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Paper 8
Entered: November 25, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WANGS ALLIANCE CORPORATION D/B/A WAC LIGHTING CO.,
Petitioner,

v.

KONINKLIJKE PHILIPS N.V.,
Patent Owner.

Case IPR2015-01292
Patent 6,586,890 B2

Before GLENN J. PERRY, TREVOR M. JEFFERSON, and MIRIAM L. QUINN, *Administrative Patent Judges*.

PERRY, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
35 U.S.C. § 314(a) and 37 C.F.R. § 42.108

INTRODUCTION

Wangs Alliance Corporation d/b/a Wac Lighting Co. ("Petitioner") filed a Petition, Paper 2, to institute an *inter partes* review of claims 7, 15, 23, and 31 (the "challenged claims") of U.S. Patent No. 6,586,890 B2 ("the '890 Patent"). 35 U.S.C. § 311. Koninklijke Philips N.V. ("Patent Owner") timely filed a Preliminary Response, Paper 6 ("Prelim. Resp."), contending that the petition should be denied as to all challenged claims.

We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless the information presented in the Petition shows "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition."

Taking into account the arguments presented in Patent Owner's Preliminary Response, we conclude that the information presented in the Petition and accompanying evidence establishes a reasonable likelihood that Petitioner would prevail in challenging at least one claim of the '890 Patent as unpatentable. We, therefore, grant the Petition and institute trial.

Related Matters

Petitioner reports the following pending litigation matter related to the '890 Patent: *Koninklijke Philips N.V. et al. v. Wangs Alliance Corporation*, Case No. 14-cv-12298-DJC (D. Mass.).

Additionally, the Patent Owner is suing the Petitioner and/or other parties under one or more of U.S. Patent Nos. 6,013,988; 6,147,458; 6,250,774; 6,561,690; 6,788,011; 7,038,399; 7,352,138; 6,094,014; and 7,262,559, all of which generally relate to light emitting diodes ("LEDs").

Petitioner reports filing additional petitions for *inter partes* review

petitions challenging U.S. Patent Nos. 6,013,988; 6,147,458; 6,586,890 B2; 6,250,774 B1; 7,038,399 B2; and 7,352,138 B2.

As of the date of this Decision, our records show the following family of *inter partes* reviews.

Case Number	Challenged Patent	Petitioner	Patent Owner
IPR2015-01287	6,013,988	Wangs Alliance Corporation	Koninklijke Philips N.V.
IPR2015-01289	6,147,458	Wangs Alliance Corporation	Koninklijke Philips N.V.
IPR2015-01290	6,250,774 B1	Wangs Alliance Corporation	Koninklijke Philips N.V.
IPR2015-01291	6,561,690 B2	Wangs Alliance Corporation	Koninklijke Philips N.V.
IPR2015-01292	6,561,690 B2	Wangs Alliance Corporation	Koninklijke Philips N.V.
IPR2015-01293	6,586,890 B2	Wangs Alliance Corporation	Philips Lighting North America Corporation
IPR2015-01294	7,038,399 B2	Wangs Alliance Corporation	Philips Lighting North America Corporation

THE ’890 Patent (Ex. 1001)

Described Invention

The ’890 Patent describes a driver for supplying power to light emitting diodes (LEDs). Ex. 1001, 1:6–7. The electrical characteristics of LEDs are such that small changes in the voltage applied to the LED lamp cause appreciable changes in current flowing through them. LED light output is proportional to LED current, and, therefore, a current source (controlled current) is the preferred method of driving LEDs. *Id*. at 1:18–22.

Figure 1 of the ’890 Patent is reproduced below.

