IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re *Ex Parte* Reexamination of:	)	
	)	
U.S. Patent No. 10,687,400 B2	)	Control No.: *To be assigned*
	)	
Issue Date: Jun. 16, 2020	)	Group Art Unit: *To be assigned*
	)	
Inventors: Michael Miskin, *et al.*	)	Examiner: *To be assigned*
	)	
Appl. No. 16/693,081	)	Confirmation No.: *To be assigned*
	)	
Filing Date: Nov. 22, 2019	)	
	)	
For: AC LIGHT EMITTING DIODE AND AC LED DRIVE METHODS AND APPARATUS	)	

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

REQUEST FOR *EX PARTE* REEXAMINATION OF U.S. PATENT NO. 10,687,400

Reexamination is requested under 35 U.S.C. § 302 and 37 C.F.R. § 1.510 for claims 1-6 and 21-26 of U.S. Patent No. 10,687,400 B2 (the '400 patent), which issued on June 16, 2020 to assignee Lynk Labs, Inc.

The *ex parte* reexamination fee of $13,545 is paid herewith by deposit account authorization. The Commissioner is hereby authorized to charge any additional fees which may be required regarding this request, or credit any overpayment, to Deposit Account No. 50-2613. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2613.

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I. Introduction

An *ex parte* reexamination is requested on claims 1-6 and 21-26 ("the challenged claims") of U.S. Patent No. 10,687,400 that issued on June 16, 2020 ("the '400 patent," Ex. PAT-A), for which the U.S. Patent and Trademark Office ("Office") files identify Lynk Labs, Inc. ("Lynk" or "Patent Owner") as the assignee. In accordance with 37 C.F.R. § 1.510(b)(6), Requester Samsung Electronics Co., Ltd. ("Requester") hereby 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 it from filing this *ex parte* reexamination request.

This request raises substantial new questions of patentability based on prior art that the Office did not have before it or did not fully consider during the prosecution of the '400 patent, and which discloses the features recited in the challenged claims. The Office should find the claims unpatentable over this art.

On May 17, 2021, Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. filed a complaint for declaratory judgment of non-infringement in *Samsung Electronics Co., Ltd. et al. v. Lynk Labs, Inc.*, Case No. 1:21-cv-2665 (N.D. Ill.). Lynk counterclaimed for infringement. That case remains pending as to the '400 patent. Requester respectfully urges that this Request be granted and that reexamination be conducted with "special dispatch" pursuant to 35 U.S.C. § 305 and MPEP § 2261. Indeed, this case represents a particularly important situation calling for the review of the patentability of the challenged claims. In particular, Samsung previously filed a petition for *inter partes* review ("IPR") against the challenged claims, and that IPR (IPR2022-00150) was denied on a discretionary basis based on Lynk's representation that the challenged claims were not being asserted in district court—a representation that Lynk is now trying to walk back. (*See infra* §§IV.A-B.)

In accordance with 37 C.F.R. § 1.20(c), the fee for *ex parte* reexamination (non-streamlined) is submitted herewith. If this fee is missing or defective, please charge the fee as well as any additional fees that may be required to Deposit Account No. 50-2613.

II. Identification of Claims and Citation of Prior Art Presented

Requester respectfully requests reexamination of claims 1-6 and 21-26 of the '400 patent in view of the following prior art references, which are also listed on the attached PTO Form SB/08 (Ex. PA-SB08).

Ex. PA-1	U.S. Patent Application Publication No. 2003/0137258 ("*Piepgras*")
Ex. PA-2	U.S. Patent No. 4,656,398 ("*Michael*")
Ex. PA-3	U.S. Patent Application Publication No. 2003/0035075 ("*Butler*")
Ex. PA-4	U.S. Patent No. 7,180,265 ("*Naskali*")
Ex. PA-5	U.S. Patent No. 5,086,294 ("*Kasegi*")
Ex. PA-6	U.S. Patent Application Publication No. 2002/0021573 ("*Zhang*")

A copy of each of the above-listed references is attached to this request pursuant to 37 C.F.R. § 1.510(b)(3). A copy of the '400 patent is also attached to this request as Exhibit PAT-A, pursuant to 37 C.F.R. § 1.510(b)(4).

Each of the cited references qualifies as prior art. As discussed in the next section (§ III.A), the '400 patent's earliest possible priority date is February 25, 2004.

Michael issued April 7, 1987, *Butler* published February 20, 2003, *Kasegi* issued February 4, 1992, and *Zhang* published February 21, 2002, and thus these references qualify as prior art at least under pre-AIA 35 U.S.C. § 102(b).

Naskali, a U.S. patent, was filed October 27, 2003 and published on February 20, 2007, and thus qualifies as prior art at least under pre-AIA 35 U.S.C. § 102(e).

Piepgras published July 24, 2003 from U.S. Application No. 10/245,786 filed September 17, 2002, and thus qualifies as prior art at least under pre-AIA 35 U.S.C. § 102(a) and/or § 102(e).

III. Overview of the '400 Patent

A. Specification and Claims of the '400 Patent

The '400 patent is titled "AC light emitting diode and AC LED drive methods and apparatus." (Ex. PAT-A, Cover.) The named inventors are Michael Miskin, James N. Andersen, and Robert L. Kottritsch. (*Id.*) It issued on June 16, 2020, from United States Patent Application No. 16/693,081, filed November 22, 2019. (*Id.*)

The '400 patent claims priority to eight provisional applications through a series of continuation and continuation-and-part applications. (*Id.* at Cover, page 2.) Requester does not concede that the priority claim is proper, but for purposes of this proceeding assumes the critical

date for the ’400 patent is February 25, 2004, which is filing date for the earliest-filed provisional application in the ’400 patent’s alleged priority chain.

The ’400 patent explains: “The present invention generally relates to light emitting diodes (‘LEDs’) and LED drivers. The present invention specifically relates to alternating current (‘AC’) driven LEDs, LED circuits and AC drive circuits and methods.” (Ex. PAT-A, 1:45-48.) The patent also explains that the “present invention is directed to an LED light emitting device and LED light system capable of operating during both the positive and negative phase of an AC power supply.” (*Id.*, 13:34-36; *see also id.*, 13:37-57.)

The “Summary of the Invention” section of the ’400 patent also purports to identify various embodiments directed to an LED device/system having various features. (Ex. PAT-A, 4:25-10:67.) The following “Detailed Description” of the patent goes on to describe numerous schematic diagrams (shown in Figures 1-68 (*id.*, 11:10- 13:22) corresponding to many different embodiments of devices and circuits that employ commonly known components, circuits, and related features. (*See e.g., generally id.*, 13:58-26:42.)

The claims of the ’400 patent are broadly directed to a lighting system/device having a combination of known components and features, such as an LED, antenna-based data communications circuit, touch circuit, power supply, heat sink, three-way switch, etc. (*Id.*, 27:19-29:4.) For example, claim 1 recites an “LED circuit compris[ing] a plurality of LEDs connected in series, parallel, or opposing parallel,” but LEDs and such LED arrangements were well known, as explained throughout this Request. Similarly, the antenna, socket, telecommunications device, and capacitive touch components recited in the claims were well known, as was integrating circuit components into various configurations.

B. Prosecution History of the ’400 Patent

The ’400 patent was allowed on first action during prosecution. (Ex. PAT-B, 1163-65.) The Examiner’s statement of reasons for allowance merely repeated most claim elements. (*Compare* Ex. PAT-B, 1164, *with* Ex. PAT-A, 27:19-35.) And as explained throughout this Request, the features identified by the examiner were well-known in the art at the time of the alleged invention.

C. Level of Ordinary Skill

Requester contends that a person of ordinary skill in the art as of the claimed priority date of the ’400 patent (“POSITA”) would have had at least a bachelor’s degree in electrical

engineering, computer engineering, computer science, physics, or the equivalent, and two or more years of experience with LED devices and/or related circuit design, or a related field. (Ex. PA-DEC, ¶¶20-21.)[1] More education can supplement practical experience and vice versa. (*Id.*)

In IPR2020-00149, the PTAB applied the following level of skill in the art: "at least a bachelor's degree in electrical engineering, computer engineering, computer science, physics, or the equivalent, and two or more years of experience with LED devices and related LED circuit design. Lack of work experience could have been remedied by additional education and vice versa," but explained that it if were to apply Requester's "proposed level of skill, [its] Decision would not be affected." (Ex. IPR-5, 8-9.) Similarly here, the analysis presented would not change under either level of skill (that proposed by Requester or previously applied by the PTAB), and the challenged claims are obvious under both levels of ordinary skill.

IV. Related *Inter Partes* Review and Court Proceedings

A. Prior *Inter Partes* Review Proceedings For the '400 Patent

Samsung filed two petitions requesting *inter partes* review of the '400 patent on November 12, 2021. The first petition challenged claims 7-20 of the '400 patent. (Ex. IPR-1, 1.) The second petition challenged claims 1-6 and 21-26 of the '400 patent. (Ex. IPR-2, 1.) The Patent Trial and Appeal Board ("PTAB") instituted *inter partes review* of all challenged claims (claims 7-20) in the first case (Ex. IPR-3, 40), but in the second case challenging claims 7-20 it "exercise[d] [its] discretion not to institute an *inter partes* review in [the second] case in light of the parallel petition filed against the '400 patent" (Ex. IPR-4, 2). **The IPR petition challenging claims 1-6 and 21-26 of the '400 patent (the same claims challenged here) was denied for purely discretionary reasons; the PTAB did not address the prior art presented or the merits of Samsung's invalidity challenges based on that prior art**. (*See generally*, IPR-4, 2-11.) More particularly, Lynk stated that in district court, "Patent Owner has asserted only Claims 7-11 from the '400 Patent. … Five claims do not constitute a large number of claims, and this Petition does not address any of the asserted claims." (Ex. IPR-8 at 3). The Board specifically relied on Lynk's statements in concluding that there were only a small number of asserted claims justifying using discretion to deny institution. (Ex. IPR-4, 9.)

[1] Requester submits the declaration of R. Jacob Baker, Ph.D., P.E. (Ex. PA-DEC), an expert in the field of the '400 patent. (Ex. PA-DEC, ¶¶1-19; Ex. PA-DEC-CV.)

Following institution of IPR on claims 7-20, Patent Owner disclaimed independent claim 14 and dependent claims 18-20. (Ex. PAT-A, 67 (disclaimer).) The PTAB subsequently found the remaining challenged claims—claims 7-13 and 15-17 unpatentable. (Ex. IPR-5, 68-69.) Lynk appealed the PTAB's findings to the Court of Appeals for the Federal Circuit, where a 3-judge panel affirmed the unpatentability of all challenged claims. (Ex. IPR-6, 29-30.) The Court declined Lynk's requests for panel rehearing and rehearing *en banc*. (Ex. IPR-7, 2.)

B. Related District Court Litigation

On May 17, 2021, Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, "Samsung") filed a complaint for declaratory judgment of non-infringement in *Samsung Electronics Co., Ltd. et al. v. Lynk Labs, Inc.*, Case No. 1:21-cv-2665 (N.D. Ill.). On September 29, 2021, Lynk filed counterclaims against Samsung, alleging that Samsung infringes several Lynk patents, including the '400 patent. In its April 1, 2022 Final Infringement Contentions, Lynk elected to assert only claims 7, 9, and 10 of the '400 patent against Samsung. (*See* Ex. NDIL-2, 6.)

All asserted claims of the '400 patent were found unpatentable during IPR and their invalidity was confirmed by the Federal Circuit. (*Supra* § IV.A.) But despite all asserted claims being invalidated, the infringement counterclaims in the N.D. Ill. litigation have not been dismissed. In that case, the parties stipulated to dismissal with prejudice of all claims and counterclaims pertaining to eight other patents in view of the PTAB's decisions finding all asserted claims in many of those patents unpatentable, and the Federal Circuit's affirming those decisions. (*See* Ex. NDIL-3 (stipulated dismissal); Ex. NDIL-4 (order granting stipulated dismissal).) Notwithstanding the fact that all asserted claims of the '400 patent were found invalid, the stipulated dismissal did not include the '400 patent. As such, the '400 patent is still at issue in the N.D. Ill. litigation and Lynk is trying to walk back its prior representations as to which claims are asserted in that case. (*See supra* §IV.A.)

C. *Inter Partes Review* of U.S. Patent No. 10,750,583

The PTAB instituted *inter partes* review of U.S. Patent No. 10,750,583 ("the '583 patent") on June 9, 2022, and subsequently found all challenged claims unpatentable, cancelling claims 8-10 and 15-18 of the '583 patent. (*See* Ex. IPR-9 at 1, 40 (IPR2022-00100) ("the '583 patent IPR".) The '583 patent is related to the '400 patent. Specifically, the '583 patent issued from a

continuation of application No. 16/443,759, and the '400 patent issued from a continuation of application No. 16/693,091, which is itself a continuation of the same application No. 16/443,759.

There are substantial similarities between now-cancelled claims 8-10 and 15-18 of the '583 patent and the '400 patent's claims challenged in this request. For example, independent claim 8 of the '583 patent (below left) and claim 1 of the '400 patent (below right) both recite "[a] lighting [device/system] comprising: a data communication circuit" having an "antenna," and "an LED circuit," "wherein the lighting device" can "transmit data signals to or receive" "data signals from at least one" "telecommunications device," and wherein the "telecommunications device" can detect "human touch via capacitive sensing," among other similarities.

Claim 8 is illustrative of the challenged claims:

8. A lighting device comprising:

a data communication circuit having at least one antenna;

an LED circuit array having at least two independently controlled LED circuits, each LED circuit having at least one LED;

an LED circuit driver capable of independently providing power to one or more of the at least two independently controlled LED circuits in the LED circuit array;

wherein the data communication circuit, the LED circuit array, and the driver are integrated into the lighting device;

wherein the lighting device can transmit data signals to or receive the data signals from at least one portable telecommunications device; and

wherein the portable telecommunications device comprises a circuit that can detect a human touch via capacitive sensing, wherein the circuit of the portable telecommunications device is configured to detect the human touch via capacitive sensing, and wherein the portable telecommunications device further comprises at least one LED that provides light based upon detection of the human touch.

1. A lighting system comprising:

a data communication circuit comprising an LED circuit and an antenna;

wherein the LED circuit comprises a plurality of LEDs connected in series, parallel, or opposing parallel;

wherein the LED circuit and the antenna are integrated in a package;

wherein the data communication circuit is integrated into a lighting device;

wherein the lighting device is adapted to be connected to a socket;

wherein the lighting device is configured to transmit data signals to or receive data signals from at least one telecommunications device; and

wherein the telecommunications device comprises a circuit configured to detect human touch via capacitive sensing.

Ex. IPR-9 at 4 (left; quoting '583 patent at 27:48-28:11); Ex. PAT-A at 27:19-35 (right; claim 1).

Ground 1 in the '583 patent IPR was based on the same combination of Piepgras, Michael, and Butler, as SNQ 1 in this request. (*See* Ex. IPR-9 at 5.) Similarly, Ground 3 in the '583 patent IPR was based on the same combination of Piepgras, Michael, Butler, and Naskali as SNQ 3 in this request. (*Id.*) Many of the PTAB's specific findings with respect to those grounds are informative on the issues presented in this request.

- *Piepgras* discloses the preamble. (Ex. IPR-9 at 11 n.7.)
- The combination of *Piepgras*, *Michael*, and *Butler* disclose "a data communication circuit having at least one antenna." (*Id.* at 12.)

- The combination of *Piepgras*, *Michael*, and *Butler* disclose "wherein the lighting device can transmit data signals or to receive the data signals from at least one portable telecommunications device." (*Id.* at 13-14.)
- A person of ordinary skill in the art would have been motivated to combine *Piepgras*'s and *Butler*'s teachings to meet the "circuit that can detect a human touch via capacitive sensing" limitations. (*Id.* at 14-29.)
- The combination of *Piepgras*, *Michael*, and *Butler* would have rendered obvious independent claim 8 and dependent claims 9, 10, 15, and 18. (*Id.* at 37.)
- The combination of *Piepgras*, *Michael*, *Butler*, and *Naskali* would have rendered obvious dependent claim 17. (*Id.* at 39.)

V. Claim Construction

"During patent examination, the pending claims must be 'given their broadest reasonable interpretation consistent with the specification.'" MPEP § 2111; *see also* MPEP § 2258. The standard of claim interpretation in reexamination is different than that used by the courts in patent litigation. MPEP § 2258; *In re Rambus, Inc.*, 753 F.3d 1253, 1255 (Fed. Cir. 2014) ("Claims are generally given their 'broadest reasonable interpretation' consistent with the specification during reexamination."); *SkyHawke Techs., LLC v. Deca Int'l Corp.*, 828 F.3d 1373, 1376 (Fed. Cir. 2016) (noting that district courts apply the "standard of claim construction as explored in *Phillips v. AWH Corp.*" rather than the "broadest reasonable construction"). Therefore, any claim interpretations submitted or implied herein for the purpose of this reexamination do not necessarily correspond to the appropriate construction under the legal standards mandated in litigation.[2] MPEP § 2686.04; *see also In re Zletz*, 893 F.2d 319, 322 (Fed. Cir. 1989). Given how closely the prior art maps to the claims, Requester submits that no construction is required any claim terms because the claims would be unpatentable under any reasonable construction of the terms.

[2] Requester reserves all rights and defenses available including, without limitation, defenses as to invalidity, unenforceability, and non-infringement regarding the '400 patent. Further, because the claim interpretation standard used by courts in patent litigation is different from the appropriate standard for this reexamination, any claim constructions submitted or implied herein for the purposes of this reexamination are not binding upon Requester in any litigation related to the '400 patent. Specifically, any interpretation or construction of the claims presented herein or in Dr. Baker's declaration for reexamination, either implicitly or explicitly, should not be viewed as constituting, in whole or in part, the Requester's own interpretation or construction of such claims.

In the Decision Denying Institution of *Inter Partes Review* of the '400 patent, the PTAB did not expressly construe "package" but noted that "[a]ccording to the '400 patent, '"package" or "packaged" is defined herein as an integrated unit meant to be used as a discrete component in either of the manufacture, assembly, installation, or modification of an LED lighting device or system.'" (Ex. IPR-3, 3 (quoting Ex. PAT-A, 5:46-50). In an IPR decision finding all challenged claims of a related patent unpatentable (U.S. Patent No. 11,019,697), the PTAB also noted the definition of package, but explained that "the field of LED lighting systems is broad and includes 'general lighting, specialty lighting, signs, and decoration such as for Christmas tree lighting" (Ex. IPR-10, 24 (quoting language that also appears in Ex. PAT-A, 2:7-11).) The PTAB applies the narrower *Phillips* standard used by district courts. Similarly, in district court litigation (again under the narrower *Phillips* standard), Lynk and Samsung agreed that the term "package" in a related patent (U.S. Patent No. 11,019,697) meant "an integrated unit meant to be used as a discrete component in either of the manufacture, assembly, installation, or modification of an LED lighting device or system." (Ex. NDIL-1, 2.) Requester takes no position on whether this construction is equivalent to or narrower than the broadest reasonable interpretation construction applied in EPR. But, to the extent the Examiners apply that construction, it is consistent with the analysis presented herein and disclosed or rendered obvious by the disclosures discussed below in Section VII.A.4(d).

VI. State of the Art and Technical Background

The accompanying declaration of Dr. Baker provides a technical background, in which Dr. Baker also discusses the state of the art. (*See* Ex. PA-DEC ¶¶ 22-54.) For certain claim elements, Requester and Dr. Baker describe the relevant state of the art in more detail in the Request and Dr. Baker's declaration, respectively.

VII. Statement of Substantial New Questions of Patentability

The following combinations of prior art disclose or suggest all the features of claims 1-6 and 21-26 of the '400 patent and raise substantial new questions of patentability under pre-AIA 35 U.S.C. § 103(a).

SNQ1: *Piepgras*, *Michael*, and *Butler* raise a substantial new question of patentability (SNQ1) with respect to claims 1-4.

SNQ2: *Piepgras*, *Michael*, *Butler*, and *Naskali* raise a substantial new question of patentability (SNQ2) with respect to claim 5.

SNQ3: *Piepgras*, *Michael*, *Butler*, and *Kasegi* raise a substantial new question of patentability (SNQ3) with respect to claim 6.

SNQ4: *Piepgras* and *Butler* raise a substantial new question of patentability (SNQ4) with respect to claims 21-23 and 26.

SNQ5: *Piepgras*, *Butler*, and *Naskali* raise a substantial new question of patentability (SNQ5) with respect to claim 24.

SNQ6: *Piepgras*, *Butler*, and *Zhang* raise a substantial new question of patentability (SNQ5) with respect to claim 25.

The references listed in the above SNQs were not considered during prosecution. (*See generally* Ex. PAT-B.). Each combination was presented in an IPR petition in IPR2022-00150, but the PTAB exercised its discretion to deny institution of IPR in that case without considering the merits of the prior art challenges. (*Supra* §IV; *see generally* Ex. IPR-4.) As such, these prior art combinations were not previously addressed by the Office and the request is not based on the same or substantially the same prior art or arguments previously considered by the Office.

For the reasons discussed below and in the accompanying declaration of Dr. Baker (Ex PA-DEC), the above prior art combinations raise substantial new questions of patentability with respect to claims 1-6 and 21-26 of the '400 patent.

A. SNQ1: Claims 1-4 Are Obvious Over *Piepgras*, *Michael*, and *Butler*

1. Overview of *Piepgras*

U.S. Patent Application Publication No. 2003/0137258 ("*Piepgras*") is titled "Light Emitting Diode Based Products." (Ex. PA-1, Cover.) *Piepgras* was published on July 24, 2003, from U.S. Patent Application No. 10/245,786, which was filed on September 17, 2002. (*Id*.) *Piepgras* discloses that "FIG. 1 is a block diagram of a lighting system or device 500" and that lighting system 500 uses light emitting diodes (LEDs), as shown below. (*Id*., ¶[0088].)

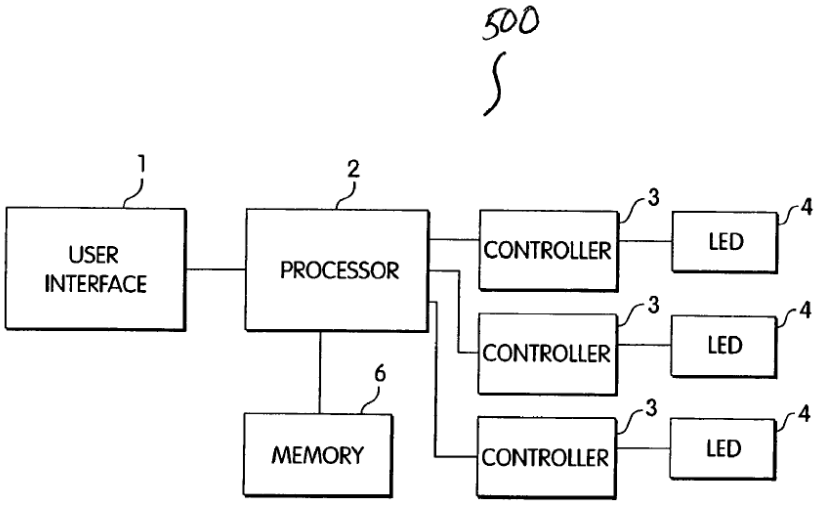


Fig. 1

(*Id.*, FIG. 1; *see also id.*, ¶¶[0033] ("FIG. 1 is a block diagram of a device according to the principles of the invention"), [0088] ("The device may include a user interface 1, a processor 2, one or more controllers 3, one or more LEDs 4, and a memory 6."), [0089]-[0093] (describing Figure 1), [0094]-[0098] (describing operation of lighting system of Figure 1), FIGS. 2A-2B (state diagram for lighting system), [0099]-[0105] (describing user interfaces for lighting system).)

Piepgras further discloses several examples of specific lighting products that are implemented using the general arrangement shown in Figure 1. (Ex. PA-1, Abstract ("Various exemplary implementations of light emitting diode (LED) based illumination products and methods are disclosed including..."), ¶¶[0083] (same), [0106]-[0241] (describing various specific lighting products that are examples of *Piepgras*' lighting system); *id.*, Title ("Light emitting diode based products"), FIGS. 3-54 (showing specific lighting products that are examples of examples of *Piepgras*' lighting system, and components of such products).)

Piepgras discloses various methods for control of lighting systems, including through a user interface, such as "touch pads" (*id.*, ¶¶[0094]-[0102]), or through wireless control. (*Id.*, ¶[0032] ("illumination of the LEDs may be controlled via the network"), [0083] (disclosing "light emitting diode (LED) based illumination products" and that "[a]ny of the foregoing devices may be equipped with various types of user interfaces (both 'local' and 'remote') to control light generated from the device"), [0177] (disclosing a PDA and "a mobile remote-control interface" for controlling a lighting device and that a "user interface may generate and communicate signals to various lighting devices through ... wireless transmission").)

Piepgras further discloses controlling a lighting device based on a proximity sensor. For example, *Piepgras* discloses that "any of the lighting devices discussed in connection with FIGS. 32-38 or other figures may be associated with a **sensor** or other system that generates a signal" (*id.*, ¶[0179] (emphasis added)) and that an LED-illuminated device "may respond to signals from an activation switch that is associated with a control circuit" wherein "[t]he activation switch may respond to ... **proximity**" (*id.*, ¶[0138] (emphasis added)). (*See also id.*, Abstract ("Devices also may include sensors so that the generated light may change in response to various operating and/or environmental conditions..."), ¶[0186] ("A detection system may also warn of exits that are not safe because of the proximity of smoke or other dangers. This warning signal may be used to change the lighting pattern being displayed by the lighting devices near the dangerous exits as well as the safe exits.").)

Piepgras discloses an example of controlling lighting based on a proximity sensor, wherein the lighting devices change color based on proximity detector signals:

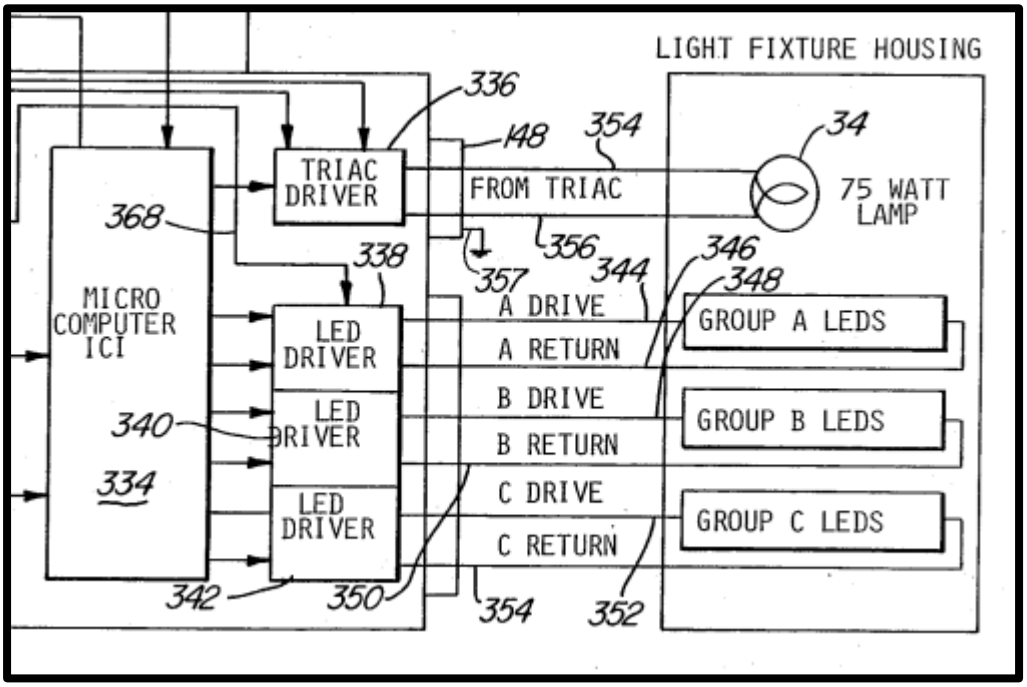
> For example, *a **proximity detector** may be provided wherein one or more lighting devices changes color based on one or more signals provided by the detector. In such a system, the lighting device(s) may light to a particular color or produce a color changing effect based on the input from the sensor. In an embodiment, a hallway or other area may have several lighting devices where each of them is associated with **a proximity detector. As a person walks down the hallway, the lighting devices activate***, change colors or display lighting effects. Once the person has passed the lighting device, it may go back to a default mode an[d] await further activation through the proximity detector.

(Ex. PA-1, ¶[0179] (emphasis added).)

2. Overview of *Michael*

U.S. Patent No. 4,656,398 ("*Michael*") is titled "Lighting Assembly." *Michael* issued on April 7, 1987, from U.S. Patent Application No. 803,302, which was filed on December 2, 1985. (Ex. PA-2, Cover.)

Michael "relates to lighting assemblies," and discloses circuitry relating to LED-based lighting. (*Id.*, 1:5-7; *see also id.*, Title ("Lighting Assembly"), 7:20-8:47 (describing circuitry relating to lighting assembly).) In particular, *Michael* discloses a lighting assembly that includes LED drivers (338, 340, and 342) and LEDs (group A LEDs, group B LEDs, and group C LEDs below), as shown below in excerpted Figure 12.



(*Id.*, FIG. 12 (excerpted); *see also id.*, 7:20-21 ("The control assembly for the invention lighting assembly is seen in block diagram in FIG. 12.").)

Michael further discloses that an operator uses a keyboard 378 to interface with the lighting assembly and control it. (*Id.*, 8:23-24 ("Keyboard 378 performs the operator interface function."), 8:54-58 ("The described lighting fixture assembly ... provide[s] the operator with the ability to ... actuate the various lighting assemblies on the lighting fixture...."), FIG. 15 (below; showing keyboard 378 at top right).) For example, *Michael* discloses controlling the color of lighting based on operator input (*id.*, 8:58-66) and further discloses that a "bulb 34 may be caused to glow with whatever intensity is desired" based on such operator input (*id.*, 8:67-9:2). *Michael* explains that by driving an appropriate current to LEDs, its system thus controls lighting provided by the LEDs. (*Id.*, 9:2-9.)

Michael describes using wireless communication for controlling the LEDs of the lighting assembly. (Ex. PA-2, 10:48-61.) For such wireless communication, *Michael* discloses a receiving antenna 438, shown in Figure 15:

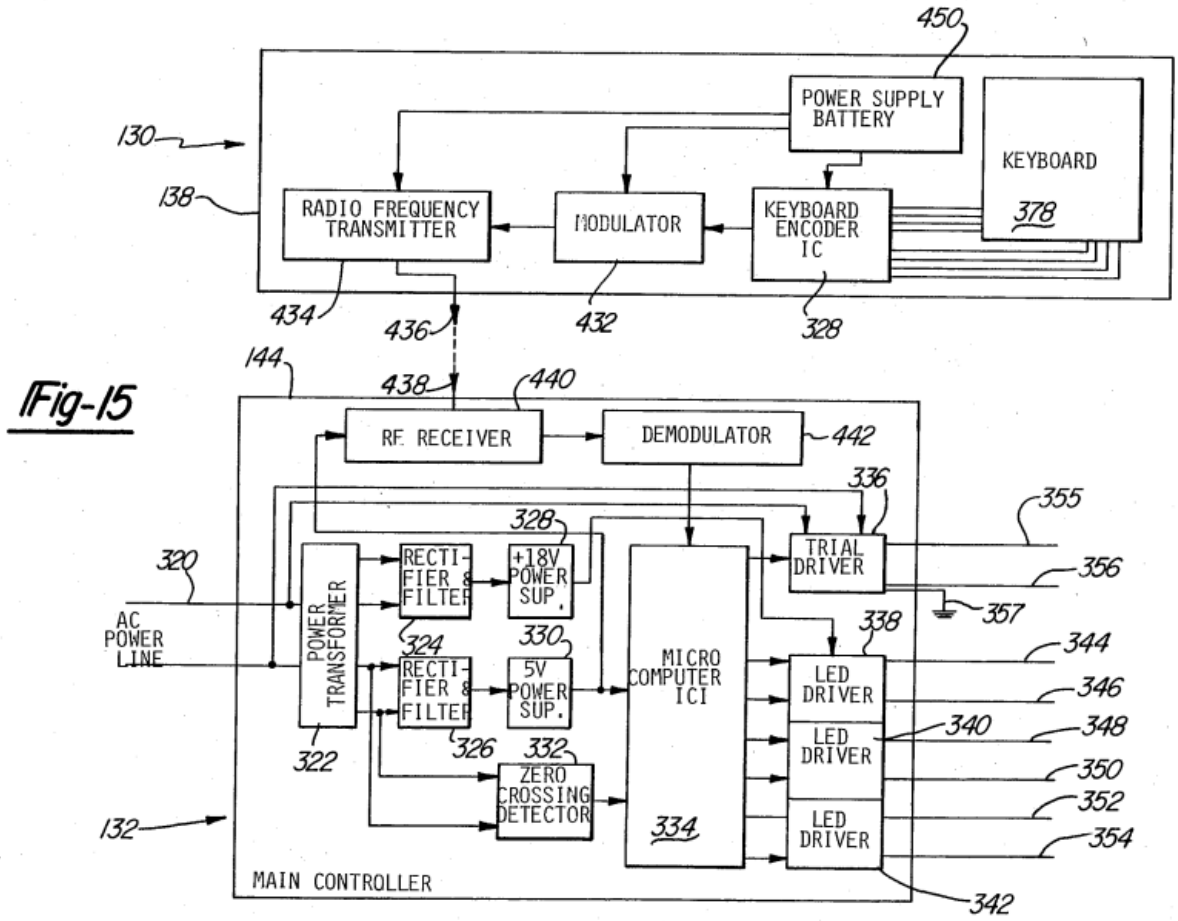


Fig-15

(*Id.*, FIG. 15 (antenna 438, described above, and LED drivers 338/340/342, described below).)

Michael explains that keyboard 378 is coupled to keyboard encoder IC 328, which provides an encoded signal that is modulated and transmitted to antenna 438, and "[t]he signal received on antenna 438 is inputted to a radio frequency receiver 440 ... [which] outputs to a demodulator 442 which outputs to microcomputer 334." (*Id.*, 10:48-58.) As shown above in Figure 15, microcomputer 334 is coupled to LED drivers 338/340/342. (*Id.*, FIG. 15.) *Michael* further discloses that the RF receiver of controller 132 (displayed adjacent to antenna 438) receives data from antenna 438.

3. Overview of *Butler*

U.S. Patent Application Publication No. 2003/0035075 ("*Butler*") is titled "Method and System for Providing Improved User Input Capability for Interactive Television." My understanding is that *Butler* was published on February 20, 2003 from U.S. Patent Application No. 09/933,683, which was filed on August 20, 2001. (Ex. PA-3, Cover.)

Butler "relates generally to techniques for providing interactive experiences to viewers of television, and in particular to techniques for providing user input capability for interactive program content over television." (*Id.*, ¶[0001].)

Butler describes a handheld remote control device that is used for controlling another device, e.g., a television. (*Id.*, Abstract ("providing touch screen capability on interactive television systems and associated remote control devices"), ¶¶[0005] ("The remote control is typically a hand held device that communicates with the television apparatus and/or a set top box by an Infrared (IR) or other link."), [0020] ("remote control"), [0029] (below).)

> In specific embodiments, interactive television system 100 may provide interactivity to users, such as permitting the user to select a program, turn the system on and off, and the like. Such capabilities may be provided using an EPG displayed on the screen of television 154 and/or on the remote control 158. A desired program may be selected by touching a corresponding listing on the touch screen 145 attached to the monitor of the television set 154 or by touching the corresponding screen 159 on the remote control 158.

(*Id.*, ¶[0029].)

Butler discloses that its remote control detects human touch for acquiring input from a user, and further discloses capacitive sensing as a way to detect the human touch. (*Id.*, ¶¶[0020] ("Embodiments provide interactive capability by using a touch screen … For example, specific embodiments of the present invention employ presence sensitive devices … [which] can be a touch screen, capacitive touch screen, …"), [0026] ("the remote control will also include touch screen capability").) For example, Figure 1A, shown below, is a representative interactive television system and includes "[a]n optional associated remote control 158, which can optionally have a corresponding touch screen overly 159." (*Id.*, ¶[0028].)

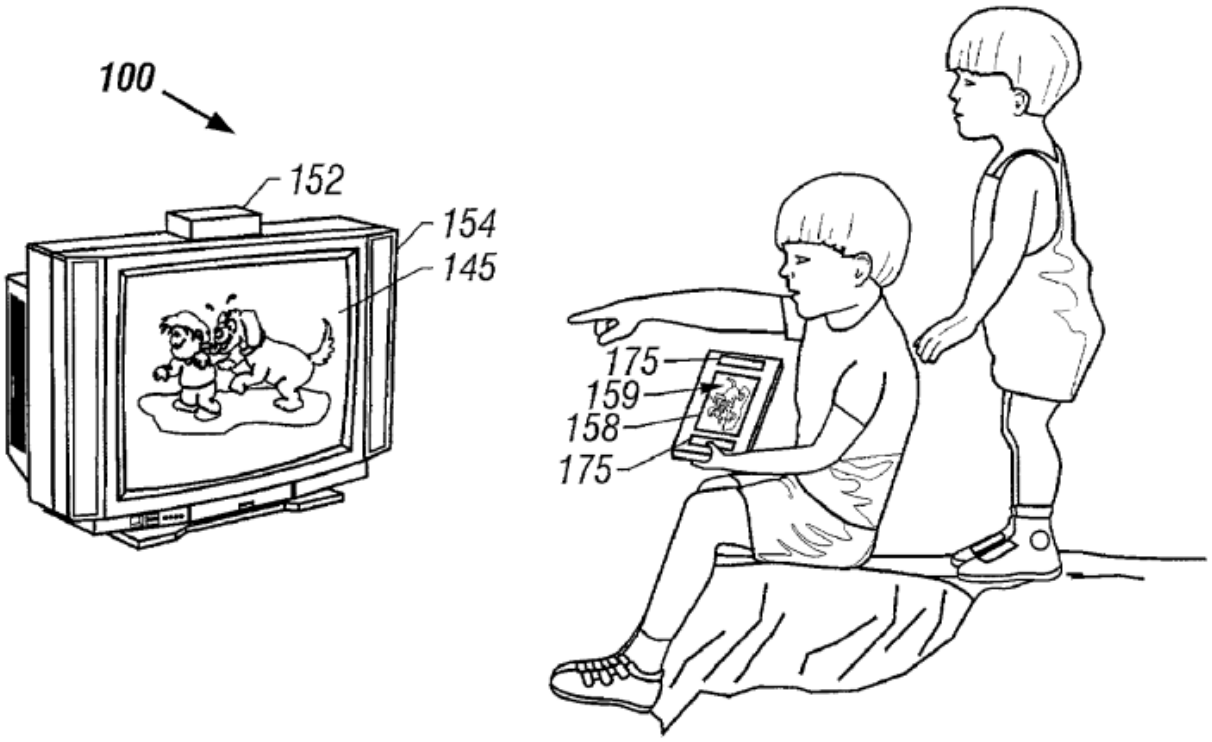


FIG. 1A

(Ex. PA-3, FIG. 1A (remote control 158).)

Butler explains benefits associated with using a touch screen:

> Touch access enables specific embodiments to be especially suitable for children or adults with impaired motor abilities because children instinctively touch something they want and using a touch screen is much easier than using a mouse or a device with small buttons, such as a standard remote control, for a disabled person. ... People with impaired vision capabilities may use a touch screen to enlarge an area or have the text read to them by the interactive system.

(Ex. PA-3, ¶[0021].)

4. Claim 1

a) A lighting system comprising:

To the extent limiting, *Piepgras* discloses the preamble of claim 1. (Ex. PA-DEC, ¶¶59-63, 91-96.) For instance, *Piepgras* discloses a lighting system including a spotlight 100 and a remote user interface 102 for remotely controlling the spotlight. (Ex. PA-1, ¶[0110] ("FIG. 6 shows a spotlight according to the principles of the invention.").)

Figure 6 of *Piepgras* shows the lighting system:

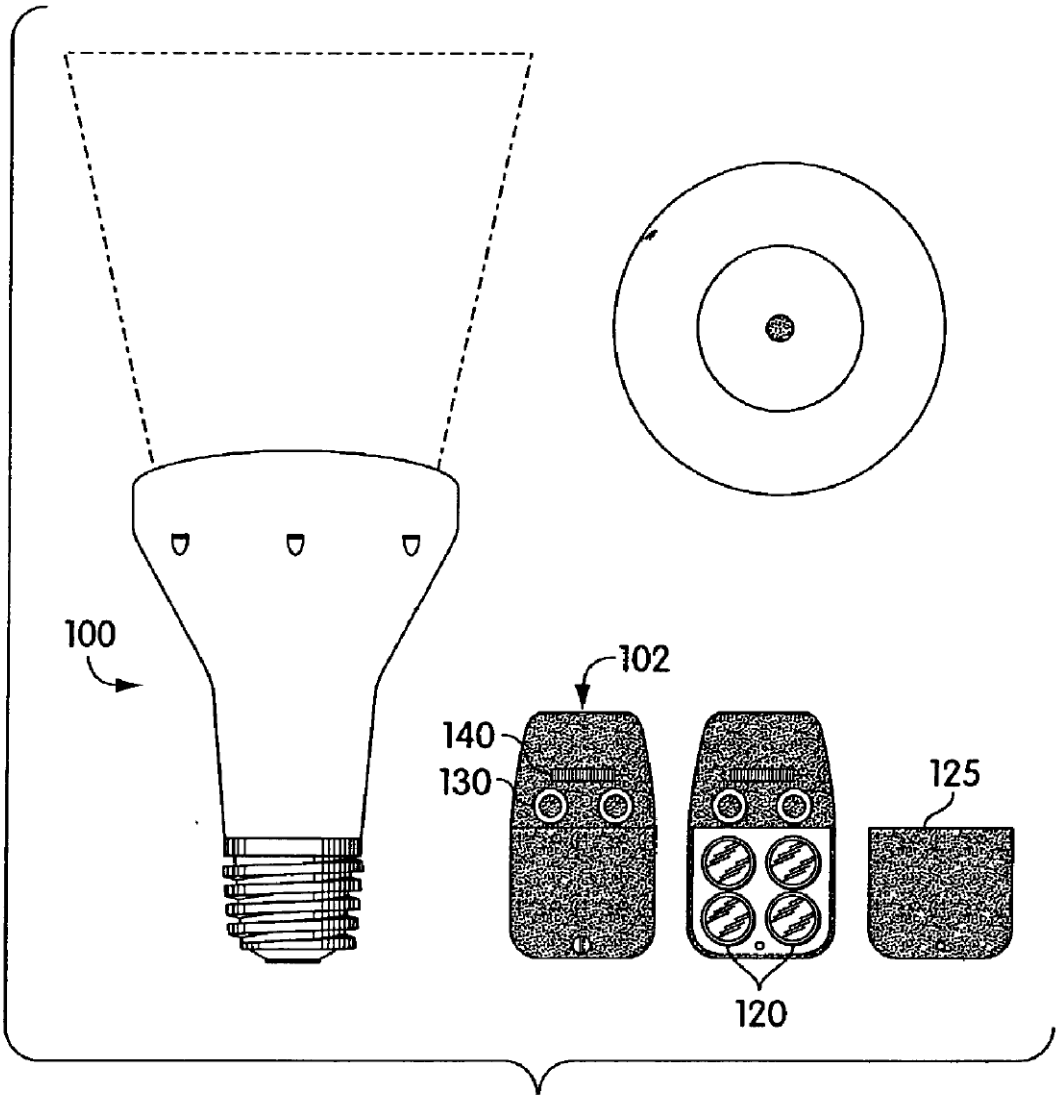


Fig. 6

(*Id.*, FIG. 6; *see also id.*, ¶¶[0038] ("FIG. 6 shows a spotlight according to the principles of the invention"), [0110] (describing Figure 6); Ex. PA-DEC, ¶93.)

Piepgras discloses that the spotlight 100 of Figure 6 is "similar to the spotlight of FIG. 5," shown below. (Ex. PA-1, ¶[0110]).)

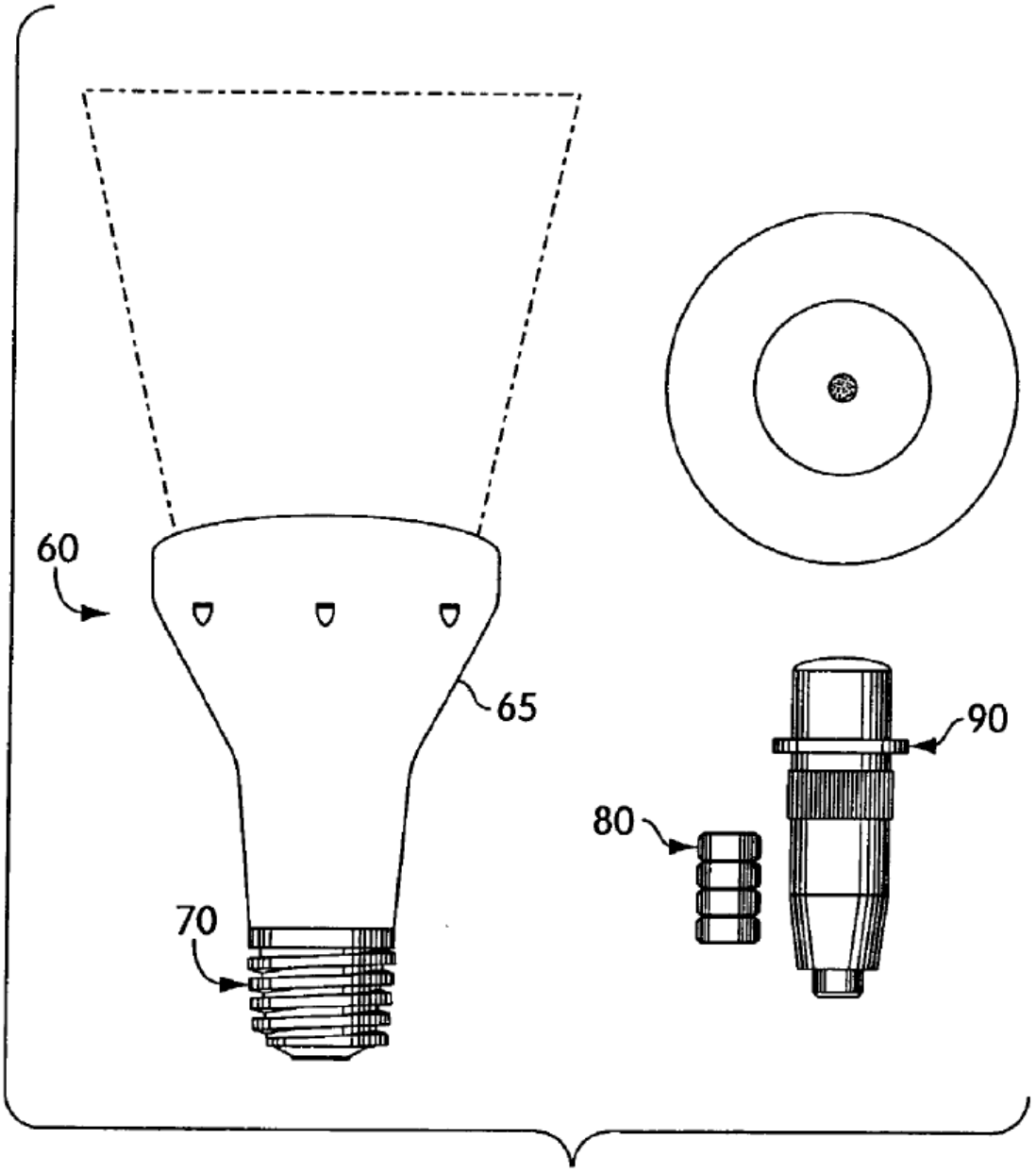


Fig. 5

(Ex. PA-1, FIG. 5; Ex. PA-DEC, ¶94.)