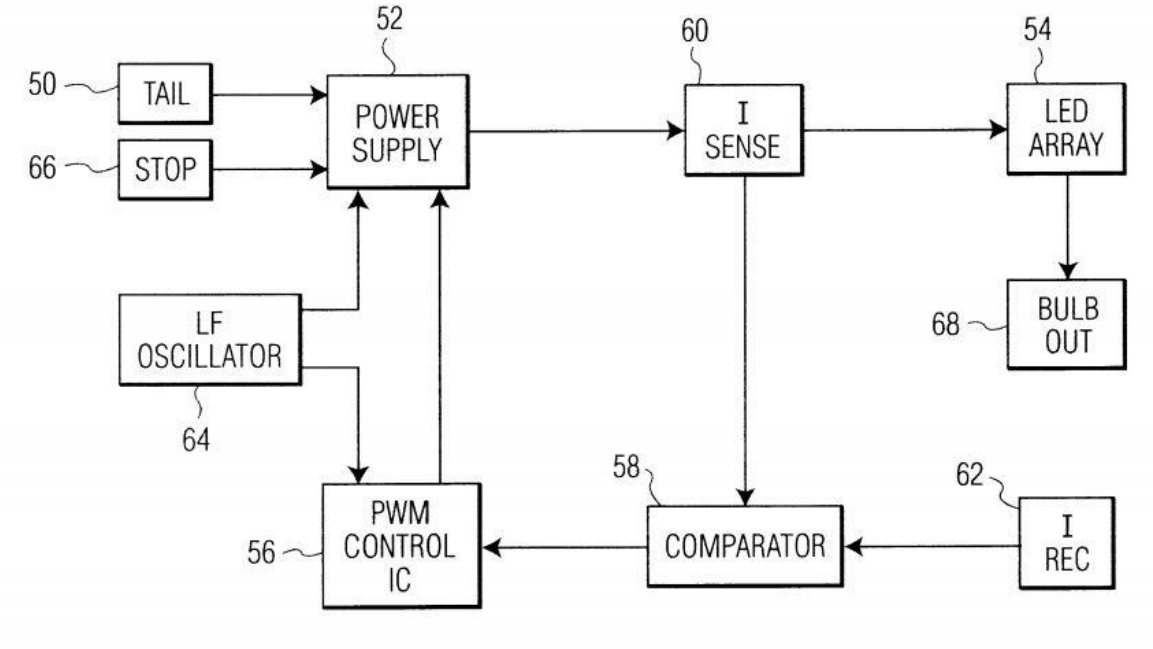

FIG. 1

Figure 1 is a block diagram of a driver for LEDs used in the tail light assembly of a vehicle. Power supply 52, providing current-regulated power, includes a DC/DC converter (e.g. buck-boost power supply, boost, buck, or flyback converter). Power supply 52 is controlled by PWM control IC 56. PWM control IC 56 provides a periodic drive signal of varying pulse width to control power supply 52 in response to a feedback signal related to current flowing through LED array 54. The pulse width of the periodic drive signal is controlled by the output of comparator 58, which provides feedback by comparing sensed current from current sensor 60 and the reference signal from reference current source 62. *Id*. at 2:1–27.

Illustrative Claim

Claim 7 of the '890 Patent is illustrative of the challenged claims:

> 7. A system for supplying power for an LED array, said system comprising:
>
> means for sensing current to the LED array, said current sensing means generating a sensed current signal;
>
> means for generating a reference signal;
>
> means for comparing the sensed current signal to the reference signal, said comparing means generating a feedback signal;
>
> means for modulating pulse width responsive to the feedback signal, said pulse width modulating means generating a drive signal; and
>
> means for supplying power responsive to the drive signal, said power supplying means supplying current to the LED array.

PETITIONER'S CHALLENGES

Petitioner asserts the following grounds of unpatentability (Pet. 3):

Reference(s)	Basis	Claim(s) challenged
Biebl[1]	35 U.S.C. § 102	7, 15, and 23
Biebl and Hochstein[2]	35 U.S.C. § 103	23 and 31
ST Micro[3] and Biebl	35 U.S.C. § 103	7, 15, 23, and 31

Petitioner's relies on the testimony of Robert Neal Tingler in the form of a Declaration. Ex. 1006.

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[1] U.S. Patent 6,400,101 B1, issued June 4, 2002 (Ex. 1003, "Biebl").
[2] U.S. Patent 5,661,645, issued August 26, 1997 (Ex. 1004, "Hochstein").
[3] ST Micro Data Sheet for UC2842/3/4/5 and UC3842/3/4/5 (Ex. 1005, "ST Micro").

CLAIM CONSTRUCTION

Claim constructions presented in this Decision are preliminary in that they are based on the record developed thus far, prior to Patent Owner's formal response. Constructions may change as the evidentiary record more fully develops.