Figure 5 of *Piepgras* shows a spotlight 60 that "may include a system such as that depicted in FIG. 1 for controlling a plurality of LEDs within the spotlight 60, and may operate according to

the techniques described above with reference to FIGS. 2A-2B." (Ex. PA-1, ¶[0108].)[3] Therefore, a POSITA would have understood that spotlight 100 (shown in Figure 6) includes system 500 of Figure 1 of *Piepgras* (shown below). (Ex. PA-DEC, ¶95.)

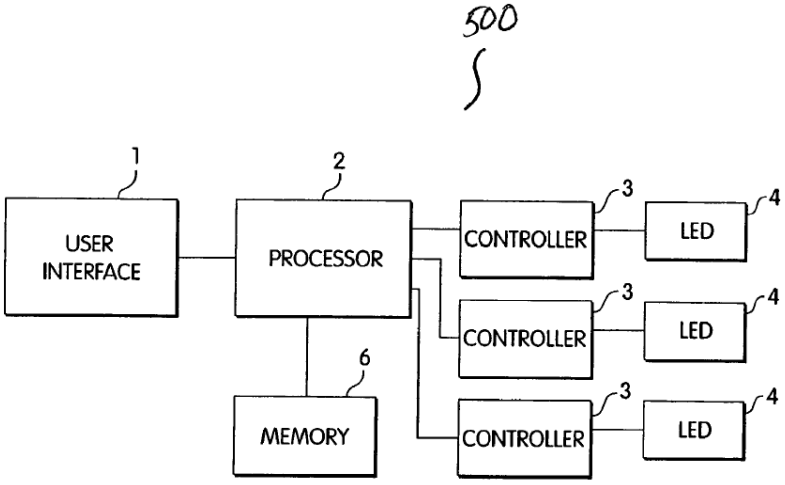


Fig. 1

(Ex. PA-1, FIG. 1; *id.*, ¶¶[0033], [0088], ("FIG. 1 is a block diagram of a lighting system or device 500"), [0089]-[0093] (describing Figure 1), [0094]-[0105], FIGS. 2A-2B; Ex. PA-DEC, ¶95.)

Piepgras discloses that "remote user interface 102 may be remote from the spotlight 100, and may transmit control information to the spotlight 100 using, for example, an infrared or radio frequency communication link, with corresponding transceivers in the spotlight 100 and the remote user interface 102." (Ex. PA-1, ¶[0110]; *see also id.*, Abstract ("Any of the foregoing devices may be equipped with various types of user interfaces (both 'local' and '**remote'**) to control light generated from the device."); Ex. PA-DEC, ¶96.) (*See also infra* §§VII.A.4(b)-(h).)

b) a data communication circuit comprising an LED circuit and an antenna;

Piepgras in view of *Michael* discloses or suggests this limitation. (Ex. PA-DEC, ¶¶64-68, 97-108.) As discussed for limitation 1(a), *Piepgras*' lighting system comprises spotlight 100, which includes system 500 of Figure 1. (§VII.A.4(a); Ex. PA-1, ¶¶[0088], [0108], [0110].) System 500 comprises an LED circuit including "one or more LEDs 4," shown below in Figure 1.

[3] A POSITA would have understood that "spotlight 10" at ¶[0110] is a typographical error, based on the description of "spotlight 100" elsewhere in the paragraph. (Ex. PA-1, ¶[0110]; Ex. PA-DEC, ¶95.)

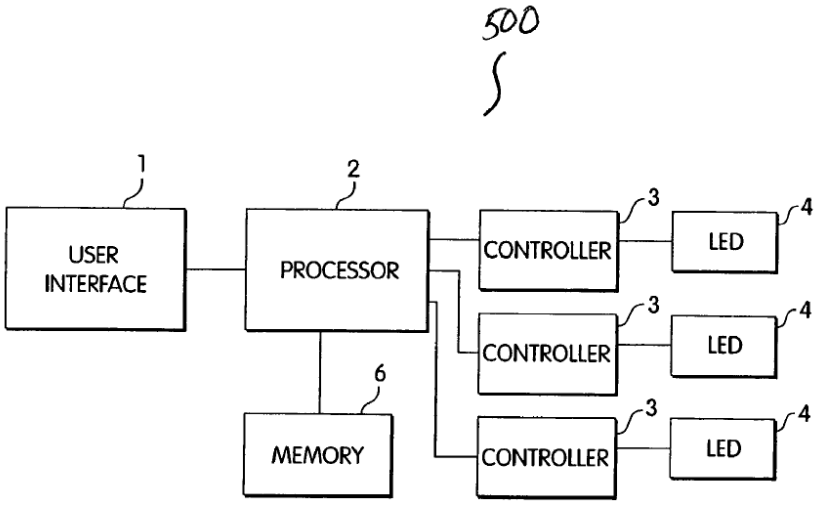


Fig. 1

(Ex. PA-1, FIG. 1; Ex. PA-DEC, ¶97.)

Piepgras discloses that controller(s) 3 shown above in Figure 1 generate signals in "a form suitable for driving the LEDs 4, which may include controlling the current, amplitude, duration, or waveform of the signals impressed on the LEDs 4." (Ex. PA-1, ¶[0088].) Therefore, a POSITA would have understood that *Piepgras*' lighting system, which includes system 500 as explained above, necessarily includes an LED *circuit* providing current and power to controllers 3 and LEDs 4. (Ex. PA-DEC, ¶98.) A POSITA would have had this understanding because LEDs 4 are devices requiring current (and thus power) for light to be emitted and because controllers 3 similarly are electronic devices requiring current (and power) (*e.g.*, in order to "control[] the current" as described above, Ex. PA-1, ¶[0088]), and because is a circuit is needed for current to flow. (*Id.*) Indeed, without a circuit, LEDs 4 would be inoperable for emitting light. (*Id.*)

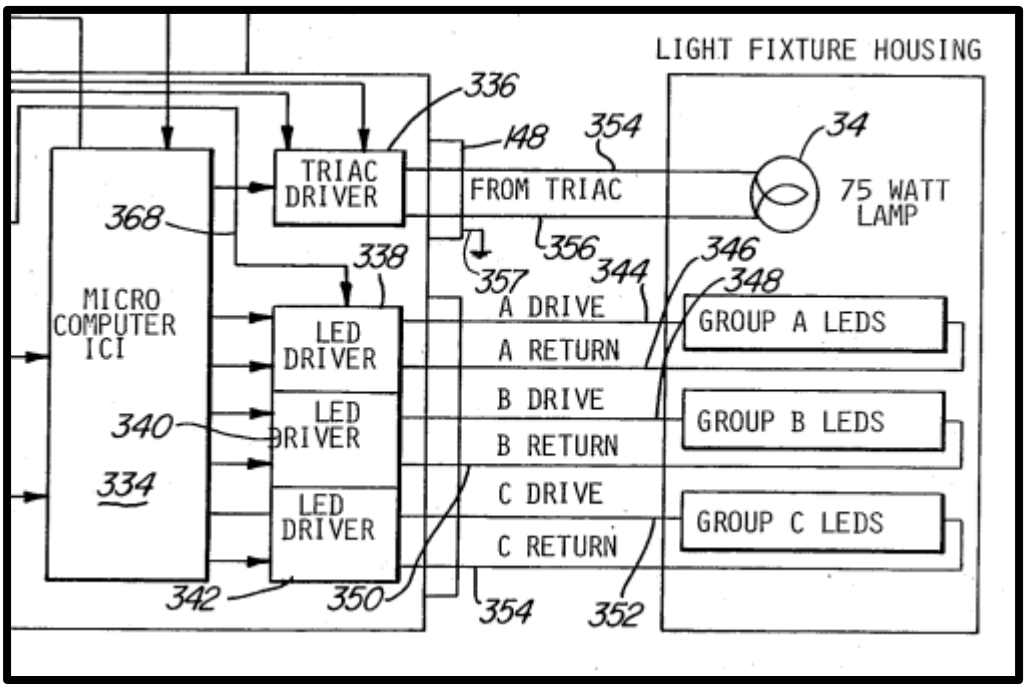
As explained for limitation 1(a), *Piepgras*' spotlight 100 includes an RF transceiver for wireless control of the spotlight. (Ex. PA-1, ¶[0110] ("The remote user interface 102 ... may transmit control information to the spotlight 100 using, for example, … [a] **radio frequency communication link, with corresponding transceivers in the spotlight 100** and the remote user interface 102.").) A POSITA would have understood that *Piepgras*' spotlight, which is part of the lighting system and which includes a transceiver for communicating using a radio frequency (RF) communication link, includes a data communication circuit. (Ex. PA-DEC, ¶99.) For example, a POSITA would have known that a transceiver for an RF communication system (as in *Piepgras*) includes electrical components that require current, which must flow in a circuit, and

that by disclosing transmission of "control information" for remotely controlling lighting system 500 (Ex. PA-1, ¶[0110]), *Piepgras* discloses a *data* communication circuit as claimed. (Ex. PA-DEC, ¶99.)

A POSITA would have understood that *Piepgras*' data communication circuit includes the above-described transceiver of spotlight 100 that transmits and receives data for remotely controlling lighting. (Ex. PA-DEC, ¶100.) A POSITA would further have understood that the data communication circuit includes an antenna. (*Id.*) For example, a POSITA would have had this understanding because without an antenna to convert received RF radiation to electrical signals, RF communication as described in *Piepgras* cannot occur. (Ex. SA-14, 49; Ex. SA-15, 110; Ex. PA-DEC, ¶100.) Indeed, a POSITA would have understood that an antenna is a basic requirement of a wireless communication system, especially one using RF communications like that disclosed by *Piepgras*. (Ex. PA-DEC, ¶100.)

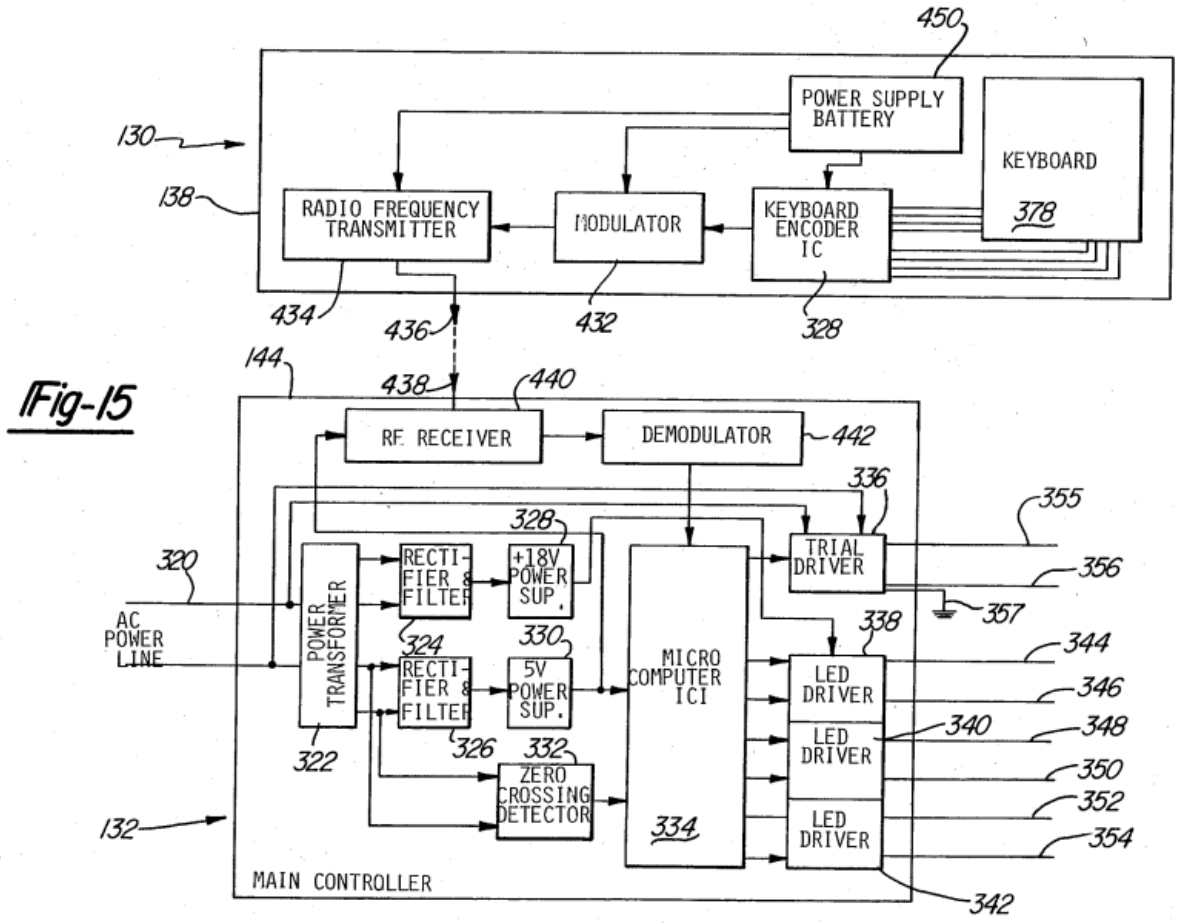
Nonetheless, while *Piepgras* does not explicitly disclose that its data communication circuit comprises the LED circuit and an antenna, it would have been obvious in view of *Michael* to implement such features in the lighting system of limitation 1(a). (*Id.*, ¶101.) *Michael* "relates to lighting assemblies" and discloses (like *Piepgras*) LED-based lighting. (Ex. PA-2, 1:5-7; *see also id.*, Title ("Lighting Assembly"), 7:20-8:47 (describing circuitry relating to lighting assembly); Ex. PA-1, FIG. 1, ¶[0088]; Ex. PA-DEC, ¶101.) Accordingly, a POSITA contemplating implementing *Piepgras*' lighting system would have had reason to consider the teachings of *Michael*. (Ex. PA-DEC, ¶101.)

Michael discloses a lighting assembly that includes LED drivers (338, 340, 342) coupled to LEDs (group A LEDs, group B LEDs, group C LEDs) via drive/return lines (344, 346, 348, 350, 352, 354), as shown below in excerpted Figure 12.



(Ex. PA-2, FIG. 12 (excerpted); *see also id.*, 7:20-21 ("The control assembly for the invention lighting assembly is seen in block diagram in FIG. 12."), 7:35-40 ("Six pin connector 146 includes a drive line 344 controlling the LEDs of light element group A; a return line 346 for light group A; a drive line 348 controlling light group B; a return line 350 for light group B; a drive line 352 controlling light group C; and a return line 354 for light group C."); Ex. PA-DEC, ¶102.)

Michael discloses an antenna 438 (shown in FIG. 15, below) for implementing wireless communication that enables an operator to remotely control the LED lighting assembly. (Ex. PA-2, 8:23-24 ("Keyboard 378 performs the operator interface function."), 8:54-58 ("The described lighting fixture assembly ... provide[s] the operator with the ability to ... actuate the various lighting assemblies on the lighting fixture...."), 10:48-61, FIG. 15 (below); Ex. PA-DEC, ¶103.)



(Ex. PA-2, FIG. 15 (showing antenna 438); Ex. PA-DEC, ¶103.)

Michael describes antenna 438 receiving data that is used to control the LEDs of the lighting assembly. (Ex. PA-DEC, ¶104.) For example, *Michael* explains that keyboard 378 is coupled to keyboard encoder IC 328, which provides an encoded signal that is modulated and transmitted to antenna 438, and "[t]he signal received on antenna 438 is inputted to a radio frequency receiver 440 ... [which] outputs to a demodulator 442 which outputs to microcomputer 334." (Ex. PA-2, 10:48-58.) As shown above in Figure 15, microcomputer 334 is coupled to LED drivers 338/340/342, which drive LEDs shown in Figure 14. (Ex. PA-DEC, ¶104.)

A POSITA would have understood that *Michael* discloses a data communication circuit comprising an LED circuit and antenna 438. (*Id.*, ¶105.) For example, *Michael* discloses AC power lines 320 (at left in Figure 15 above) and a circuit ground 357 (at right in Figure 15). (Ex. PA-2, FIG. 15, 7:41-43 ("ground line 357"), 8:11 ("AC line voltage") and describes various aspects of circuitry (*see generally id.*, 4:58-9:37), including describing that "a forward current

flows ... from a drive terminal through the circuit board to the appropriate LED load" (*id.*, 9:53-55), and further discloses that the LED drivers shown in Figure 15 are coupled to LEDs as shown in Figure 12. (Ex. PA-DEC, ¶105; *see also* Ex. PA-2, FIG. 12 (excerpted above), 7:35-40 ("Six pin connector 146 includes a drive line 344 controlling the LEDs of light element group A; a return line 346 for light group A; a drive line 348 controlling light group B; a return line 350 for light group B; a drive line 352 controlling light group C; and a return line 354 for light group C.").) Thus, a POSITA would have understood that *Michael*'s controller 132 (Ex. PA-2, FIG. 15), in conjunction with antenna 438 and the LEDs of Figure 12, discloses a data communication circuit comprising an LED circuit and an antenna. (Ex. PA-DEC, ¶105.)

In light of *Piepgras* and *Michael*, a POSITA would have been motivated to configure *Piepgras*' lighting system (discussed above for limitation 1(a)) to include a data communication circuit *comprising the LED circuit and an antenna*. (*Id.*, ¶106.) For example, a POSITA would have found it beneficial and predictable to implement an antenna—a fundamental component (known decades before the alleged invention of the '400 patent) of a wireless communication system—in *Piepgras*' lighting system, which includes a transceiver for RF communication (as discussed above). (Ex. PA-1, ¶[0110], FIG. 6.) Given that *Piepgras* discloses remotely controlling its spotlight using an RF communication link, a POSITA would have been motivated to configure a data communication circuit comprising the LED circuit and an antenna. (Ex. PA-DEC, ¶106.) For example, such a skilled person would have recognized that such a configuration (with the data communication circuit comprising both the LED circuit and antenna) would have promoted communication between the antenna and the LED circuit in order to control LEDs based on data received by the antenna. (*Id.*) Moreover, such a configuration would have been recognized to promote a compact design (*e.g.*, because the antenna and the LED circuit that is to be controlled based on the functioning of the antenna are both comprised in the data communication circuit) and would have been consistent with known circuit designs (*e.g.*, as taught by *Michael*, discussed above). (*Id.*)

A POSITA would have been skilled at circuit design/implementation and would have found such a configuration to be a predictable and feasible implementation for supporting *Piepgras*' wireless remote control of LED lighting (discussed above), particularly because it was well known to configure circuitry in such a manner for wireless control of lighting. (Ex. SA-6, FIGS. 2-5, 7 (showing printed circuit board 142 and circuit comprising lamp driver and antenna),

4:7-16, 4:48-50 ("FIG. 7 shows the embedded antenna 140, which is a metal trace put on the printed circuit board (PCB) 142."); Ex. PA-DEC, ¶107.) For example, a POSITA would have recognized that such a configuration would have predictably leveraged existing design principles and technologies. (Ex. PA-DEC, ¶107.) Indeed, *Wacyk* (Ex. SA-6) demonstrates the existing approach of implementing a data communications circuit (*e.g.*, as shown by the radio and RF signal below in Figures 7-8) that includes an antenna and a lamp driver. (Ex. PA-DEC, ¶107.)

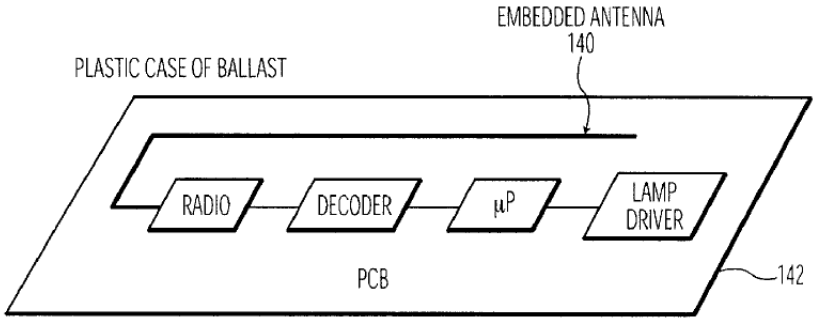


FIG. 7

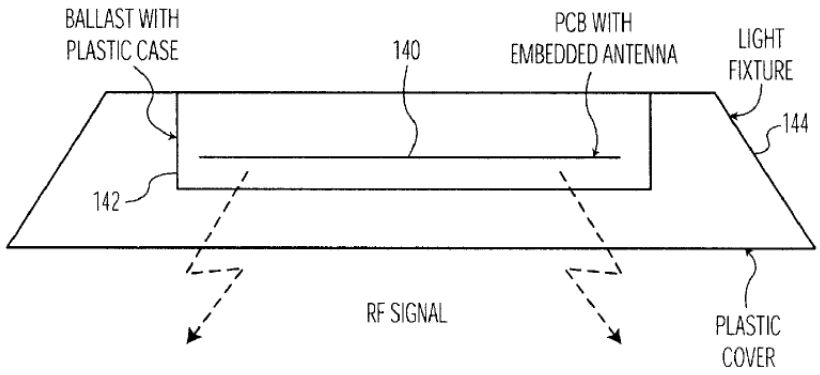


FIG. 8

(Ex. SA-6, FIGS. 7-8.)

A POSITA would have found such a configuration of *Piepgras*' system to be a combination of known components and technologies, according to known methods, to produce a predictable circuit arrangement. (Ex. PA-DEC, ¶108.) *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). Moreover, *Piepgras* describes the design approaches of including several components in a single package and integrating several components, and thus a POSITA would have found it feasible and predictable to include both an LED circuit and an antenna in the data communication circuit. (Ex. PA-1, ¶¶[0089] ("[A] processor may include discrete circuitry such as passive or

active analog components including resistors, capacitors, inductors, transistors, operational amplifiers, and so forth, as well as discrete digital components such as logic components, shift registers, latches, or any other separately packaged chip or other component for realizing a digital function. Any combination of the above circuits and components, whether packaged discretely, as a chip, as a chipset, or as a die, may be suitably adapted to use as a processor as described herein."), [0090] ("The processor 2 and controller 3 may be incorporated into one device, e.g., sharing a single semiconductor package."), [0160] (describing with reference to a rope light shown in Figure 31 that "three [] LED dies of different colors may be packaged together in each LED subsystem 3102, with each die individually controllable"); Ex. PA-DEC, ¶108.) Accordingly, a POSITA would have had a reasonable expectation of success implementing such a configuration of *Piepgras*' system. (Ex. PA-DEC, ¶108.)

c) wherein the LED circuit comprises a plurality of LEDs connected in series, parallel, or opposing parallel;

Piepgras discloses this limitation. (Ex. PA-DEC, ¶109.) For example, *Piepgras* discloses "a plurality of LEDs within the spotlight 60" (Ex. PA-1, ¶[0108]) of Figure 5 and explains (as discussed above for limitation 1(a)) that spotlight 100 of Figure 6 is "similar to the spotlight of FIG. 5" (*id.*, ¶[0110]), so a POSITA would have understood that spotlight 100 comprises a plurality of LEDs. (Ex. PA-DEC, ¶109.) *Piepgras* further discloses that its "processor 2 and controller 3 [of system 500] may be incorporated into one device, [which] may drive **several LEDs 4 in series** where it has sufficient power output" (Ex. PA-1, ¶[0090]) and provides this disclosure in the context of Figure 1 (*id.*, ¶¶[0088]-[0090]), which shows system 500 that is included in spotlight 60. (Ex. PA-DEC, ¶109.) Since "spotlight [100] may be similar to the spotlight of FIG. 5," a POSITA would have understood that the foregoing disclosure of "several LEDs 4 in series" applies to the LEDs of the LED circuit discussed above for limitation 1(b) (i.e., the LED circuit that the data communication circuit comprises). (*Id.*) Thus, *Piepgras* discloses that the LED circuit comprises a plurality of LEDs connected in series ("connected in series, parallel, or opposing parallel"). (*Id.*)

d) wherein the LED circuit and the antenna are integrated in a package;

The *Piepgras-Michael* combination discloses or suggests this limitation. (Ex. PA-DEC, ¶¶110-113.) *Piepgras* discloses the use of LEDs in a "package." (Ex. PA-1, ¶[0095] (disclosing "packaged LEDs" and explaining that "the term 'LED' does not restrict the package type of the

LED."); *see also id.*, [0124] (describing LED packages), [0136] ("package").) *Piepgras* further discloses integrating multiple components in a package (*e.g.*, integrating multiple LED dies in a package, and integrating separate components, such as a controller and a processor or components of constituent components of processor. (*Id.*, ¶¶[0089] ("[A] processor may include discrete circuitry such as passive or active analog components including resistors, capacitors, inductors, transistors, operational amplifiers, and so forth, as well as discrete digital components such as logic components, shift registers, latches, or any other separately **packaged** chip or other component for realizing a digital function. Any combination of the above circuits and components, whether **packaged** discretely, as a chip, as a chipset, or as a die, may be suitably adapted to use as a processor as described herein."), [0090] ("The processor 2 and controller 3 may be incorporated into one device, e.g., sharing a single semiconductor **package**."), [0160] (describing with reference to a rope light shown in Figure 31 that "three [] LED dies of different colors may be **packaged together** in each LED subsystem 3102, with each die individually controllable"); Ex. PA-DEC, ¶110.)

As explained for limitation 1(b) (§VII.A.4(b)), *Piepgras-Michael* discloses/suggests the data communication circuit including the antenna for wirelessly controlling LEDs. In light of *Piepgras*' and *Michael*'s disclosures and the knowledge of a POSITA regarding the state of the art, it would have been obvious to configure the *Piepgras-Michael* system to integrate the LED circuit and the antenna of the above-described data communication circuit in a circuit board ("package"). (Ex. PA-DEC, ¶111.) Such a configuration was known in the art, and a POSITA would have found such an integration of components to be desirable and beneficial, *e.g.*, to promote a compact, consolidated design, consistent with known design principles. (*Id.*) For example, *Wacyk* (demonstrating the state of the art and discussed above for limitation 1(b)) shows at Figure 7 (below) a lamp driver circuit and an antenna integrated in a printed circuit board ("package"), which a POSITA would have found to be a compact, efficient, and versatile design, and such a skilled person would have found integrating the above-discussed LED circuit and antenna in a package in the *Piepgras-Michael* system to be similarly beneficial. (Ex. PA-DEC, ¶111.)

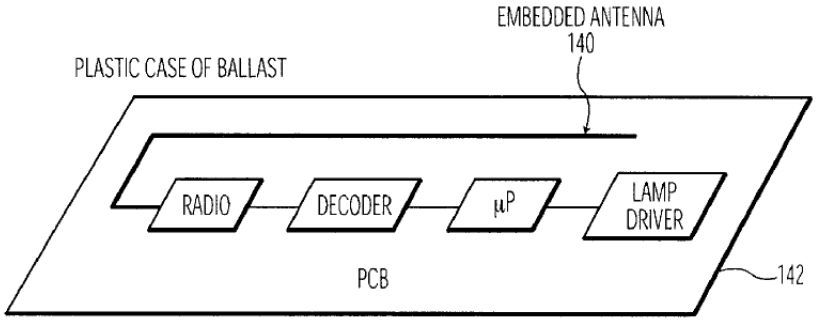


FIG. 7

(Ex. SA-6, FIG. 7.)

A POSITA would have additionally recognized that integrating various components (*e.g.*, the LED circuit and antenna discussed above) would have predictably promoted versatility in forming circuitry in a manner suitable for a given desired application (*e.g.*, consistent with *Piepgras*' goal of enabling remote control of lighting). (Ex. PA-DEC, ¶112.) Indeed, it was well known to integrate components that are related in functionality or that cumulatively help achieve a goal of a system. (*Id.*) A POSITA have been skilled at circuit design/implementation and would have been familiar and knowledgeable about packaging circuit components in various configurations, including the "integrated" configuration described in limitation 1(d). (*Id.*) Indeed, the '400 patent does not describe any criticality associated with integrating the elements recited in limitation 1(d) (*see generally* Ex. PAT-A), and moreover, *Piepgras* describes various options for integrating components in a package, including integrating different types of components (as discussed above), so a POSITA would have found the configuration of limitation 1(d) to be predictable and feasible. (Ex. PA-DEC, ¶112.)

Indeed, such a configuration would have been a mere combination of known components and technologies, according to known methods, to produce predictable results with a reasonable expectation of success. (*Id.*, ¶113.) *KSR*, 550 U.S. at 416. A POSITA would have found such a configuration compatible with the principles and goals of *Piepgras*' system, including providing remotely controllable LED-based lighting as discussed above. (Ex. PA-1, Abstract, ¶¶[0032], [0083]; Ex. PA-DEC, ¶113.)

e) wherein the data communication circuit is integrated into a lighting device;

The *Piepgras-Michael* combination (discussed for limitation 1(b), *see* §VII.A.4(b)) discloses or suggests this limitation. (Ex. PA-DEC, ¶¶114-116.) As discussed above for limitation 1(b), *Piepgras* discloses that that its spotlight 100 includes LEDs and a transceiver. (§VII.A.4(b); *see also* §VII.A.4(a).) As also explained for limitations 1(a) and 1(b), a POSITA would have understood that *Piepgras* additionally discloses that spotlight 100, which is similar to spotlight 60 of Figure 5 of Piepgras, includes system 500 ("a lighting device"). (§§VII.A.4(a)-(b); Ex. PA-1, ¶[0108] ("The spotlight 60 may include a system such as that depicted in FIG. 1 for controlling a plurality of LEDs within the spotlight...").) To the extent *Piepgras-Michael* does not disclose that its data communications circuit (*i.e.*, the data communication circuit of the combined *Piepgras-Michael* system, discussed for limitation 1(b)) is *integrated into* system 500 ("lighting device") of the "lighting system" discussed for limitation 1(a), it would have been obvious to configure the *Piepgras-Michael* system to implement this feature. (Ex. PA-DEC, ¶114.)

For example, given that system 500 ("lighting device") includes LEDs 4 and controllers 3 for controlling the LEDs as shown below, a POSITA would have been motivated to, and found it predictable to, configure the *Piepgras-Michael* data communication circuit, which includes the LED circuit and the antenna (for receiving data used for remotely controlling lighting) to be integrated into system 500. (Ex. PA-DEC, ¶115.)

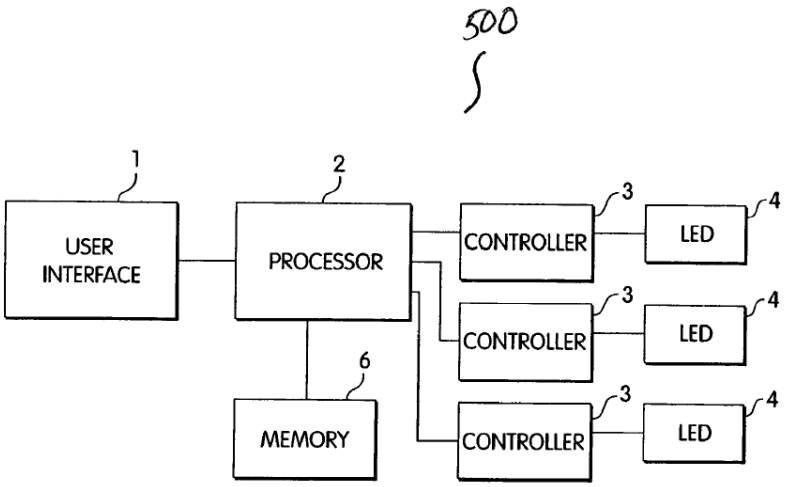


Fig. 1

(Ex. PA-1, FIG. 1.)

A POSITA would have recognized the benefits of integrating the above-discussed data communication circuit including the LED circuit and antenna, which receives data for controlling lighting in the above-discussed system, into the system 500 ("lighting device" implemented as part of the lighting system above (*e.g.*, FIGS. 5-6)) in order to enable controllers 3, which are part of system 500, to control LEDs based on such received data.[4] (Ex. PA-DEC, ¶116.) Thus, a POSITA would have appreciated the benefits of implementing the above configuration of the *Piepgras-Michael* system, to allow remote communications with the device in an efficient, and convenient manner. (*Id.*) A POSITA would have been skilled at designing/implementing circuits, would have found integrating various types of circuits into various types of devices to be straightforward and predictable, and similarly would have been able to implement the above configuration with a reasonable expectation of success, especially since such a configuration would have been a mere combination of known components and technologies to achieve predictable results. (*Id.*) *KSR*, 550 U.S. at 416. Providing the "communication circuit" of the *Piepgras-Michael* system to be integrated in a lighting device (*e.g.*, such as system 500 included in the system of Figures 5-6 (limitation 1(a)) would have been one of a finite number of ways of configuring the system to facilitate the remote lighting controls contemplated by *Piepgras*. (Ex. PA-DEC, ¶116.)

f) wherein the lighting device is adapted to be connected to a socket;

Piepgras-Michael discloses this limitation. (Ex. PA-DEC, ¶¶117-118.) For instance, *Piepgras-Michael* discloses that system 500 ("the lighting device") is adapted to be connected to a socket. As discussed for limitation 1(e), *Piepgras* discloses that its spotlight 100 of Figure 6 is "similar to the spotlight of FIG. 5" (Ex. PA-1, ¶[0110]), which "draw[s] power for illumination from an external power source through a **connection** 70" (*id.*, ¶[0108]), which is "**adapted for**, for example, a screw **socket**, **socket**, post **socket**, pin socket spade **socket**, wall **socket**, or other interface" (*id.*, ¶[0109]). *Piepgras* discloses with respect to Figure 5 that the LEDs of spotlight 60 are "powered by electrical power received through the connection 70." (*Id.*, ¶[0108]; Ex. PA-DEC, ¶117.) Given that LEDs of spotlight 60 are part of system 500 (as shown in Figure 1), spotlight 60 includes system 500 (*id.*), and spotlight 100 of Figure 6 similarly would have been understood to include system 500, a POSITA would have understood that system 500 ("the lighting

[4] The '400 patent does not describe any criticality associated with integrating a communication circuit in a lighting device as claimed. (*See generally* Ex. PAT-A.)

device") of the lighting system discussed for limitation 1(a) is adapted to be connected to a socket. (Ex. PA-DEC, ¶118; Ex. PA-1, FIGS. 1, 5-6 (below, showing socket connection).)

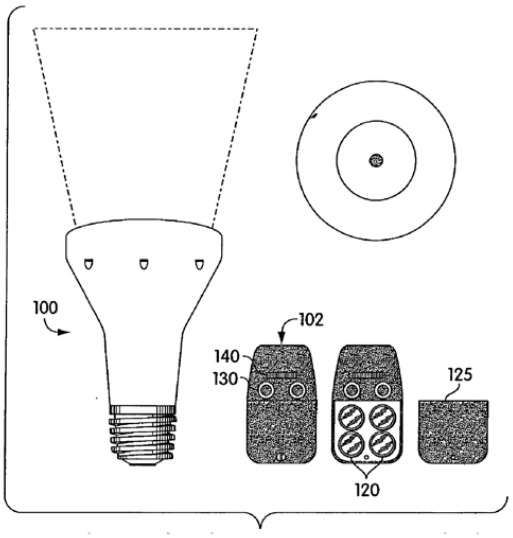


Fig. 6

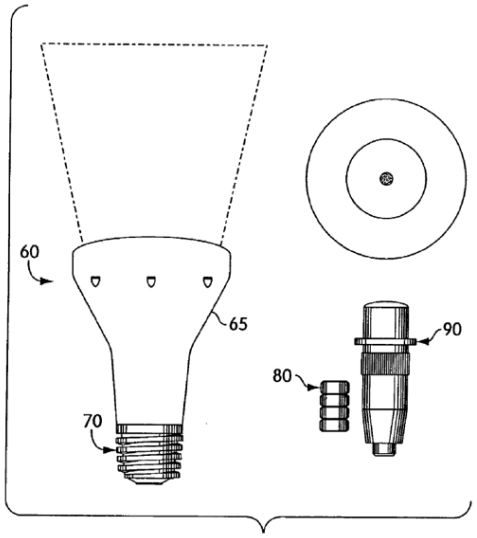


Fig. 5

g) wherein the lighting device is configured to transmit data signals to or receive data signals from at least one telecommunications device;

Piepgras (as modified above) discloses this limitation. (Ex. PA-DEC, ¶¶119-121.) For instance, as discussed for limitations 1(a) and 1(b), *Piepgras* discloses that the lighting system (discussed for limitation 1(a)) includes a remote user interface 102 ("at least one telecommunications device") (see FIG. 6, below) for remotely controlling spotlight 100. (§§VII.A.4(a)-(b); Ex. PA-1, ¶[0110] (describing remote user interface 102).)

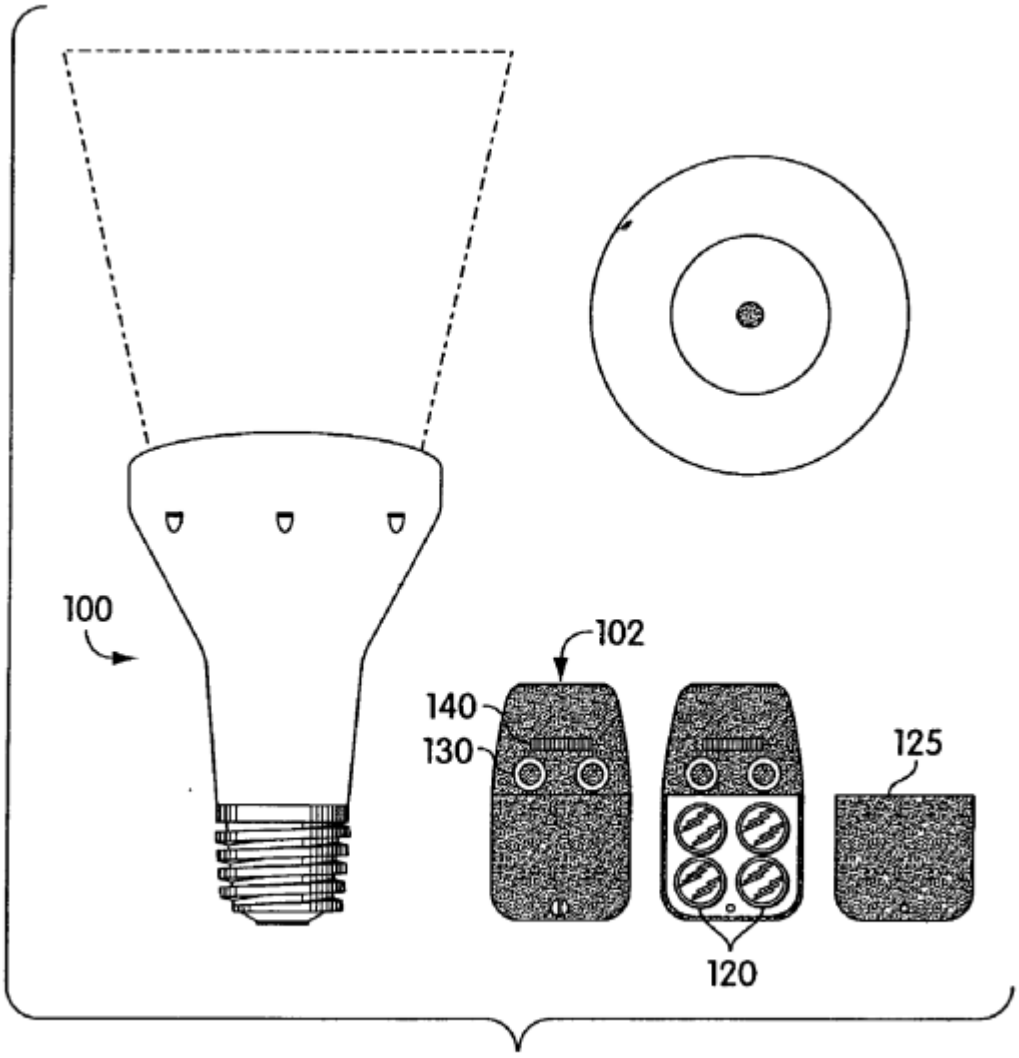


Fig. 6

(Ex. PA-1, FIG. 6 (showing remote user interface 102); Ex. PA-DEC, ¶119.) "[R]emote user interface 102 may be remote from the spotlight 100, and may transmit **control information** to the spotlight 100 using, for example, an infrared or radio frequency communication link, with corresponding transceivers in the spotlight 100 and the remote user interface 102." (Ex. PA-1, ¶[0110].) A POSITA would have understood that remote user interface 102 is a *telecommunications device*, because it includes a transceiver for communicating control information with spotlight 100. Thus, system 500 ("lighting device" as modified above and included in the lighting system (limitation 1(a))) lighting device is configured to transmit data

signals to or receive data signals (*e.g.*, control information which necessarily must include data to facilitate remote control) from remote interface 102, which is a "telecommunications device." (Ex. PA-DEC, ¶119.) A POSITA would have recognized that system 500 includes the controllers 3 that control the LEDs (as described above) and thus the control information (data signals) received by user interface 102 would facilitate such remote control.

Indeed, *Piepgras* explains that "user interfaces for **any of the devices shown in** FIGS. [32-38] **as well as other figures** may be implemented as a software driven graphical user interface, a **personal digital assistant (PDA)**, a **mobile remote-control interface**, etc." (Ex. PA-1, ¶[0177]; Ex. PA-DEC, ¶120.) Because *Piepgras* describes the foregoing disclosure as being applicable to "other figures," a POSITA would have understood that *Piepgras*' characterization of user interfaces is applicable to lighting applications of various figures, including the remote **user interface** 102 of Figure 6. (Ex. PA-DEC, ¶120.) Such a user interface may "generate and communicate signals to various lighting devices" (Ex. PA-1, ¶[0177]), which is consistent with the "control information" communicated by user interface 102 of FIG. 6 (*id.*, ¶[0110]), and thus a POSITA would have understood such features to be associated with the remote "control" of the lighting device in the lighting system (*e.g.*, system 500 operations of controlling lighting by the LEDs in the system). (Ex. PA-DEC, ¶120.)

To the extent *Piepgras-Michael* does not explicitly disclose that *system 500* ("the lighting device") is configured to transmit data signals to or receive the data signals from remote user interface 102 ("at least one telecommunications device"), it would have been obvious to implement such a feature. (*Id.*, ¶121.) For example, as discussed above and shown above in Figure 1, system 500 includes controllers 3 for controlling the LEDs and as explained, the Figure 6 lighting system provides a "remote user interface" 102 that communicates "control information" via transceivers in interface 102 and spotlight 100. (Ex. PA-1, ¶[0110].) Therefore, given that *Piepgras* discloses remote control of lighting, a POSITA would have been motivated to configure system 500 to receive the data signals from the remote user interface 102, so that such data signals can be appropriately used for controlling the LEDs that provide the lighting. (Ex. PA-DEC, ¶121.) This would have been a straightforward configuration for a POSITA to implement, as a POSITA would have been skilled at designing various types of electronic circuits/systems, and implementing transmission and reception of data signals in various contexts. (*Id.*) Such a skilled person would have found the above configuration to be feasible to implement with a reasonable expectation of

success, particularly because *Piepgras* describes system 500 as being included in spotlight 100. (Ex. PA-1, ¶¶[0108], [0110]; Ex. PA-DEC, ¶121.)

h) wherein the telecommunications device comprises a circuit configured to detect human touch via capacitive sensing.

Piepgras-Michael in view of *Butler* discloses or suggests this limitation.[5] (Ex. PA-DEC, ¶¶69-73, 122-131.) As discussed for limitations 1(a)-(b) and 1(g), the *Piepgras-Michael* system discloses/suggests a remote user interface ("the telecommunications device") used for remotely controlling spotlight 100. (§§VII.A.4(a)-(b), (g).)

However, *Piepgras-Michael* does not explicitly disclose that the remote user interface 102 ("telecommunications device") comprises a circuit configured to detect human touch via capacitive sensing. Nonetheless, it would have been obvious in view of the disclosures of *Piepgras* and *Butler* and the knowledge of a POSITA to configure and use a remote user interface 102 with such features. (Ex. PA-DEC, ¶123.)

As explained, *Piepgras* discloses features that use remote user interfaces, such as a PDA. (§VII.A.4(h); Ex. PA-1, ¶[0177].) Thus, a POSITA would have had reasons to contemplate various ways to implement a remote control device to facilitate the remote lighting control of the lighting system discussed above. (Ex. PA-DEC, ¶124.) As such, a POSITA would have found *Butler* as relevant guidance for such configurations. *Butler* describes a handheld remote control device that is used for controlling another device, *e.g.*, a television, and in this manner is similar to *Piepgras*' disclosure of a remote control device (*e.g.*, PDA) for controlling another device (*e.g.*, LED lighting device). (Ex. PA-3, Abstract ("providing touch screen capability on interactive television systems and associated remote control devices"), ¶¶[0005] ("The remote control is typically a hand held device that communicates with the television apparatus and/or a set top box by an Infrared (IR) or other link."), [0020] ("remote control"); Ex. PA-DEC, ¶124.) Therefore, a POSITA contemplating implementing the *Piepgras-Michael* lighting system would have had reason to consider the teachings of *Butler*, *e.g.*, for guidance regarding implementing *Piepgras*' remote lighting control. (Ex. PA-DEC, ¶124.)