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015) (stating that "Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA," and "the standard was properly adopted by PTO regulation") *reh'g en banc denied*, 2015 WL 4100060 (Fed. Cir. July 8, 2015). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definition for a claim term must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

The parties propose the following claim constructions:

Term	Petitioner's Proposed Construction	Patent Owner's Proposed Construction
"means for sensing current to the LED array, said current	Petitioner notes corresponding structure in the Specification. Pet. 5	PO agrees as to function. Prelim. Resp. 9–10.

sensing means generating a sensed current signal"	(citing Ex. 1009 ¶ 70; Ex. 1006 ¶ 47, Ex. 1001, 3:25–27 and 3:33–35	
"Means for generating a reference signal"	Pet. 5–6 (citing Ex. 1009 ¶ 73; Ex. 1006 ¶ 49, Ex. 1001, 3:17–27), Ex. 1005)	PO agrees as to function. Prelim. Resp. 9–10.
"Means for comparing the sensed current signal to the reference signal"	Pet. 6 (citing Ex. 1009 ¶ 76, Ex. 1006 ¶ 50, Ex. 1001, Figs 1, 2A–2D, 2:14–16, 3:23–35)	PO agrees as to function. Prelim. Resp. 9–10.
"Means for modulating pulse width responsive to the feedback signal, said pulse width modulating means generating a drive signal"	Pet. 7 (citing Ex. 1009 ¶ 20, Ex. 1006 ¶ 53, Ex. 1001, Figs 1, 2A–D, Abstract, 1:6–8, 1:60–65, 2:4–13, 3:55–56, 4:1–12, 4:33–53).	PO agrees as to function. Prelim. Resp. 9–10.
"Means for supplying power responsive to the drive signal, said power supplying means supplying current to the LED array" (claim 7)	"power supply with at least one transistor or switch for receiving a drive signal." Pet. 8 (citing Ex. 1009 ¶ 85, Ex. 1006, ¶ 54; Ex. 1001, 3:11–17, 4:26–32)	Patent Owner argues that Petitioner's construction is inconsistent with the structures listed in the Specification Prelim. Resp. 6–9.

For purposes of this opinion we construe only "means for supplying power responsive to the drive signal, said power supplying means supplying current to the LED array" (claim 7). The parties agree that this term is written in means plus function format, and we construe it as such. The function associated with this term is supplying power responsive to a drive signal. The structures associated with this function, as described in the specification are in an enumerated list of DC/DC converters including "a buck-boost power supply or . . . a boost, buck, and flyback converter." Ex.

1001, 2:4–6. These listed types of power supplies are consistent with the stated goal of regulating current flowing through the LEDs, as opposed to regulating voltage across them. (Ex. 1001, 1:41–43).

We agree with Patent Owner that Petitioner's proposed construction ("a power supply with at least one transistor or switch for receiving a drive signal") is unreasonable in that it covers power supplies outside of the scope of corresponding structures described in the Specification and their equivalents.

In the parallel District Court proceeding, Petitioner proposed (Ex. 2002, 15) a different construction than it has in this proceeding for the corresponding structure, namely: "[a] buckboost, boost, buck, or flyback power supply; with a transistor Q1A, inductor L1A, and diode D4A; or transistor Q1B, inductor L1B, and diode D4B." We find it more reasonable to construe the claim term consistent with the Specification's disclosure of structures and the claim language.

For purposes of this decision, we construe the corresponding structure as "a buckboost, boost, buck, or flyback power supply and its equivalent power supplies that regulate current (as opposed to regulating voltage)."

ANALYSIS OF PRIOR ART CHALLENGES

We turn now to Petitioner's asserted grounds of unpatentability and Patent Owner's arguments in its Preliminary Response to determine whether Petitioner has met the threshold standard of 35 U.S.C. § 314(a).

Challenge Relying on Biebl Alone

Petitioner contends that claims 7, 15, and 23 are anticipated by Biebl under 35 U.S.C. § 102, relying on the supporting testimony of Mr. Neal

Tingler (Ex. 1006). Pet. 14–27. Patent Owner argues that this challenge should be denied. Prelim. Resp. 10–18.

Claim 7

Biebl Figure 8 is reproduced below.