[5] The '400 patent does not describe a "telecommunications device compris[ing] a circuit configured to detect human touch via capacitive sensing." (*See generally* Ex. PAT-A; Ex. PA-DEC, ¶122.) Requester reserves all rights to challenge this claimed feature under 35 U.S.C. § 112 in other proceedings. For purposes of this proceeding, Requester demonstrates that the prior art discloses/suggests this limitation based on the language of the claim.

Butler describes techniques for providing improved user input capability via a remote control with touch screen functionalities. (Ex. PA-3, Title ("Method and system for providing **improved user input capability** for interactive television"), Abstract ("providing touch screen capability"), ¶¶[0001] ("techniques for providing user input capability for interactive program content over television"), [0029] ("[I]nteractive television system 100 may provide interactivity to users, such as permitting the user to select a program, **turn the system on and off**, and the like. Such capabilities may be provided using an EPG [electronic program guide] displayed...**on the remote control 158**."); Ex. PA-DEC, ¶125.) *Butler* discloses that its remote control detects human touch for acquiring input from a user, and further discloses capacitive sensing as a way to detect the human touch. (Ex. PA-3, ¶¶[0020] ("Embodiments provide interactive capability by using a **touch screen** ... . [E]mbodiments ... employ presence sensitive devices [which] can be a ... **capacitive touch screen** ... . [A] touch screen emulates the operation of a mouse to select areas of the screen to activate. Specific embodiments may be preferably implemented on ... a remote control..."), [0026] ("the remote control will also include touch screen capability."), [0028] ("An optional associated remote control 158, which can optionally have a corresponding **touch screen** overlay 159 can be provided."), FIG. 1A (below); Ex. PA-DEC, ¶126.)

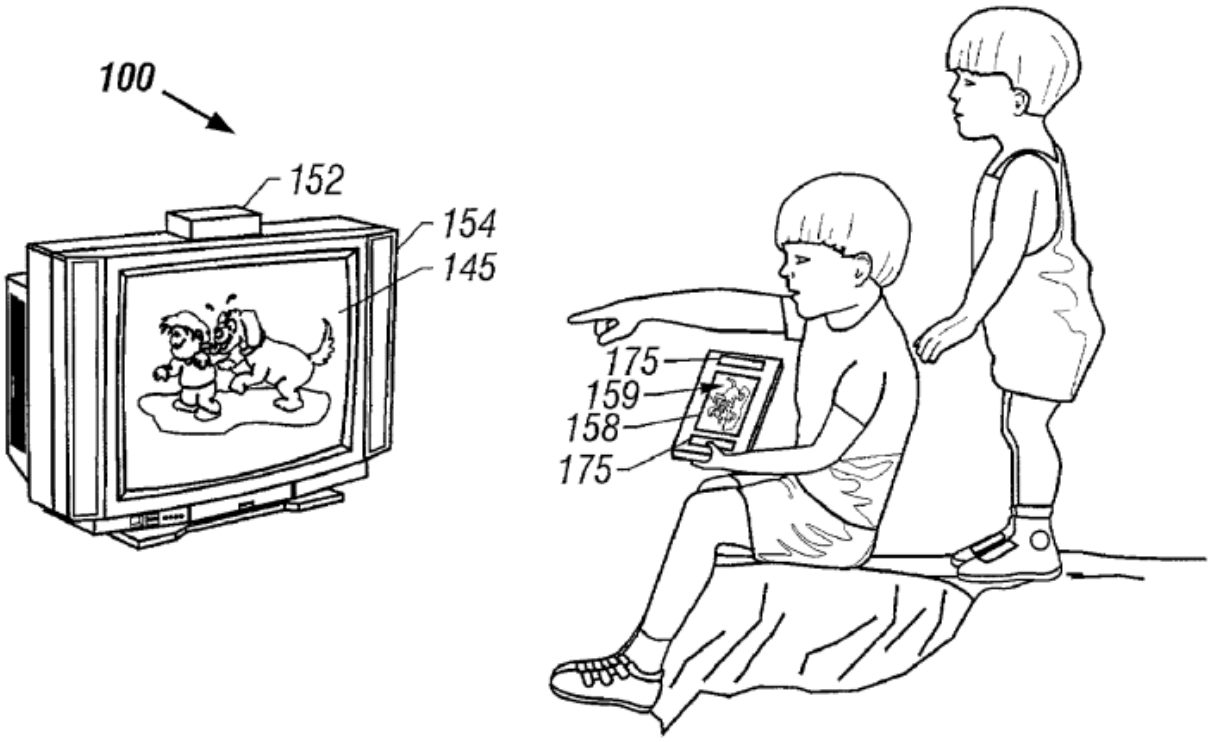


FIG. 1A

(Ex. PA-3, FIG. 1A (remote control 158); Ex. PA-DEC, ¶126.)

Butler explains benefits associated with using a touch screen. (Ex. PA-3, ¶[0021] ("Touch access enables specific embodiments to be especially suitable for children or adults with impaired motor abilities because children instinctively touch something they want and using a touch screen is much easier than using a mouse or a device with small buttons, such as a standard remote control, for a disabled person. ... People with impaired vision capabilities may use a touch screen to enlarge an area or have the text read to them by the interactive system."); Ex. PA-DEC, ¶127.) Additionally, a POSITA would have recognized that touch screens facilitate convenient user input for a variety of users besides the ones described in *Butler*, because touch screens were well known in the art. (Ex. SA-1, ¶[0030] ("Input/output components 206 include a variety of input devices that have previously been found on mobile devices such as a touch-sensitive screen..."); *id.*, ¶[0024], FIGS. 1 (input/output components 206), 3 (above; display screen 304); Ex. PA-DEC, ¶128.)

A POSITA would have understood that *Butler*'s portable remote control necessarily comprises a *circuit that can* detect a human touch via capacitive sensing, wherein the *circuit is configured to* detect the human touch via capacitive sensing. (Ex. PA-3, FIG. 1A, ¶[0005] ("The remote control is typically a hand held device that communicates with the television apparatus and/or a set top box by an Infrared (IR) or other link."); Ex. PA-DEC, ¶129.) A POSITA would have had such an understanding because it was well known that capacitive sensing requires sensing capacitance, which is an attribute of a circuit, and in any event must include touch sensing circuitry to provide such features. (Ex. SA-1, ¶[0037] ("[T]he touch sensors are **capacitive touch sensors** that are divided into two regions. ... When a user touches either section 300 or 302, the **capacitance** associated with the touched section changes indicating that the user has touched the device."); Ex. PA-DEC, ¶129.)

In light of *Piepgras*' and *Butler*'s disclosures, a POSITA would have been motivated to configure or implement within *Piepgras-Michael*'s system a remote user interface ("telecommunications device") that includes a circuit configured to detect human touch via capacitive sensing, such as touch sensors or a touch screen. (Ex. PA-DEC, ¶130.) For example, a POSITA would have found providing such human touch detection features in the remote control interface used by the lighting system (*e.g.*, FIG. 6 of *Piepgras*) would have improved the system because it would have beneficially added versatility in how a user could remotely control the lighting system via well-known user friendly touch sensing technologies. (*Id.*) A POSITA would found such a configuration predictable and feasible, given that *Butler* describes such capacitive touch tensing and particularly given that touch detection was well known for portable devices, including PDAs, which *Piepgras* describes as an example of the remote user interface. (Ex. PA-1, ¶[0177]; Ex. SA-7, ¶¶[0005] ("display of the PDA is usually a touch-control display"), [0016] ("display 101[] ... can be a touch-control screen"); Ex. SA-8, ¶[0005] ("touch panel 11"), FIG. 1 (showing touch panel 11); Ex. PA-DEC, ¶130.) A POSITA would have found using *capacitive* sensing to be to be a predictable way of implementing such touch detection input features in such a remote control device in the *Piepgras-Michael* system, especially in light of *Butler* and a POSITA's state-of-the-art knowledge. (Ex. SA-1, ¶[0037]; Ex. PA-DEC, ¶130.)

For similar reasons, a POSITA would have had the capability to implement this configuration with a reasonable expectation of success. (Ex. PA-DEC, ¶131.) Such a configuration would have been straightforward to implement, as it would have involved the use of

known components and technologies and techniques (*e.g.*, capacitive touch detection circuitry in a remote control device) that would have predictably led to a remote user interface (*e.g.*, remote user interface 102) with convenient user touch input features. (*Id.*) *KSR*, 550 U.S. at 416.

5. Claim 2

a) The lighting system of claim 1, wherein the package comprises a reflective material.

The *Piepgras-Michael-Butler* combination discloses or suggests this limitation. (Ex. PA-DEC, ¶¶132-134.) *Piepgras* discloses several examples of lighting systems implemented using system 500 that consider the benefits of reflective materials and components for enhancing lighting effects. (Ex. PA-1, Title, Abstract, ¶¶[0083], [0106]-[0241], FIGS. 3-54; Ex. PA-DEC, ¶132.) For example, *Piepgras* discloses "[v]arious optical processing devices which may be used with any of the devices (*e.g.*, **reflectors**...)" (Ex. PA-1, ¶[0083]) and further discloses the use of a "reflective material." (*Id.*, ¶¶[0187] ("The optic may also include a **reflective material** to reflect the light received from the ends out of the optic."); *see also, e.g.*, *id.*, ¶¶[0124] ("A reflector may also be associated with one or more LEDs to project illumination in a predetermined pattern."), [0118] ("reflective surface for directing light onto a wall"), [0125] ("A reflector including a front section 1208 and a rear section 1210 may also be included in the device 1200 to project light from the LED. This reflector can be formed as several pieces or one piece of reflective material. The reflector may direct illumination from the at least one LED 1202 in a predetermined direction, or through a predetermined beam angle. The reflector may also gather and project illumination scattered by the at least one LED 1202."), [0134] ("Optics may be used to alter or **enhance the performance of** illumination devices. For example, **reflectors** may be used to redirect LED radiation..."), [0151] ("reflective material"), [0189]-[0198] (disclosing reflective material and reflector), [0214]-[0218] (same); Ex. PA-DEC, ¶132.)

Section VII.A.4(d) explains that the *Piepgras-Michael* system would have been configured to integrate the LED circuit and the antenna of the above-described data communication circuit in a circuit board ("package"). While the *Piepgras-Michael-Butler* combination does not disclose that the above-discussed "package" comprises a reflective material, it would have been obvious in view of *Piepgras-Michael-Butler* and the state of the art to implement such a feature, *e.g.*, by coating the circuit board with reflective material or using a reflective substrate. (Ex. PA-DEC, ¶133.) For example, a POSITA would have recognized that configuring the circuit board with

reflective material (*e.g.*, as disclosed in *Piepgras*) would have been a predictable way to minimize loss of light and thereby enhance lighting, which would have been a desirable feature for a lighting system like *Piepgras*'s system. (*Id.*) A POSITA would have found it beneficial to direct the LED illumination in a desired manner, which would have enhanced the performance of *Piepgras*' lighting system, in a manner consistent with *Piepgras*' above-discussed teachings regarding the use of reflective materials and known in the art. (Ex. PA-6, Abstract ("coat a layer of **high reflection material on the [circuit] board to collect light**"); *id.*, ¶¶[0018] ("coat a layer of high reflection material on the board to collect light"), [0034] ("coat a reflection layer on the board to collect the back forward light"), [0081] ("coat a layer of high reflection material on the top of the board"); Ex. SA-16, FIG. 27, 6:6-7:34 (describing use of a substrate 716 including reflector component assembly 770 in an LED lighting system where "reflector portions 766 and 866 serve both as light reflectors," which aid to ensure "**light is not lost and can be effectively used**") Ex. PA-DEC, ¶133.)[6]

Given that it was known to use/configure a circuit board with a reflective material as demonstrated above, and given *Piepgras*' consideration of reflective materials for enhancing lighting, a POSITA would have found the above configuration to implementation to be simple and feasible, and would have had a reasonable expectation of success implementing it. (Ex. PA-DEC, ¶134.) Indeed, such an implementation would have been a combination of known components, according to known methods, to produce predictable results. (*Id.*) *KSR*, 550 U.S. at 416.

6. Claim 3

a) The lighting system of claim 1, further comprising the telecommunications device.

The *Piepgras-Michael-Butler* combination discloses or suggests this limitation for reasons similar to those for claim 1. (Ex. PA-DEC, ¶135.) Sections VII.A.4(a)-(b) and VII.A.4(g)-(h) explain how the *Piepgras-Michael-Butler* system includes a "telecommunications device" (*e.g.*, modified user interface 102), which is part of the lighting system discussed for limitation 1(a). (§§VII.A.4(a)-(b), (g)-(h); Ex. PA-DEC, ¶135.)

[6] Ex. PA-6 is cited in this SNQ to demonstrate the state of the art.

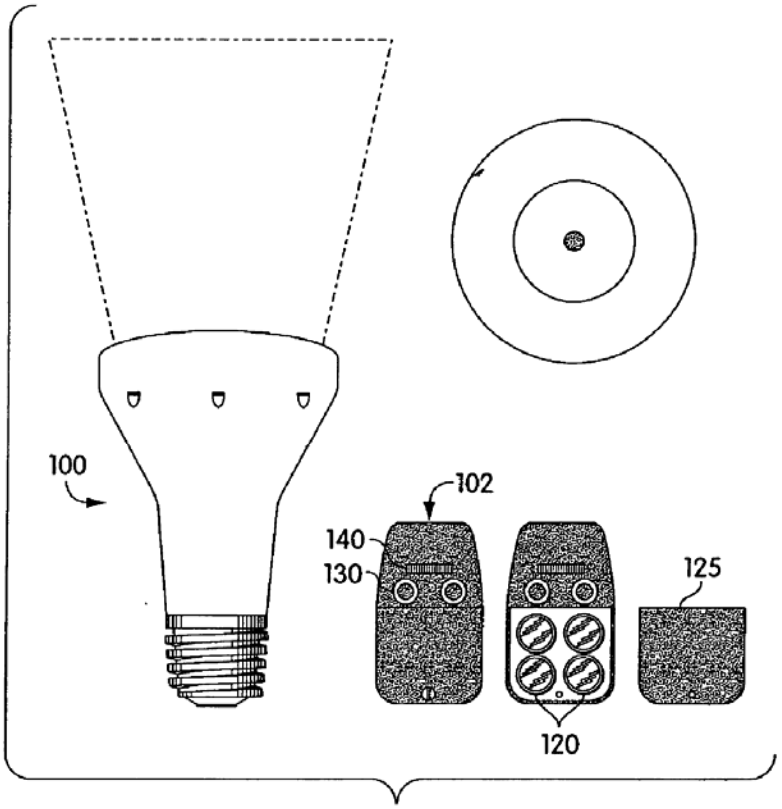


Fig. 6

(Ex. PA-1, FIG. 6.)

7. Claim 4

a) The lighting system of claim 1, wherein the telecommunications device is portable.

The *Piepgras-Michael-Butler* combination discloses or suggests this limitation for reasons explained for claim 1. (Ex. PA-DEC, ¶136.) As explained for limitations 1(b) and 1(g)-(h), the *Piepgras-Michael-Butler* lighting system includes a remote control interface (*e.g.*, modified interface 102), which a POSITA would have understood is portable. (§§VII.A.4(b), (g)-(h); Ex. PA-DEC, ¶136.) As explained, *Piepgras* shows a "**remote**" interface 102 (Ex. PA-1, FIG. 6), and explains that such user interfaces can be implemented as a **PDA** or "**mobile** remote control interface." (§§VII.A.4(g)-(h); Ex. PA-1, ¶[0177].) A POSITA would have further understood that a PDA was known to be a portable telecommunications device. (Ex. PA-DEC, ¶136; Ex. SA-7, ¶[0004]; Ex. SA-8, ¶[0004] ("With the variety of **portable** electronic products, PDA applications have become more and more popular.").) As such, the "telecommunications device" in the *Piepgras-Michael-Butler* lighting system is portable. And even if not apparent or disclosed, for

reasons similar to those explained in Sections VII.A.4(g)-(h), it would have been obvious to implement the "telecommunications device" in the *Piepgras-Michael-Butler* lighting system to be portable to provide known mobile remote control functionality expected with an interface like that contemplated and disclosed by *Piepgras*. (Ex. PA-DEC, ¶136.)

B. SNQ2: Claim 5 Is Obvious Over *Piepgras*, *Michael*, *Butler*, and *Naskali*

1. Overview of *Naskali*

U.S. Patent No. 7,180,265 ("*Naskali*") is titled "Charging Device with an Induction Coil." *Naskali* issued on February 20, 2007, from U.S. Patent Application No. 10/694,638, which was filed on October 27, 2003. (Ex. PA-4, Cover.)

Naskali "relates to a charging system and, more particularly, to a charging system for a portable electronic device" such as a PDA. (Ex. PA-4, 1:14-16; *see also id.*, Title ("Charging Device With an Induction Coil), Abstract (below), 1:18-24 ("the need to recharge batteries of portable electronic devices while away from the home or office has increased"), 4:45-47 ("the first portable electronic device comprises a mobile telephone 20 and the second portable electronic device comprises a PDA 22), FIG. 2 (showing PDA 22 and reproduced below).)

> A charging device including a battery; a first induction coil coupled to the battery; and an induction core extending through the first induction coil. The induction core has a portion which extends in an outward direction from the charging device and is adapted to removably couple with a second induction coil of a portable electronic device by extending into the second induction coil.

(*Id.*, Abstract.)

Naskali explains that it was known at the time to charge a portable device wirelessly. For example, Figure 1 of *Naskali* (below) "shows a portable telephone 1 being charged by a contactless charging system, based upon electromagnetic induction, which is known to exist in the prior art." (*Id.*, 1:36-39.) As shown below in Figure 1, telephone 1 includes an induction core 9 located in an induction coil 2 that wirelessly receives electromagnetic energy from a coil 7 having an induction core 6, so that charger 3 wirelessly charges telephone 1.

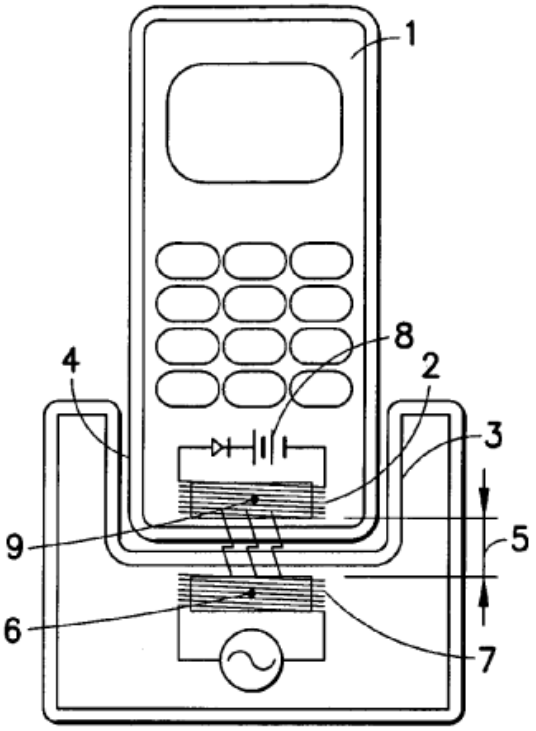


FIG. 1
PRIOR ART

(Ex. PA-4, FIG. 1 (showing induction core 9 and induction core 6); *see also id.*, 3:40-42 ("FIG. 1 is a schematic diagram of a conventional system of a battery charger stand used for charging a battery in a portable telephone by induction[.]").)

Naskali further describes Figure 1 as follows, for example:

> With the prior art charging system shown in FIG. 1, a spacing 5 is provided between the primary side coil 7 and the secondary side coil 2. The charger 3 comprises a first induction core 6 located in the primary side coil 7. The telephone 1 comprises a second induction core 9 located in the secondary side coil 2. Because of the spacing 5, the induction cores 6, 9 are spaced from each other.

(*Id.*, 1:48-54.)

Naskali discloses with reference to Figure 2 a charging system 10 that includes a charging device 16 for charging a portable electronic device 18, e.g., "PDA 22." (*Id.*, 4:24-26 ("Referring to FIG. 2, there is shown a perspective view of a charging system 10 incorporating features of the present invention.").)

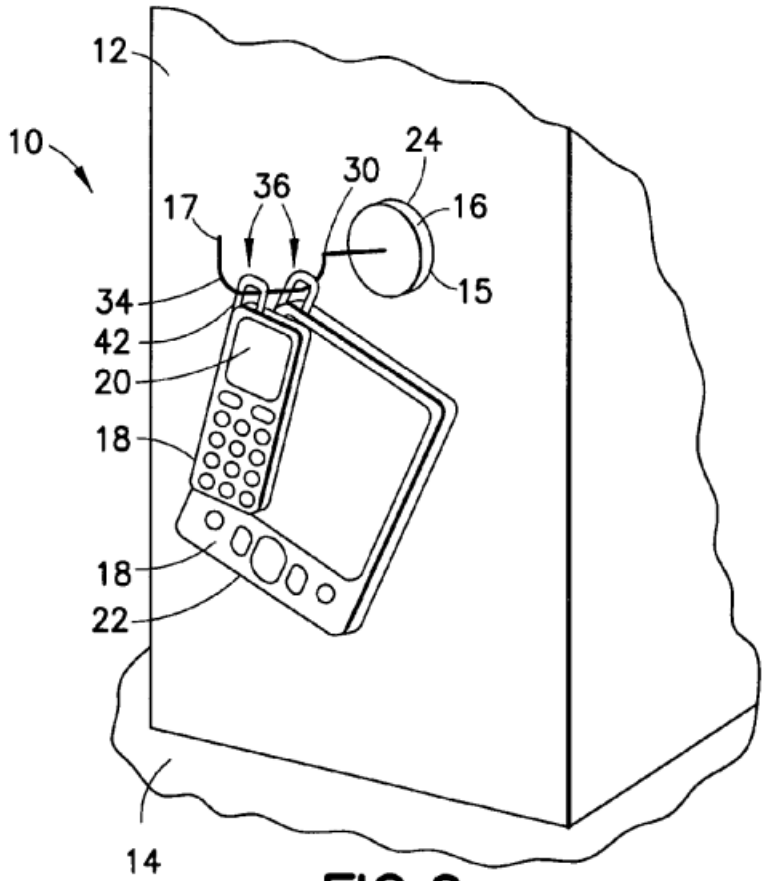


FIG.2

(*Id.*, FIG. 2 (showing PDA 22); *see also id.*, 3:44-45 ("FIG. 2 is a perspective view of a charging system incorporating features of the present invention[.]").)

Naskali further describes Figure 2 as follows, for example:

> The charging system 10 is shown connected to a wall 12 erected perpendicular to a floor 14 (the ground). In an alternate embodiment, the charging system 10 could be connected to any suitable component or surface. The charging system 10 generally comprises a charging device 16 and at least one portable electronic device 18. In the embodiment shown, the charging system 10 is shown with two of the portable electronic devices 18 connected to the charging device 16. In alternate embodiment, more or less than the two portable electronic devices could be connected to the charging device. The charging device could be configured to receive only one portable electronic device at a time, or more than two portable electronic devices at the same time. In the embodiment shown, the first portable electronic device comprises a mobile telephone 20 and the second portable electronic device comprises a PDA 22. However, in alternate embodiments, the portable electronic devices

> could comprise any suitable type of portable electronic device including, for example, a laptop computer, a hand-held game device, or a digital camera.

(*Id.*, 4:32-51.)

Figure 3 of *Naskali* (below) shows coils 26 and 40 of charging device 16 and electronic device 18, respectively, for wirelessly charging electronic device 18 based on power from power feed portion 28, e.g., an AC voltage source. (Ex. PA-4, 4:52-55 ("the charging device 16 generally comprises a main section 15 ... compris[ing] ... a primary side coil 26"), 5:35-36 ("Each of the portable electronic devices 18 comprise a ... secondary side coil 40.").)

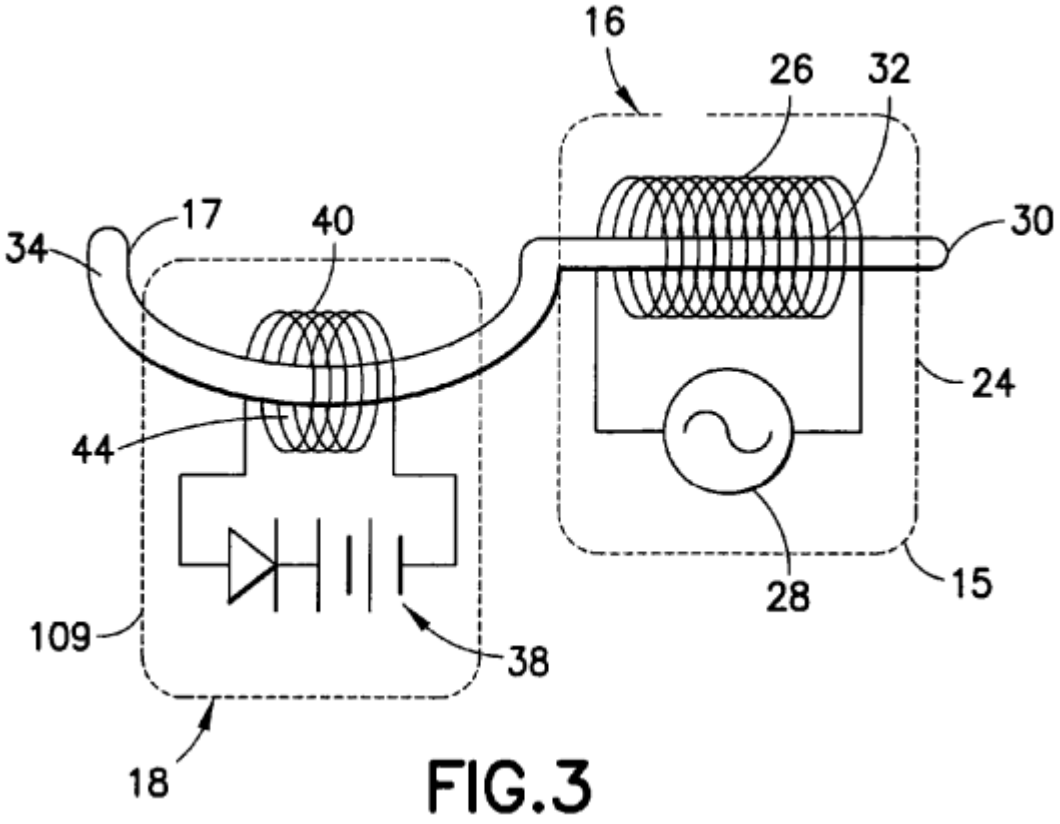


FIG.3

(Ex. PA-4, FIG. 3 (showing coil 26 of charging device 16 and coil 40 of electronic device 18); *see also id.*, 3:46-47 ("FIG. 3 is a diagrammatic view of two components of the system shown in FIG. 2[.]"), 4:52-5:52 (describing further Figure 3).)

Naskali explains that charging system 10 implements wireless power transfer to PDA 22 via electromagnetic induction. (*Id.*, 5:60-66 ("When the power feed portion 28 provides an AC voltage, a magnetic flux is generated in the induction core 30. A voltage is induced across the secondary side coil 40 by the action of electromagnetic induction. Because the secondary side coil 40 is connected to the rechargeable battery 38, the rechargeable battery 38 can be recharged.").)

2. Claim 5

a) The lighting system of claim 4, wherein the portable telecommunications device further comprises at least one OLED, and

The *Piepgras-Michael-Butler* combination in view of the state of the art discloses or suggests this limitation. (Ex. PA-DEC, ¶¶137-143.) *Piepgras* discloses the known characteristics and types of LEDs, including the use of organic LEDS (OLEDs). (§§VII.A.4(a)-(b); Ex. PA-1, ¶[0085] ("[T]he term 'LED' … should be understood to include light emitting diodes of all types, including ... **organic LEDs...")**; Ex. PA-DEC, ¶138.) While the *Piepgras-Michael-Butler* combination does not explicitly disclose that the "portable telecommunications device" (*e.g.*, as discussed for limitations 1(g)-(h) and claim 4), comprises at least one OLED, it would have been obvious to configure the device with OLED technology (*e.g.*, for user display or indicator lighting, etc.). (Ex. PA-DEC, ¶138.)

As noted above, *Piepgras* recognizes the known use of OLEDs. It was also known that like other LED types, OLEDs provide illumination for wide-ranging applications, including use in mobile devices with illumination/lighting features, such as displays, indicator lights, etc. (*e.g.*, in devices such as PDAs, which *Piepgras* provides as an example of a user interface, as explained above). A POSITA would have been well aware of such implementations and applications. Indeed, *Swartz* discloses features consistent with such state-of-the-art knowledge about the known use of an OLED-based "touch screen display" for a portable computing device. (Ex. PA-DEC, ¶¶139-140; Ex. SA-13, ¶[0080], FIG. 17, ¶[0048] (OLED display), ¶[0087] ("[T]he wrist unit and the CPU unit may be combined into a single control unit, which in itself may become a **PDA**..."); Ex. SA-3, ¶¶[0014] ("The display can include a plurality of [OLEDs]."), [0063] (disclosing "light emitting elements," which are "[p]referably, ... high efficiency, organic light emitting devices (**OLEDs**)"), [0064], [0066], [0071], [0072] ("[A] flexible **OLED** backlight can be used to illuminate a flexible LCD to provide a flexible backlit LCD."), [0076], FIG. 2A (showing portable computing device), Abstract ("hand-held, portable communications device").) Such disclosures are consistent with that known by a POSITA regarding use of OLED technologies at the time. (Ex. PA-DEC, ¶141; Ex. SA-5, FIG. 2 (touch sensor 202), ¶¶[0037] (describing capacitive touch sensor 202), [0038]-[0039] ("display 204 can be [an] **organic light emitting diode (OLED) display**").)

In light of such state-of-the-art knowledge and the disclosures/suggestions by *Piepgras* in context of *Butler*, a POSITA would have been motivated to configure the "portable telecommunications device" of the *Piepgras-Michael-Butler* system to use at least one OLED, *e.g.*, an OLED-based display or indicator lighting. (Ex. PA-DEC, ¶142.) A POSITA would have found such a configuration beneficial. (*Id.*) As explained, OLEDs were a known, high-performing technology, *e.g.*, for use in an OLED display or for providing backlighting, both of which would have been relevant, predictable features to include in the remote control telecommunications device of the *Piepgras-Michael-Butler* system. (Ex. SA-3, ¶¶[0071] (discussing known OLED features such as "high brightness at low power levels"), [0072] ("OLED backlight"), [0076] ("OLED technology is preferred because of the very small pixel size that can be attained (such as the so-called 'nanopixels,' for example)."); Ex. PA-DEC, ¶142.) A POSITA would have sought to leverage an existing, reliable technology (such as OLED) for implementing a display in the above-described "telecommunications device" of the *Piepgras-Michael-Butler* system to provide convenient and improved user interface functionalities known in the art at the time. (Ex. PA-DEC, ¶142.) For instance, usage of an OLED backlight display would have been desirable for promoting readability by the user of the remote control device. (Ex. SA-5, ¶[0039] ("backlight 206 ... enhance[s] readability in all lighting conditions"); Ex. PA-DEC, ¶142.)

Given the skills and knowledge of a POSITA at the time, and that such a modification would have involved the use of known technologies and techniques (as demonstrated above), a POSITA would have had ample reasons for implementing the above modification with a reasonable expectation of success. (Ex. PA-DEC, ¶143.) *KSR*, 550 U.S. at 416.

b) wherein the portable telecommunications device is configured to receive power wirelessly.

While the *Piepgras-Michael-Butler* combination does not explicitly disclose that the above "portable telecommunications device" is configured to receive power wirelessly, it would have been obvious in view of *Naskali* to implement this feature. (Ex. PA-DEC, ¶¶74-81, 144-150.) *Naskali* "relates to a charging system and, more particularly, to a charging system for a portable electronic device" such as a PDA. (Ex. PA-4, 1:14-16; *see also id.*, Title ("Charging Device With an Induction Coil), Abstract ("A charging device including ... a first induction coil ... ; and an induction core [having] a portion which ... is adapted to removably couple with a second induction coil of a **portable electronic device** ... ."), 1:18-24 ("The use of battery operated **portable**

electronic devices has been increasing, such as ... PDAs ... . Problems associated with the discharge of batteries in portable electronic devices has, thus, been increasing. Likewise, the need to recharge batteries of portable electronic devices while away from the home or office has increased."), 4:45-47 ("the second portable electronic device comprises a **PDA 22**"), FIG. 2 (showing PDA 22); Ex. PA-DEC, ¶144.)

Naskali explains that it was known even at the time to charge a portable device wirelessly. (Ex. PA-DEC, ¶145.) For example, Figure 1 of *Naskali* (below) "shows a portable telephone 1 being charged by a contactless charging system, based upon **electromagnetic induction**, which is **known to exist in the prior art**." (Ex. PA-4, 1:36-39.) As shown below in Figure 1, telephone 1 includes an induction core 9 located in an induction coil 2 that wirelessly receives electromagnetic energy from a coil 7 having an induction core 6, so that charger 3 wirelessly charges telephone 1. (*Id.*, FIG. 1, 1:48-54 ("With the prior art charging system shown in FIG. 1, a spacing 5 is provided between the primary side coil 7 and the secondary side coil 2. The charger 3 comprises a first induction core 6 located in the primary side coil 7. The telephone 1 comprises a second induction core 9 located in the secondary side coil 2. Because of the spacing 5, the induction cores 6, 9 are spaced from each other."); Ex. PA-DEC, ¶145.)

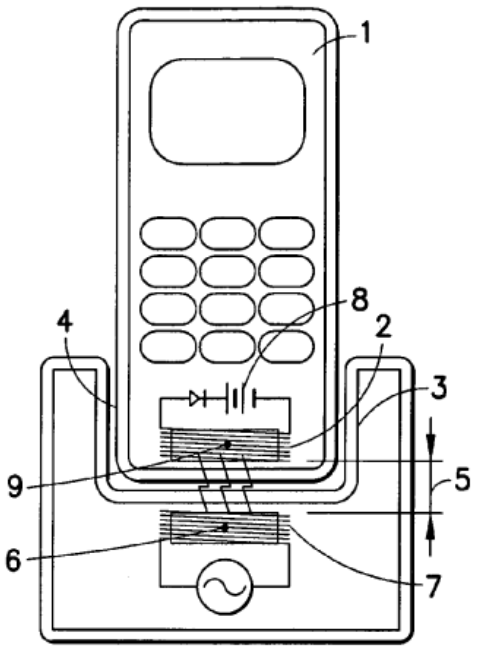


FIG. 1
PRIOR ART

(Ex. PA-4, FIG. 1; *see also id.*, 3:40-42 ("FIG. 1 is a schematic diagram of a conventional system of a battery charger stand used for charging a battery in a portable telephone by induction[.]"); Ex.

PA-DEC, ¶145.)

Naskali discloses with reference to Figure 2 a charging system 10 that includes a charging device 16 for charging a portable electronic device 18, *e.g.*, "PDA 22" (below). (Ex. PA-4, 4:24-26, 4:32-51.)

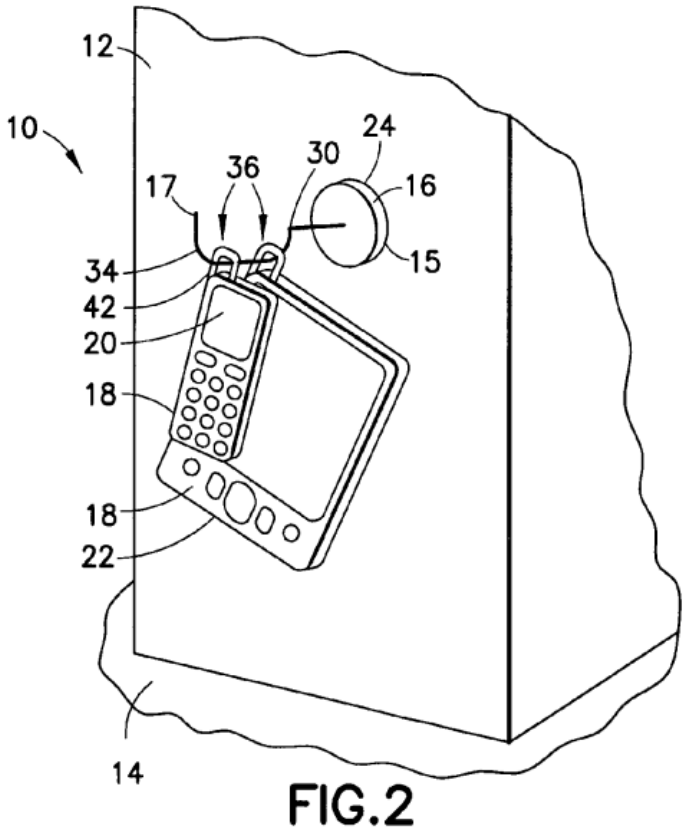


FIG.2

(Ex. PA-4 (showing PDA 22); *see also id.*, 3:44-45 ("FIG. 2 is a perspective view of a charging system incorporating features of the present invention[.]"); Ex. PA-DEC, ¶146.)

Figure 3 of *Naskali* shows coils 26 and 40 of charging device 16 and electronic device 18, respectively, for wirelessly charging electronic device 18 based on power from power feed portion 28, *e.g.*, an AC voltage source. (Ex. PA-4, 4:52-55 ("the charging device 16 generally comprises a main section 15 ... compris[ing] ... a primary side coil 26"), 5:35-36 ("Each of the portable electronic devices 18 comprise a ... secondary side coil 40.").)

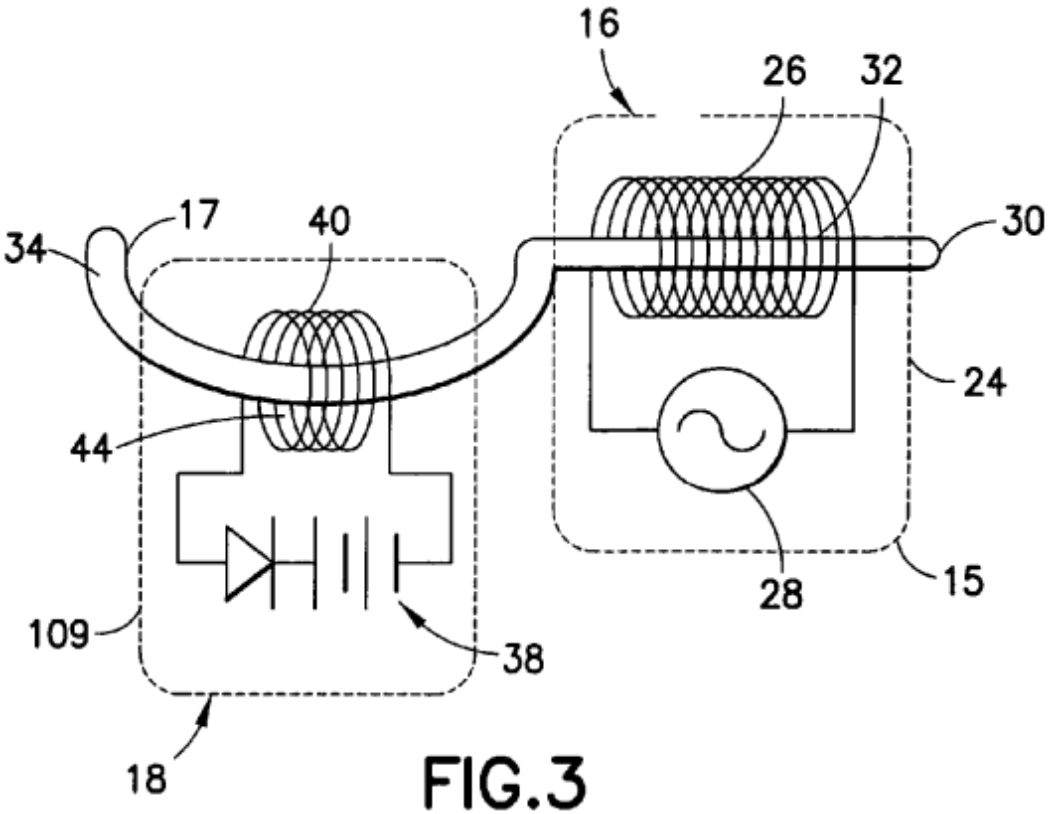


FIG.3

(Ex. PA-4, FIG. 3; *see also id.*, 3:46-47 ("FIG. 3 is a diagrammatic view of two components of the system shown in FIG. 2[.]"), 4:52-5:52 (describing Figure 3); Ex. PA-DEC, ¶147.)

Naskali explains that charging system 10 implements wireless power transfer to PDA 22 via electromagnetic induction. (Ex. PA-4, 5:60-66 ("When the power feed portion 28 provides an AC voltage, a magnetic flux is generated in the induction core 30. A voltage is induced across the secondary side coil 40 by the action of **electromagnetic induction**. Because the secondary side coil 40 is connected to the rechargeable battery 38, the rechargeable battery 38 can be recharged."); Ex. PA-DEC, ¶148.)

In light of *Naskali*'s disclosures, a POSITA would have been motivated to configure the above-described "portable telecommunications device" of the *Piepgras-Michael-Butler* system to use a rechargeable battery that can receive power wirelessly. (Ex. PA-DEC, ¶149.) For example, *Piepgras* explains that user interface 102 can be battery operated (further demonstrating portability). (Ex. PA-1, ¶[0108].) Like a PDA (as *Piepgras* explains is an example of a remote control user interface, *see* §VII.A.4(g)) and other mobile electronic devices, such a device requires power. Thus, a POSITA would have found it obvious to configure the "telecommunications device" to use rechargeable battery source that is configured to be recharged (*e.g.*, receive power)

wirelessly (*e.g.*, as an alternative to or complementing a wired power approach). (Ex. PA-4, 1:18-24; Ex. PA-DEC, ¶149.)

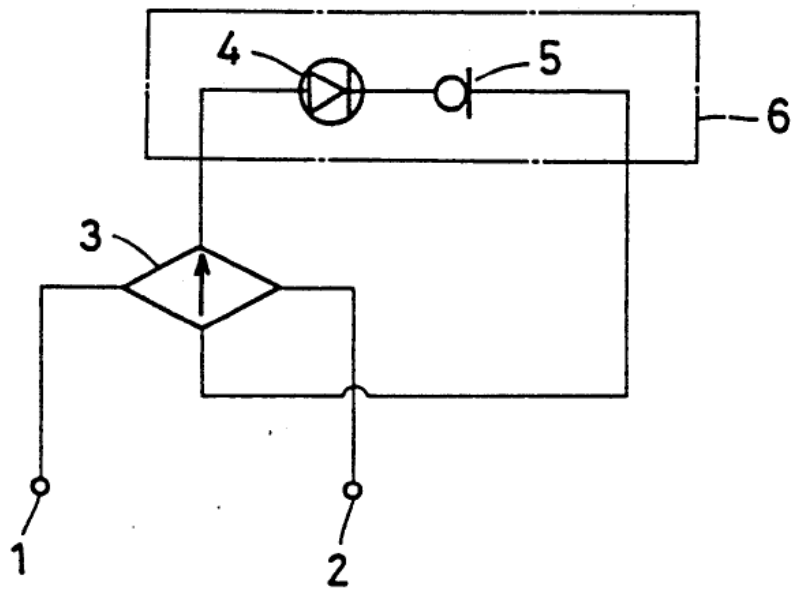
Thus, a POSITA, who would have been knowledgeable of such features/circuits, would have been capable of designing or using a remote control user interface (with touch detection and OLED display as noted above) with wireless power features. (Ex. PA-DEC, ¶150.) Such a POSITA would have found the above configuration feasible and predictable, and would have had a reasonable expectation of success implementing it, particularly given *Naskali*'s disclosures regarding charging system 10 and that wireless power transfer technologies and concepts were well known. (*Id.*)

C. SNQ3: Claim 6 Is Obvious Over *Piepgras*, *Michael*, *Butler* and *Kasegi*

1. Overview of *Kasegi*

U.S. Patent No. 5,086,294 ("*Kasegi*") is titled "Indicator Circuit for Protecting Light Emitting Diode." *Kasegi* issued as a patent on February 4, 1992. (Ex. PA-5, Cover.) *Kasegi* discloses an LED lighting system that utilizes received AC power. (*Id.*, Abstract.) For example, *Kasegi* discloses an LED coupled to a bridge rectifier 3 that receives AC power. (*Id.*, 2:34-48 (below), FIG. 1 (below).)

FIG. 1



(*Id.*, FIG. 1.) *Kasegi* describes with respect to Figure 1:

> FIG. 1 is an electric circuit diagram of an operation indicator circuit for a switch according to the present invention applied to a limit switch.
>
> In this drawing, numerals 1 and 2 denote **AC power** source input terminals and numeral 3 denotes a bridge rectifying circuit connected to the power source input terminals. Numeral 4 denotes a **light emitting device, such as a light emitting diode**, for indicating the operation of a limit switch not shown in the drawings, and numeral 5 denotes a constant current device consisting of a constant current diode connected in series with the light emitting diode 4. The serial connection of the two diodes 4 and 5 are connected to the output end of the bridge rectifying circuit 3 as an operation indicator circuit 6.

(*Id.*, 2:34-48 (emphasis added).)

Kasegi discloses an arrangement where "a constant current diode [5]" is "connected in series with the light emitting diode 4," as shown above in Figure 1. (Ex. PA-5, 2:40-45; *see also id.*, 1:53-60, FIG. 1.) *Kasegi* describes supplying a current, which is limited to a maximum value, to LED 4.

> In the above described structure, the rated operation voltage range of the constant current diode 5 is 10 to 100 volts, and the constant current diode 5 produces a constant current for application voltages within this range. In other words, the risk of destroying the light emitting diode 4 by using a wrong circuit element as was the case with the conventional arrangement based on the selection of a resistor can be eliminated, and since **a constant current (approximately 1.0 mA or less) is supplied to the light emitting diode 4** a constant brightness can be obtained even when the power source voltage fluctuates.

(*Id.*, 2:49-60 (emphasis added); *see also id.*, 3:1-20 (describing constant current diodes 5 and 7).)

2. Claim 6

a) The lighting system of claim 1, further comprising a current limiting device coupled to the LED circuit.

To the extent the *Piepgras-Michael-Butler* combination does not explicitly disclose a current limiting device coupled to the LED circuit of the *Piepgras-Michael-Butler* system, it would have been obvious in view of *Kasegi* to implement this feature. (Ex. PA-DEC, ¶¶82-83, 151-157.)