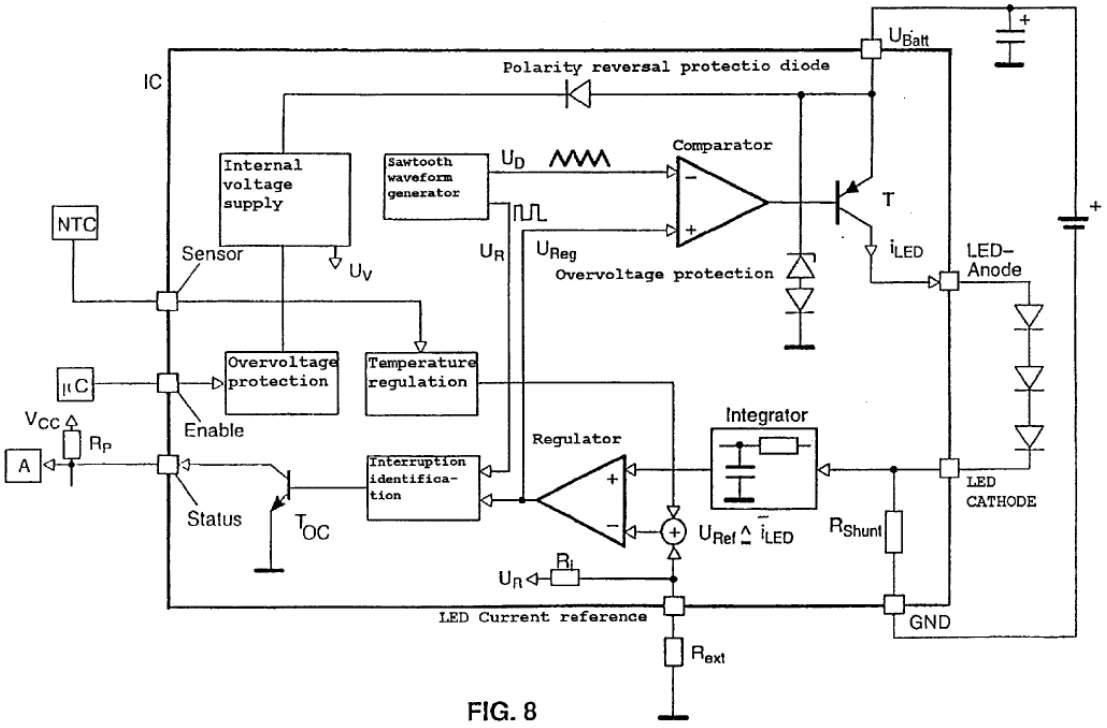

FIG. 8

Figure 8 shows a block diagram of an LED drive circuit. Ex. 1003, 5:51–52. Biebl discloses a drive circuit that controls the operation of a switching transistor T that connects a battery node U_{Batt} in series with an LED array. The "on" time of the transistor is controlled by the width of pulses applied to its base by a comparator. The pulse width is controlled by a feedback signal indicative of current flowing through the LEDs, determined by integrating a voltage across a shunt resistor R_{Shunt}.

Patent Owner notes that Biebl uses a DC chopper power supply which is not equivalent to any of the structures listed in the '890 Patent Specification. Prelim. Resp. 14–17. A transistor T is driven to switch on

and off by a pulse width modulated signal applied to its base. When "on," transistor T connects the LED array to a source of battery power. When "off," transistor T disconnects the LED array from its source of battery power. Given our construction, and based on the information presented by Patent Owner, we conclude that Biebl does not meet the power supply limitation of claim 7.

Claims 15 and 23

However, Patent Owner's argument differentiating the Specification-listed power supplies from the simple chopper circuit used by Biebl does not persuade us with respect to claims 15 and 23. Claim 15 is a method claim and claim 23 is a circuit claim. Neither claim recites means plus function terms.

With regard to the power supply, claim 15 requires "supplying current to the LED array in response to the pulse width modulated drive signal." With regard to the power supply, claim 23 requires "a power supply 52, the power supply 52 supplying current to the LED array 54 and being responsive to a drive signal." Thus, each of these independent claims recites the power supply limitation in a broader fashion than does claim 1. Accordingly, we find that it is reasonably likely that Petitioner would prevail in establishing unpatentability with respect to claims 15 and 23.

Challenges Relying on Biebl and Hochstein

Petitioner contends that claims 23 and 31 are obvious under 35 U.S.C. § 103 based on Biebl and Hochstein, and relies on the supporting testimony of Neal Tingler (Ex. 1006). Pet. 27–30. Patent Owner argues that we should deny this challenge. Prelim. Resp. 18–29.

Hochstein Fig. 5 is reproduced below.