Like *Piepgras*, *Kasegi* discloses an LED lighting system that utilizes received AC power. (Ex. PA-5, Abstract.) For example, *Kasegi* discloses an LED coupled to a bridge rectifier 3 that

receives AC power. (Ex. PA-5, 2:34-48, FIG. 1.) Thus, a POSITA implementing the system of *Piepgras* would have had reason to consider the teachings of *Kasegi*. (Ex. PA-DEC, ¶153.)

Kasegi discloses an arrangement where "a constant current diode [5]" is "connected in series with the light emitting diode 4." (Ex. PA-5, 2:40-45, 1:53-60.) Thus, constant current diode 5 of *Kasegi*, which is coupled to LED 4, is a "current limiting device" as claimed because that diode 5 limits the current through the LED to a certain value, *e.g.*, "approximately 1.0 mA or less," within "the rated operation voltage range," *e.g.*, "10 to 100 volts" (*Id.*, 2:49-60; *see also* Ex. SA-17, 99; Ex. PA-DEC, ¶154.) Thus, *Kasegi* discloses "a current limiting device coupled to [an] LED circuit." (Ex. PA-DEC, ¶154; *see also* Ex. PA-5, 3:1-20.)

In light of such disclosures and guidance, POSITA would have been motivated to modify the above-discussed lighting system by implementing a current limiting device coupled to the LED circuit (*see* limitation 1(b), §VII.A.4(b)) to provide a constant current to improve LED operation, as suggested by *Kasegi*. (Ex. PA-DEC, ¶155.) For example, a POSITA would have been motivated by the benefits of configuring the LED circuit with a series-connected current limiting diode (device) to expand "the operable range of the input voltage" of the LED circuit and "keep[] the brightness of the light emitting device constant over a wide input voltage range," as guided by *Kasegi*. (Ex. PA-5, Abstract.) Such an implementation would have solved issues associated with LEDs' "sensitiv[ity] to voltage fluctuations" and mitigated or prevented destruction, damage, or insufficient operation of the LED(s) in the LED circuit, as explained by *Kasegi*. (*Id.*, 1:22-32; *id.*, 1:45-48, 1:62-68, 2:58-60 ("a constant brightness can be obtained even when the power source voltage fluctuates"); Ex. PA-DEC. ¶156.)

Given the skills and knowledge of a POSITA at the time, coupled with the disclosures/guidance of *Piepgras* and *Kasegi*, a POSITA would have been motivated to implement the above modification and done so with a reasonable expectation of success. (Ex. PA-DEC, ¶157.) Such a modification would have involved the use of known technologies and techniques (*e.g.*, known LED circuit and active current limiting device designs/components) to produce the predictable result of coupling a current limiting device to the LED circuit in the *Piepgras-Kasegi* combination for obtaining a constant brightness even when the power source voltage fluctuates. (*Id.*) *KSR*, 550 at 416.

D. SNQ4: Claims 21-23 and 26 Are Obvious Over *Piepgras* and *Butler*

1. Claim 21

a) A lighting device comprising:

To the extent limiting, *Piepgras* discloses the preamble of claim 21 for at least the reasons discussed regarding the preamble of claim 1. (§VII.A.4(a); Ex. PA-DEC, ¶¶158-159.) For example, as discussed for limitation 1(a), *Piepgras* discloses with reference to Figure 6 (below) a spotlight 100 ("lighting device") containing system 500 shown in Figure 1 (below). (§VII.A.4(a); Ex. PA-1, ¶¶[0088], [0108], [0110], FIGS. 5-6; Ex. PA-DEC, ¶159.)

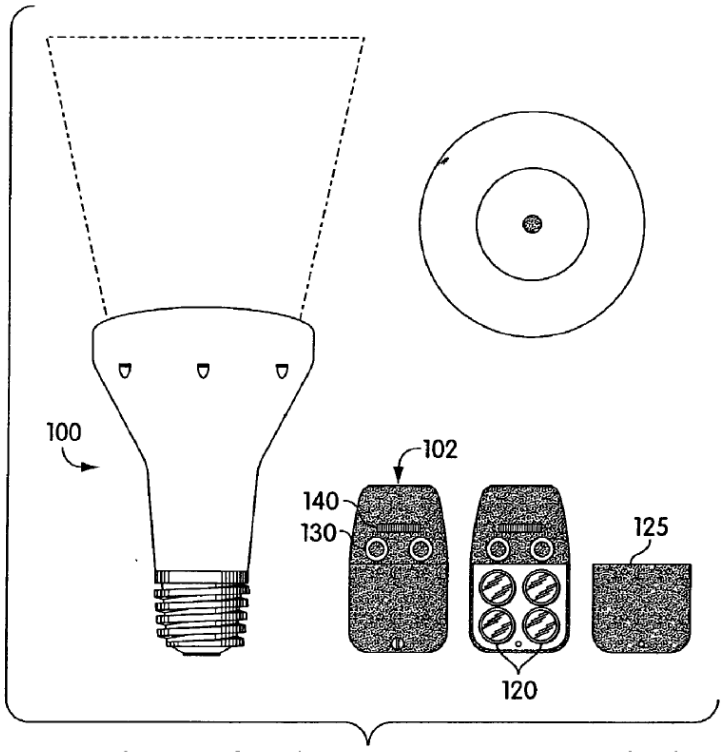


Fig. 6

(Ex. PA-1, FIG. 5.)

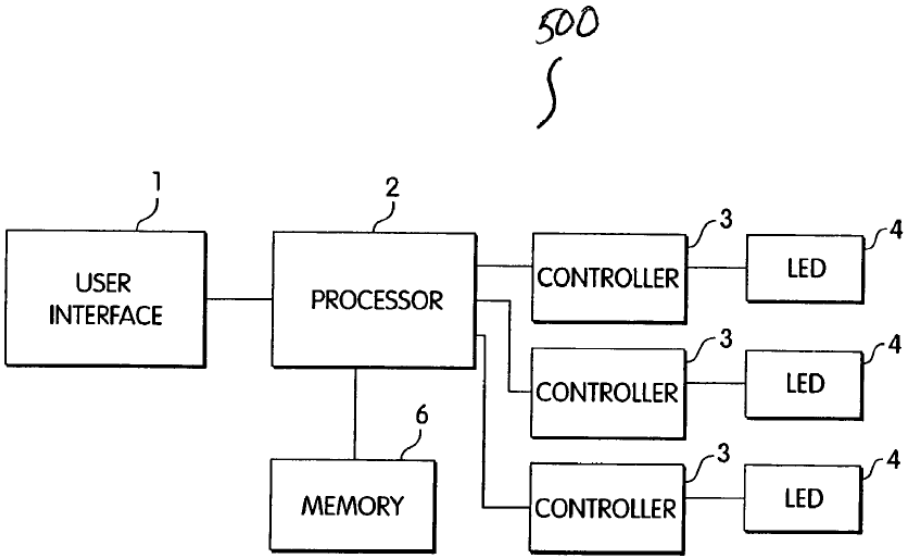


Fig. 1

(*Id.*, FIG. 1; *see also* §§VII.D.1(b)-(g); Ex. PA-DEC, ¶159.)

b) a data communication circuit having at least one LED circuit, wherein the at least one LED circuit has at least two LEDs connected in series, parallel or opposing parallel, and

Piepgras in view of the state of the art discloses or suggests this limitation, for reasons similar to those discussed regarding limitations 1(b) and 1(c), which recite substantially the same features as limitation 21(b). (§§VII.A.4(b)-(c), Ex. PA-DEC, ¶160.) For example, *Piepgras* discloses that its spotlight 100 ("lighting device") includes a data communication circuit and an LED circuit for the reasons discussed for limitation 1(b), and the LED circuit has at least two LEDs connected in series for the reasons discussed for limitation 1(c). (§§VII.A.4(b)-(c); Ex. PA-DEC, ¶160.) As further discussed for limitation 1(b), the *Piepgras-Michael* data communication circuit has an LED circuit and an antenna. (§VII.A.4(b); Ex. PA-DEC, ¶160.) Thus, regarding limitation 21(b), it would have been obvious in view of the state of the art (*e.g.*, as demonstrated by *Michael*) to configure spotlight 100 ("lighting device") to comprise a data communication circuit *having* the LED circuit ("at least one LED circuit"), for reasons similar to those discussed for limitation 1(b). (§VII.A.4(b); Ex. PA-2 (*Michael*, demonstrating the state of the art), FIGS. 12, 15, 10:48-61; *see also id.*, 4:58-9:37, 7:35-43, 8:11; Ex. PA-DEC, ¶160.)[7] A POSITA would have had similar

[7] Exhibit PA-2 is cited for this SNQ to demonstrate the state of the art. (Ex. PA-DEC, ¶160.)

appreciation, capabilities, motivation, and reasonable expectation of success regarding the above configuration (for limitation 21(b)) as discussed for limitation 1(b). (Ex. PA-DEC, ¶160.)

c) wherein the at least two LEDs are a same color or different colors;

Piepgras discloses this limitation. (Ex. PA-DEC, ¶¶161-164.) Indeed, "a same color or different colors" spans the entire range of possibilities for colors of *Piepgras*' LEDs, and no other options are possible. (*Id.*, ¶161.) Moreover, *Piepgras* describes its LEDs include "visible color LEDs" (Ex. PA-1, ¶[0085]) and that "[t]he term 'color' should be understood to refer to any frequency of radiation, or combination of different frequencies, within the visible light spectrum" (*id.*, ¶[0087]), and a POSITA would have understood that each LED can be any color. (Ex. PA-DEC, ¶161.) Additionally, *Piepgras* describes phosphor that "convert[s] energy from the LED to a different wavelength," which a POSITA would have understood results in a different color. (Ex. PA-1, ¶[0085]; Ex. PA-DEC, ¶161.) Such disclosures are provided in *Piepgras* prior to discussion of any of *Piepgras*' figures, and thus a POSITA would have understood that such disclosures are applicable to all of *Piepgras*' figures, including Figure 6 showing spotlight 100 ("lighting device"). (Ex. PA-DEC, ¶161.)

Similarly, *Piepgras* discloses with reference to Figure 1 that "**several LEDs 4 with different spectral output** may be used," "**[e]ach of these colors** may be driven through separate controllers 3, and that "[b]y controlling the LEDs 4 independently, **color mixing** can be applied for the creation of lighting effects." (*Id.*, ¶162.) A POSITA would have understood these disclosures are applicable to spotlight 100 ("lighting device") of Figure 6 because spotlight 100 of Figure 6 includes system 500 of Figure 1, as explained above for limitation 1(a). (§VII.A.4(a); Ex. PA-DEC, ¶163.) *Piepgras* further discloses "projecting different colors simultaneously" using LEDs and a POSITA would have understood that different colors are produced by different LEDs. (Ex. PA-1, ¶[0124]; Ex. PA-DEC, ¶163.) Thus *Piepgras* discloses that the at least two LEDs are different colors. (Ex. PA-DEC, ¶163.)

Additionally, as discussed for limitation 1(c), *Piepgras* discloses that spotlight 100 includes multiple LEDs. (§VII.A.4(c); Ex. PA-1, ¶¶[0108], [0110]; Ex. PA-DEC, ¶163.) A POSITA would have understood that spotlight 100 also includes at least two LEDs of the same color. (Ex. PA-DEC, ¶164.)

d) wherein the data communication circuit having the at least one LED circuit is integrated into the lighting device;

Piepgras discloses or suggests this limitation. (§VII.A.4(e); Ex. PA-DEC, ¶165.) As explained above for limitation 21(b), the data communication circuit (discussed for limitation 21(b)) is included in the lighting device 100. (§VII.D.1(b); Ex. PA-DEC, ¶165.) Thus, a POSITA would have understood that the data communication circuit (having the at least one LED circuit, as explained for limitation 21(b)) is integrated into the lighting device. (Ex. PA-DEC, ¶165.)

e) wherein the lighting device can transmit data signals to or receive the data signals from at least one portable telecommunications device; and

Piepgras (as modified above) discloses this limitation for similar reasons as those discussed for limitation 1(g) (discussing *Piepgras*' spotlight 100 transmitting data to, and receiving data from, remote user interface 102) and claim 4 (discussing modified interface 102, which is portable). (§§VII.A.4(g), VII.A.7; Ex. PA-DEC, ¶166.) For instance, the modified *Piepgras* spotlight 100 ("lighting device") can transmit data signals and also receive the data signals from (which also meets the limitation "transmit data signals to **or** receive the data signals from") the modified remote user interface 102 ("at least one portable telecommunications device"), for similar reasons as those discussed for limitation 1(g) and claim 4. (§§VII.A.4(g), VII.A.7; Ex. PA-DEC, ¶166.)

f) wherein the portable telecommunications device comprises a circuit that can detect a human touch via capacitive sensing, and

Piepgras in view of *Butler* discloses or suggests this limitation. (Ex. PA-DEC, ¶167.) The discussion for limitation 1(h) at Section VII.A.4(h) explains how and why it would have been obvious to configure the "telecommunications device" in the *Piepgras-Michael* system in view of *Butler* to comprise a capacitive human touch circuit. For similar reasons relating to the disclosures/suggestions of *Piepgras* and *Butler* (and those discussed for limitation 21(e)), a POSITA would have been motivated and found obvious to configure the *Piepgras* lighting device (limitation 21(a)) to work with a portable telecommunications device with similar features as those explained for limitation 1(h). (§§VII.A.4(h), VII.D.1(a)-(e); Ex. PA-DEC, ¶167.) A POSITA would have had similar appreciation, capabilities, motivation, and reasonable expectation of success regarding configuring (for limitation 21(f)) the *Piepgras* portable telecommunications device in view of *Butler*, as discussed for limitation 1(h) regarding configuring the *Piepgras*-

Michael telecommunications device in view of *Butler*.

g) wherein the portable telecommunications device further comprises at least one LED that provides light based upon detection of the human touch.

The *Piepgras-Butler* combination in view of the state of the art discloses or suggests this limitation. (Ex. PA-DEC, ¶¶168-172.) As discussed for limitations 1(g) and 21(e), *Piepgras* discloses that its lighting device is remotely controlled by the modified portable telecommunications device, and as discussed for limitations 1(h) and 21(f), the *Piepgras-Butler* combination discloses that the portable telecommunications device can detect a human touch. (§§VII.A.4(g)-(h), VII.D.1(e)-(f).) While the *Piepgras-Butler* combination does not explicitly disclose that the portable telecommunications device *comprises at least one LED that provides light based upon detection of the human touch*, it would have been obvious in view of the state of the art to configure the portable telecommunications device to implement such features. (Ex. PA-DEC, ¶168.)

It was well known to a POSITA to implement a touch screen as an *LED* touch screen. (*Id.*, ¶169.) For example, *Swartz* and *Hack* disclose features consistent with such state-of-the-art knowledge about the known use of LED touch screens. (Ex. SA-13 (*Swartz*), ¶¶[0048] [0080] ("touch screen display") for a portable computing device shown in Figure 17 of *Swartz* (below), and describes using "a flat panel type display," *e.g.*, "**light emitting diode (LED) displays** such as Organic LED" (*id.*, ¶[0048]); Ex. SA-3 (*Hack*), ¶¶[0013] ("The display can be touch responsive."), [0014] ("The display can include a plurality of [OLEDs]."), FIG. 2A (showing portable computing device), Abstract ("hand-held, portable communications device"); Ex. SA-5, FIG. 2 (showing touch sensor 202), ¶¶[0037] (describing capacitive touch sensor 202), [0038]-[0039] ("display 204 can be [an] organic light emitting diode (OLED) display"); Ex. PA-DEC, ¶169.) *Swartz* further demonstrates that it was known to implement an LED touch screen in a PDA. (Ex. SA-13, ¶[0087] ("[T]he wrist unit and the CPU unit may be combined into a single control unit, which in itself may become a PDA..."); Ex. PA-DEC, ¶170.)

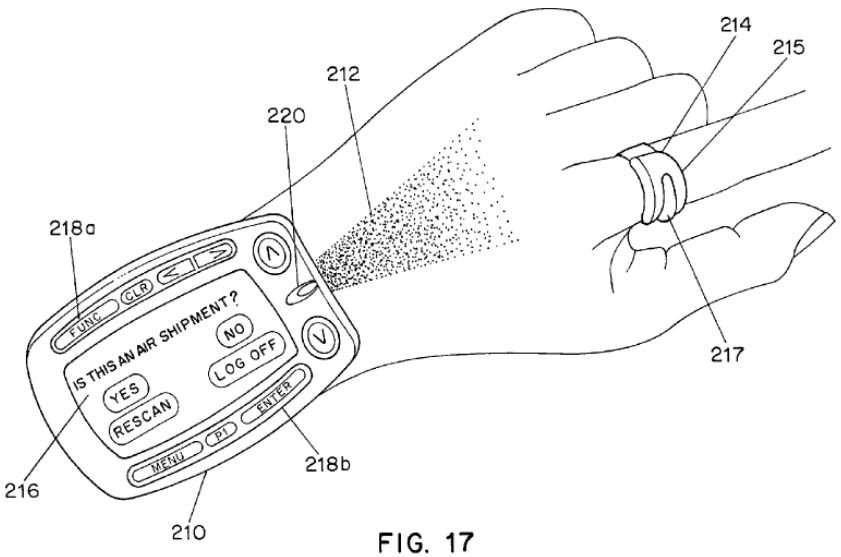


FIG. 17

(Ex. SA-13, FIG. 17.)

A POSITA would have understood that configured in the above-described manner, the above-discussed modified portable telecommunications device would use an LED touch display and thus when touched, the LED(s) of the display would change (*e.g.*, turning on and/or changing interface content). (Ex. PA-DEC, ¶171.) Thus, a POSITA would have understood that at least one LED in such a display would provide light based upon detection of the human touch, consistent with that known in the art. (Ex. SA-3, ¶[0013] ("The display can provide touch signals to the processor and the processor can perform responsive operations in response to receiving the touch signals."); Ex. PA-DEC, ¶171.)

A POSITA would have recognized that such a configuration of the portable telecommunications device would have been a predictable way to implement a touch screen, and a POSITA would have found such usage of conventional technology to be desirable for promoting reliability and ease of implementation. (*Id.*, ¶172.) A POSITA would have been capable of implementing an LED touch screen, as it was well known, as explained above (including in the context of portable devices such as a PDA), and would have had a reasonable expectation of success implementing such a configuration, as it would have been a mere combination of known components and technologies, according to known methods, to produce predictable results. (*Id.*) *KSR*, 550 U.S. at 416.

2. Claim 22

a) The lighting device of claim 21, further comprising the portable telecommunications device.

The *Piepgras-Butler* combination discloses or suggests this limitation. (Ex. PA-DEC, ¶173.) As explained for limitations 1(b), 1(g), and 21(e), *Piepgras-Butler*'s modified portable telecommunications device controls lighting remotely. (§§VII.A.4(b), VII.A.4(g), VII.D.1(e); Ex. PA-DEC, ¶173.) To the extent *Piepgras-Butler* does not explicitly disclose that its lighting device *comprises* the portable telecommunications device, it would have been obvious to configure the *Piepgras-Butler* lighting device to implement this feature. (Ex. PA-DEC, ¶173.) For example, a POSITA would have recognized that such a configuration would have been a mere combination of known components and technologies (*e.g.*, a lighting device and another device for controlling it remotely), according to known methods, to produce predictable results. (Ex. PA-DEC, ¶173.) *KSR*, 550 U.S. at 416. A POSITA would have found it beneficial and predictable to arrange a lighting device (such as the *Piepgras-Butler* lighting device) to *comprise* a device that controls it (*e.g.*, the portable telecommunications device discussed above), so that the lighting device can conveniently hold or store its associated remote control device. (Ex. PA-DEC, ¶173.) POSITA would have been skilled at arranging devices in various ways and would have known how to configure a first device to comprise a second device that controls the first device. (*Id.*) Indeed, Figure 6 of *Piepgras* shows a remote control user interface 102 that works with spotlight 100 ("lighting device"), and thus supports the above configuration. (*Id.*) Moreover, the '400 patent does not describe any criticality or novelty regarding a lighting device that *comprises* a portable telecommunications device, so a POSITA would have found the above configuration to be a feasible via a simple physical (*e.g.*, mechanical) alteration of the *Piepgras-Butler* lighting device. (*See generally* Ex. PAT-A; Ex. PA-DEC, ¶173.)

3. Claim 23

a) The lighting device of claim 21, wherein the portable telecommunications device further includes at least one OLED.

While *Piepgras-Butler* does not explicitly disclose that the above-discussed portable telecommunications device includes at least one OLED, it would have been obvious in view of the state of the art to implement this feature, for similar reasons as those discussed above for claim limitation 5(a). (§VII.B.2(a); Ex. PA-DEC, ¶174.) A POSITA would have had similar appreciation, capabilities, motivation, and reasonable expectation of success regarding configuring

(for claim 23) the *Piepgras-Butler* device in view of the state of the art, as discussed for claim limitation 5(a) regarding configuring the *Piepgras-Michael-Butler* device in view of the state of the art. (Ex. PA-DEC, ¶174.)

4. Claim 26

a) The lighting device of claim 21, wherein the lighting device further comprises: integrated circuitry that allows adjustment of a brightness of the at least one LED circuit.

Piepgras-Butler in view of the state of the art discloses or suggests this limitation. (Ex. PA-DEC, ¶¶175-180.) *Piepgras* discloses with reference to Figure 8 an example lighting application including a light bulb 180, shown below:

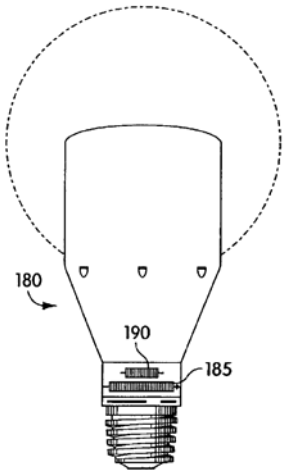


Fig. 8

(Ex. PA-1, FIG. 8; *see also id.*, ¶¶[0111]-[0114]; Ex. PA-DEC, ¶175.)

Piepgras explains that "light bulb 180 is similar to the light bulb 150 of FIG. 7" (Ex. PA-1, ¶[0112]), which includes LEDs (*id.*, ¶[0111]). *Piepgras* explains that "[m]any incandescent lighting systems have dimming control that is realized through changes to applied voltages," and discloses dimming *Piepgras*' light bulb 180 that includes LEDs. (Ex. PA-1, ¶[0114] (disclosing that a "look-up table may contain full brightness control signals and these control signals may be communicated to the LEDs when a **power dimmer** is at 100%"); *see also id.*, ¶[0113].) *Piepgras* explains that "[a] portion of the [look-up] table may contain **80% brightness control signals** and may be used when the input voltage to the lamp is reduced to 80% of the maximum value," and a "**processor** may continuously change a parameter with a program as the input voltage changes." (*Id.*, ¶[0114]; Ex. PA-DEC, ¶176.) *Piepgras* describes that "[t]he lighting instructions could be used to **dim the illumination** from the lighting system," and a POSITA would have understood

that the dimming is achieved by the processor, which must include circuitry because it includes electrical components that require power, which is conveyed using a circuit. (*Id.*; Ex. PA-DEC, ¶177.) *Piepgras* discloses that "light bulb 150 may include a system such as that depicted in FIG. 1," i.e., system 500, and thus a POSITA would have understood that the processor used for dimming is processor 2 of system 500 in light bulb 180, which is described as similar to light bulb 150. (Ex. PA-1, ¶[0111]; Ex. PA-DEC, ¶177.)