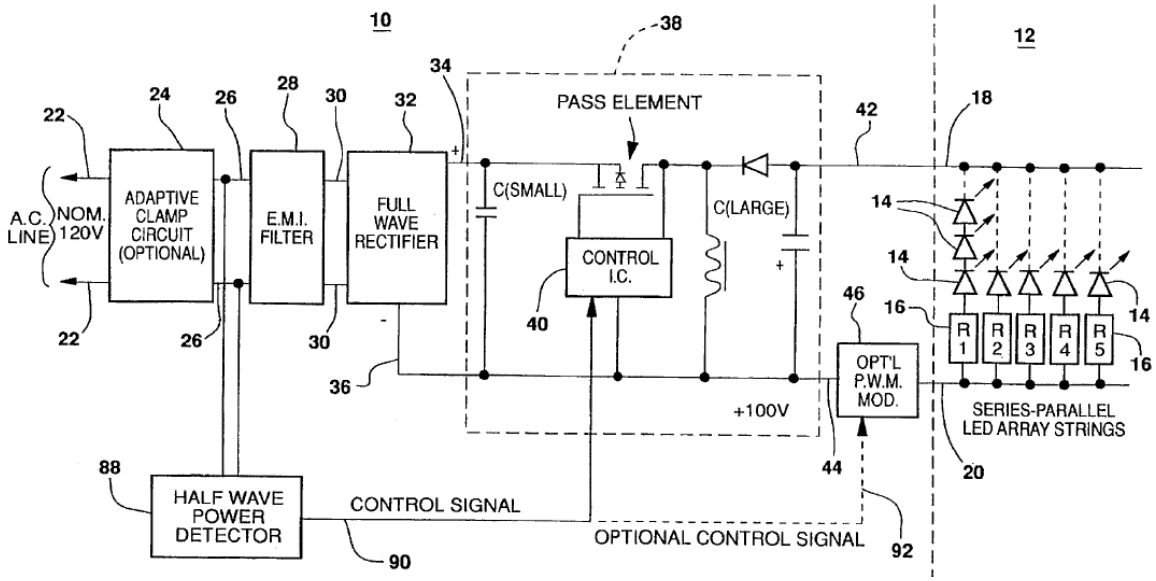

Figure 5 is a schematic diagram of a regulated voltage, switchmode power supply for LED signals. Hochstein describes a circuit for supplying power to a traffic signal using an LED array. Ex. 1004, Abstract. It uses a voltage regulating (not current regulating) buck/boost switchmode converter. Hochstein also discloses a separate PWM modulator to supply a pulsed current to the LED array. *Id*. (citing Ex. 1006 ¶ 78).

Petitioner argues that "a person of ordinary skill in the art would be motivated to combine Hochstein's power supply with Biebl" to avoid "power loss, heating, and voltage fluctuations." Pet. 30.

Patent Owner disagrees, arguing that there are "fundamental differences" between the references. Prelim. Resp. 21. Patent owner notes that Biebl powers LEDs from a direct current (DC) car battery. *See* Ex. 1003 at 1:13–17, 1:45–50 (describing fluctuations particular to "motor vehicle" batteries), 2:31–32 ("in particular the battery voltage in a motor

vehicle"), 3:30–31 ("[a] 12 V car battery may be mentioned as an example"). In contrast, Hochstein discloses powering indicator LEDs (e.g., traffic lights) from alternating current ("AC") line-power—e.g., "a.c. mains (120 v.a.c., 60 Hz)." Ex. 1004 at 1:13–17, 3:35–37, 5:11–13. Hochstein's choice of power supply is based on its primary concern of a power factor correction, a problem of AC. Power factor correction is a problem specific to AC linepowered systems and is not necessary when power is provided by a DC input, such as a battery. Ex. 1004 at 10:12–14.

Patent Owner argues that Biebl and Hochstein teach away from each other with respect to the problem of power loss and the use of current-limiting resistors. Prelim. Resp. 21–25. Petitioner concedes that Biebl is concerned with the "problem of power loss" and "avoids using current-limiting series resistors that were traditionally used when driving LEDs, as these resistors dissipate excess heat and result in a significant power loss." Pet. 28. Hochstein, however, teaches the use of current-limiting series resistors, i.e., "ballasting resistors" in series with the LEDs "to maintain a given current through the LED strings." Ex. 1004 at 1:34–37, 5:5–8, Fig. 5.

Hochstein also teaches the use of an inductor element in its buck-boost power supply (*see id*. at Fig. 5), which further introduces power losses (*see* Ex. 2004 t 540). The Petition fails to address or explain how these features of Hochstein comport with Biebl's desire to "produce[] as little . . . power loss as possible." Ex. 1003 at 2:17–20.