Thus, *Piepgras*' processor allows adjustment of a brightness of lighting provided by LEDs. (Ex. PA-DEC, ¶178.) A POSITA would have understood that processors, including *Piepgras*' processor that performs dimming, are implemented with *integrated* circuitry. (Ex. SA-9, 150 ("Figure 11.7 shows a complex integrated circuit. It is in fact the central processor unit of a computer."), 151 ("an example of a large-scale integrated circuit, a microprocessor"); Ex. PA-DEC, ¶178.)

To the extent the *Piepgras-Butler* combination does not explicitly disclose that spotlight 100 ("the lighting device") comprises integrated circuitry that allows adjustment of a brightness of the at least one LED circuit, it would have been obvious to implement this feature in the *Piepgras-Butler* system. (Ex. PA-DEC, ¶179.) As discussed above, *Piepgras* discloses that its lighting application for Figure 8 includes circuitry that allows adjustment of a brightness of LEDs. (*Id.*) A POSITA would have been motivated to, and found it predictable to, implement such features in spotlight 100, particularly because spotlight 100, like light bulb 180, includes system 500 comprising LEDs 4 and processor 2. (*Id.*) A POSITA would have thus found it feasible and beneficial to implement such features in spotlight 100. (*Id.*)

Additionally, integrated circuitry design/implementation concepts were well known to a POSITA and indeed were fundamental to numerous electronic systems, including LED lighting systems. (Ex. SA-9, 144-153; Ex. PA-DEC, ¶180.) A POSITA would have been skilled at implementing various types of integrated circuits and would have found it predictable to implement, in spotlight 100 ("the lighting device"), integrated circuitry that implements dimming functionality like that claimed in claim 26 and described in *Piepgras*. (Ex. PA-DEC, ¶180.) A POSITA would have found the above implementation straightforward, as it was a basic application of integrated circuitry to achieve known control of an LED circuit. (*Id.*) Similarly, a POSITA would have had a reasonable expectation of success implementing such a configuration. (*Id.*)

E. SNQ5: Claim 24 Is Obvious Over *Piepgras, Butler*, and *Naskali*

1. Claim 24

a) The lighting device of claim 21, wherein the portable telecommunications device is configured to receive power wirelessly.

While the *Piepgras-Butler* combination does not explicitly disclose that the above-discussed portable telecommunications device is configured to receive power wirelessly, it would have been obvious in view of *Naskali* to implement such features, for similar reasons as explained above regarding limitation 5(b). (§VII.B.2(b); Ex. PA-DEC, ¶¶181-183.) The analysis for limitation 5(b) explains how the disclosures/suggestions in *Piepgras-Michael-Butler* in light of *Naskali* would have motivated a POSITA to configure the telecommunications device of the *Piepgras-Michael-Butler* system to receive power wirelessly. (Ex. PA-4, Title, Abstract, 1:14-24, 1:36-45, 1:48-54, 3:46-47, 4:24-26, 4:32-5:52, 5:60-66, FIGS. 1-3; Ex. PA-DEC, ¶182.)

For similar reasons, in light of *Naskali*, a POSITA would have had the same motivation, appreciation, knowledge, skill, and expectation of success in implementing such a modification as discussed for the *Piepgras-Michael-Butler-Naskali* combination for limitation 5(b) in Section VII.B.2(b) for the *Piepgras-Butler-Naskali* combination discussed here for claim 24 (which recites similar features). (Ex. PA-DEC, ¶183.) *KSR*, 550 U.S. at 416.

F. SNQ6: Claim 25 Is Obvious Over *Piepgras, Butler*, and *Zhang*

1. Overview of Zhang

U.S. Patent Application Publication No. 2002/0021573 ("*Zhang*") is titled "Lighting Devices Using LEDs." *Zhang* published on February 21, 2002, from U.S. Patent Application No. 09/973,554, which was filed on October 9, 2001. (Ex. PA-6, Cover.) *Zhang* discloses "us[ing] LEDs to replace the incandescent bulbs for 5 lighting devices because the LED has much lower power consumption, much longer lifetime, and many other advantages than incandescent bulb." (*Id.*, Abstract.)

With reference to Figure 2.1, *Zhang* discloses a chip-on-board LED lighting system used for various lighting contexts, such as an illuminated exit sign or a lighting system providing backlighting. (*Id.*, ¶¶[0079] ("Chip-on-board LED Exit Signs"), [0089] ("Chip-on-board Back Lights"); *see also id.*, ¶¶[0002] ("LED exit signs"), [0005]-[0006] ("LED Exit Signs"), [0090] ("back lights for automobile dash boards, advertisement lamp boxes in mall and bar, Liquid Crystal Display, 2-D and 3-D photo illuminations, and many other applications"); *see also id.*, FIG. 2.1

(circuit diagram reproduced below), ¶[0083] ("The circuit board design is shown in FIG. 2.1.").) *Zhang*'s circuit board of Figure 2.1 includes a driver portion (annotated below with dotted outline) that drives voltage and current to LEDs 20 and an LED circuit (annotated below with dashed outline).

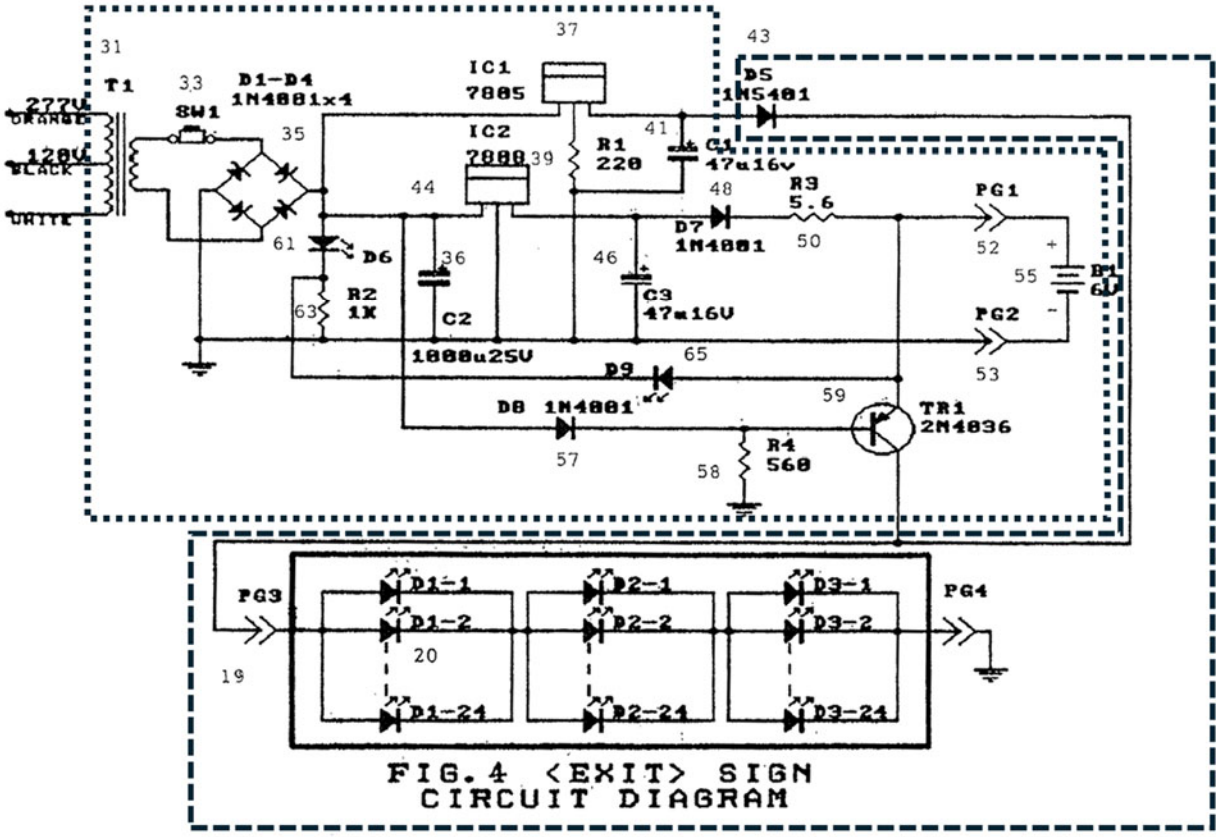


Fig. 2.1, Electronic Circuit Board for LED Exit Sign

(*Id.*, FIG. 2.1 (annotated with dotted and dashed lines).)

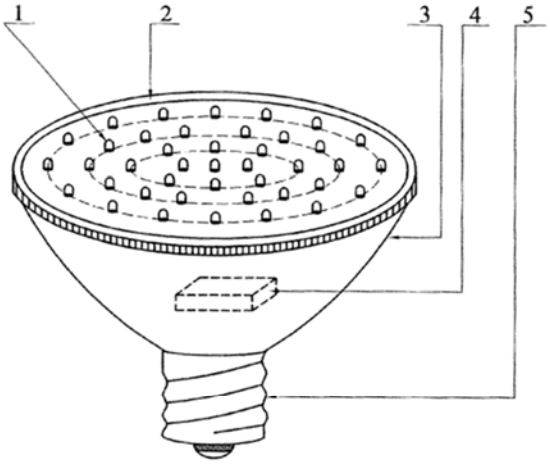
Zhang discloses that the circuit board of Figure 2.1 has an LED circuit (in the dashed outline above) having a plurality of LEDs 20. (*Id.*, ¶¶[0080]-[0081] ("LED chips"), [0082]-[0087], [0088] ("The COBLEDES 19 has n LEDs i[n] one row and m [r]ows in parallel."), [0089]-[0090] ("LED lights").) *Zhang* further discloses that the LED lights may be "red, yellow, orange, green, blue and white colors" (*id.*, ¶[0090])) and that a switch may be used to control signals connected to LEDs (*id.*, ¶[0119], FIG. 5.3).

Zhang discloses that the driver portion of Figure 2.1 includes a transistor 59, capacitors C1 (capacitor 41), C2 (capacitor 36), and C3 (capacitor 46), bridge rectifier 35. (*Id.*, FIG. 2.1.)

Zhang discloses that its "circuit design allows the LED board to use 120 VAC or 220 VAC line power." (*Id.*, ¶[0036]; *see also id.*, ¶[0083] ("The 120 VAC or 220 VAC power from the commercial line is reduced to 9 VAC by the transformer 31 and sent to the test switch 33.").) *Zhang* explains that "[t]he 120 VAC or 220 VAC power from the commercial line is reduced to 9 VAC by the transformer 31" shown in Figure 2.1. (*Id.*, ¶[0036].) *Zhang* further discloses that "[a]fter filtering by the capacitor 36, the first output of the DC power from the rectifier 35 is sent to the regulator 37 of 5 VDC" and "[a]fter filtering by capacitor 41, the output of the regulator lights the COBLEDES [chip-on-board LED exit sign] 19 through diode 43." (*Id.*, ¶[0084]; *see also id.*, FIG. 2.1.)

Zhang discloses that the circuit board itself is a reflective material. (*Id.*, ¶[0081] ("coat a layer of high reflection material on the top of the board"); *see also id.*, ¶¶[0018] ("coat a layer of high reflection material on the board to collect light"), [0034] ("coat a reflection layer on the board to collect the back forward light"), Abstract ("coat a layer of high reflection material on the board to collect light").)

With reference to Figure 3.1, *Zhang* discloses an LED lamp that includes an "aluminum coated plastic bowl 3 to be used as the heat sink for a circuit board." (*Id.*, ¶[0092].)



No	Part	Notice
5	Head	
4	Circui board	For power supply
3	Plastic wall	Coated by aluminum
2	Plastic cover	
1	LEDs	Can be any color

Fig.3.1, LED Lamps

(*Id.*, FIG. 3.1 (showing aluminum coated plastic bowl 3 used as a heat sink).)

2. Claim 25

a) The lighting device of claim 21, wherein the at least one LED circuit is mounted on a reflective printed circuit board.

The *Piepgras-Butler* combination in view of *Zhang* discloses or suggests this limitation. (Ex. PA-DEC, ¶¶84-90, 184-188.) As discussed for limitations 1(b), 1(c), and 21(b), the modified *Piepgras* spotlight 100 ("lighting device") comprises a data communication circuit having an LED circuit. (§§VII.A.4(b)-(c), VII.D.1(b).) *Piepgras* further discloses that "[t]he term 'LED' includes ... chip on **board** LEDs," and a POSITA would have understood that the "board" is a circuit board. (Ex. PA-DEC, ¶185.) A POSITA would have further understood that the LED circuit is mounted on the circuit board, *e.g.*, because mounting circuits on a circuit board was a conventional, expected usage of a circuit board. (*Id.*)

To the extent *Piepgras-Butler* does not explicitly disclose that the LED circuit ("at least one LED circuit") is mounted on a reflective printed circuit board, it would have been obvious in view of *Zhang* to implement such features. (*Id.*, ¶186.) *Zhang*, like *Piepgras*, discloses an LED

lighting system. (Ex. PA-6, Title ("Lighting Devices Using LEDs"), Abstract, FIG. 2.1, ¶¶[0080]-[0090]; Ex. PA-1, Title, Abstract, ¶¶[0032], [0083]; Ex. PA-DEC, ¶186.) Therefore, a POSITA would have had reason to consider the teachings of *Zhang* when contemplating implementing *Piepgras*' LED lighting system. (Ex. PA-DEC, ¶186.) *Zhang* discloses a lighting system (*e.g.*, LED exit sign) that includes a circuit board and various components, including LEDs, as shown below in Figure 2.1. (Ex. PA-6, ¶¶[0079] ("Chip-on-board LED Exit Signs"), [0083] ("The circuit board design is shown in FIG. 2.1."), FIG. 2.1 (titled "Electronic **Circuit Board** for LED Exit Sign" (emphasis added)); Ex. PA-DEC, ¶186.)

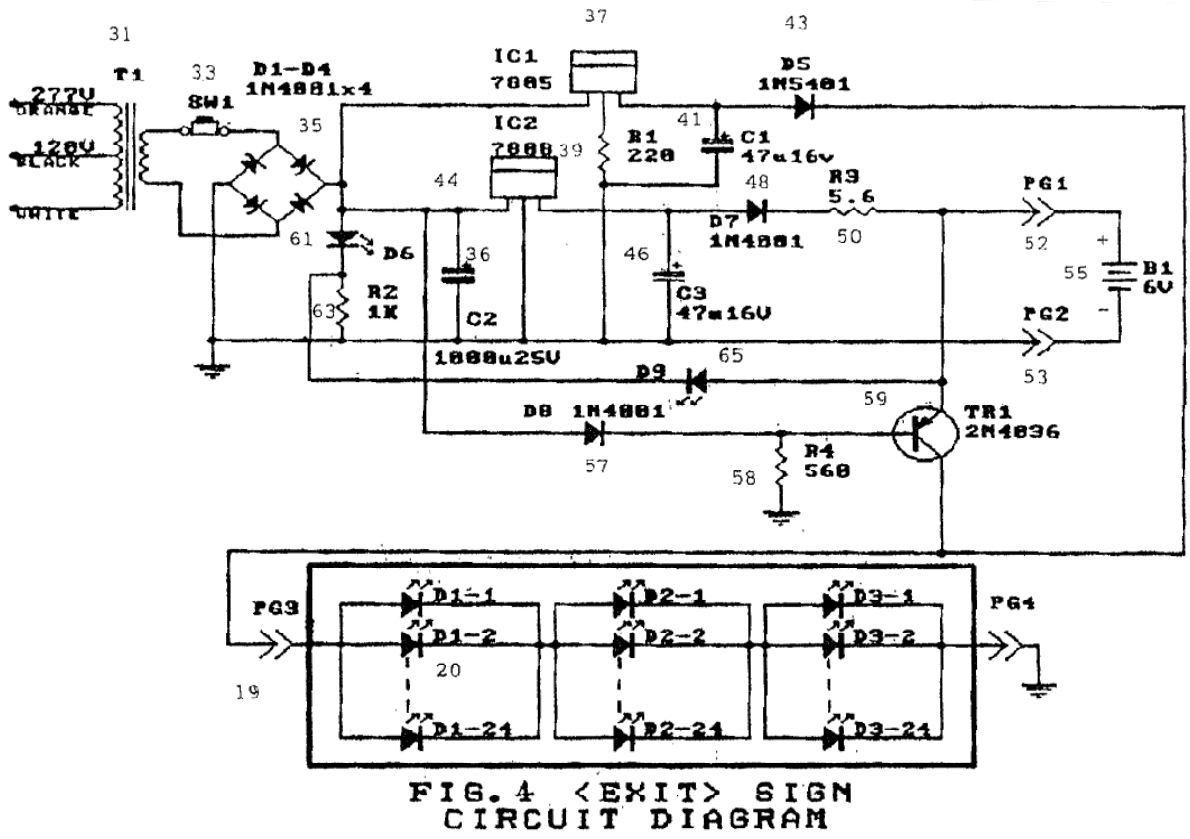


Fig. 2.1, Electronic Circuit Board for LED Exit Sign

(Ex. PA-6, FIG. 2.1; Ex. PA-DEC, ¶186.)

Zhang discloses that its circuit board is coated with a reflective material to collect light. (Ex. PA-6, Abstract ("coat a layer of **high reflection material on the board to collect light**"); *see also id.*, ¶¶[0018] ("coat a layer of high reflection material on the board to collect light"), [0034] ("coat a reflection layer on the board to collect the back forward light"), [0081] ("coat a layer of

high reflection material on the top of the board"); Ex. PA-DEC, ¶187.) A POSITA would have known that a *printed* circuit board was common and conventional. (Ex. SA-12, 2:1-5 (disclosing mounting components on a "printed circuit board"); Ex. PA-DEC, ¶187.)

In light of *Zhang* and the state of the art, a POSITA would have been motivated to, and found it predictable and obvious to, mount *Piepgras*' LED circuit on a *reflective printed* circuit board. (Ex. PA-DEC, ¶188.) A POSITA would have found such an implementation to be a predictable way to implement a circuit board in a manner that collects light, thereby reducing loss of light, which would have been recognized as a desirable feature in a lighting system, *e.g.*, to enhance lighting. (Ex. PA-6, Abstract; Ex. PA-DEC, ¶188.) A POSITA would have been skilled at circuit design/implementation, would found such an implementation straightforward, and would have had a reasonable expectation of success implementing it. (Ex. PA-DEC, ¶188.)

VIII. Detailed Explanation of the Pertinence and Manner of Applying the Prior Art to the Claims

A. Bases for Proposed Rejections of the Claims

The following is a quotation of pre-AIA 35 U.S.C. § 102 that forms the basis for all of the identified prior art:

> A person shall be entitled to a patent unless...
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States, or . . .
>
> (e) the invention was described in — (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language . . . .

The following is a quotation of pre-AIA 35 U.S.C. § 103(a) that forms the basis of all of the following obviousness rejections:

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

The question under 35 U.S.C. § 103 is whether the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention. In *KSR International Co. v. Teleflex Inc*., 550 U.S. 398 (2007), the Court mandated that an obviousness analysis allow for "common sense" and "ordinary creativity," while at the same time not requiring "precise teachings directed to the specific subject matter of the challenged claim[s]." *KSR Int'l Co.*, 550 U.S. at 418, 420-421. According to the Court, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.,* 416. In particular, the Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art." *Id.,* 401. The Court also stated that "when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious." *Id.,* 417.

The Office has provided further guidance regarding the application of *KSR* to obviousness questions before the Office.

> If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

MPEP § 2141(I) (quoting *KSR* at 417.)

The MPEP identifies many exemplary rationales from *KSR* that may support a conclusion of obviousness. Some examples that may apply to this reexamination include:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- Use of a known technique to improve similar devices in the same way;

- Applying a known technique to improve devices in the same way;
- Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success ("obvious to try")

MPEP § 2141(III).

In addition, the Office has published *Post-KSR* Examination Guideline Updates. *See* Fed. Reg. Vol. 75, 53464 (the "Guideline Updates".) The Guideline Updates discuss developments after *KSR* and provide teaching points from recent Federal Circuit decisions on obviousness. Some examples are listed below:

> A claimed invention is likely to be obvious if it is a combination of known prior art elements that would reasonably have been expected to maintain their respective properties or functions after they have been combined.

Id., 53646.

> A combination of known elements would have been prima facie obvious if an ordinary skilled artisan would have recognized an apparent reason to combine those elements and would have known how to do so.

Id., 53648.

> Common sense may be used to support a legal conclusion of obviousness so long as it is explained with sufficient reasoning.

Id.

B. Proposed Rejections

Pursuant to 37 C.F.R. § 1.510(b)(2), Requester identifies claims 1-6, and 21-26 as the claims for which reexamination is requested. The proposed rejections below, in conjunction with the analysis in Section VII above and the attached declaration of Dr. Baker (Ex. PA-DEC), provide a detailed explanation of the pertinence and manner of applying the prior art to each of claims 1-6 and 21-26.

1. Proposed Rejection #1

Claims 1-4 are obvious over *Piepgras*, *Michael*, and *Butler* under 35 U.S.C. § 103(a), as shown by the discussion above in Section VII.A and the declaration of Dr. Baker provided in Exhibit PA-DEC.

2. Proposed Rejection #2

Claim 5 is obvious over *Piepgras*, *Michael*, *Butler*, and *Naskali* under 35 U.S.C. § 103(a), as shown by the discussion above in Section VII.B and the declaration of Dr. Baker provided in Exhibit PA-DEC.

3. Proposed Rejection #3

Claim 6 is obvious over *Piepgras*, *Michael*, *Butler*, and *Kasegi* under 35 U.S.C. § 103(a), as shown by the discussion above in Section VII.C and the declaration of Dr. Baker provided in Exhibit PA-DEC.

4. Proposed Rejection #4

Claims 21-23 and 26 are obvious over *Piepgras* and *Butler* under 35 U.S.C. § 103(a), as shown by the discussion above in Section VII.D and the declaration of Dr. Baker provided in Exhibit PA-DEC.

5. Proposed Rejection #5

Claim 24 is obvious over *Piepgras*, *Butler*, and *Naskali* under 35 U.S.C. § 103(a), as shown by the discussion above in Section VII.E and the declaration of Dr. Baker provided in Exhibit PADEC.

6. Proposed Rejection #6

Claim 25 is obvious over *Piepgras*, *Butler*, and *Zhang* under 35 U.S.C. § 103(a), as shown by the discussion of *Jang* and *Brockmann* above in Section VII.F and the declaration of Dr. Baker provided in Exhibit PA-DEC.

IX. Conclusion

For the reasons set forth above, Requester has established at least one substantial new question of patentability with respect to each of claims 1-6 and 21-26 of the ’400 patent. The analysis provided in this Request and in the declaration of Dr. Baker demonstrates the invalidity of claims 1-6 and 21-26 in view of prior art that was not substantively considered by the Patent Office. Therefore, it is requested that this request for reexamination be granted and claims 1-6 and 21-26 be cancelled.

As identified in the attached Certificate of Service and in accordance with 37 C.F.R. §§ 1.33(c) and 1.510(b)(5), a copy of this Request has been served, in its entirety, to the address of the attorney of record.

Respectfully submitted,

Dated: June 30, 2025

By: /Naveen Modi/
Naveen Modi
Reg. No. 46,224