We agree with Patent Owner's argument that Biebl and Hochstein disclose two different and incompatible types of regulation. Biebl utilizes

current regulation (*see, e.g.*, Ex. 1003 at 2:26), while Hochstein uses voltage regulation (*see, e.g.*, Ex. 1004 at Abstract).

We are not persuaded by Petitioner's argument that one of ordinary skill would have combined Biebl and Hochstein based on their respective teachings alone. Accordingly Petitioner is not reasonably likely to prevail in this challenge.

Given our conclusion with respect to Biebl, above, this challenge does not cure the deficiency of apply Biebl to claim 7. We, therefore, exercise our discretion to deny this particular challenge.

Challenges Relying on ST Micro and Biebl

Petitioner contends that claims 7, 15, 23, and 31 are obvious under 35 U.S.C. § 103 based on ST Micro and Biebl, and relies on the supporting testimony of Neal Tingler (Ex. 1006). Pet. 31–50. Patent Owner argues that this challenge should be denied. Prelim. Resp. 29–43.

ST Micro is a datasheet describing a PWM IC. Its Figure 11 is reproduced below.

Figure 11 : Off-line Flyback Regulator.

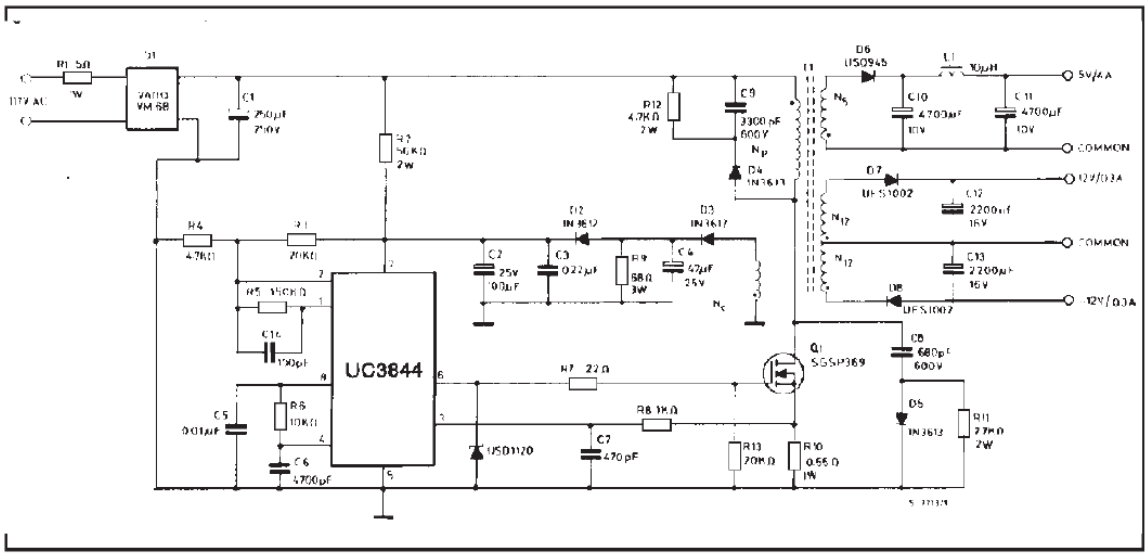

Figure 11 illustrates an application of the data sheet-described IC to a flyback regulator. According to Petitioner, The ST Microelectronics UCC2842/3842 Current Mode PWM Controller datasheet ("ST Micro Datasheet"), published and made publicly available in October 1998, is a prior art reference to the '890 Patent under 35 U.S.C. § 102(b). Pet. 3, 13.

Patent Owner argues that ST Micro is not properly before us as a publication reference. Prelim. Resp. 30–35. The date "October 1998" appears on the first page of ST Micro without explanation in the document itself as to the significance of that date.

The Tingler Declaration refers to the "October 1998" date as a "copyright date." Ex. 1006 ¶ 88. However, we find no copyright statement or symbol on the document itself. The Tinger Declaration further states that "I have experience working with products and datasheets from ST Microelectronics in particular. Based on my experience, it is my opinion that the ST Micro Datasheet was published and made publicaly available at

least as of the copyright date of October 1998." *Id.* at par. 89. Further, according to the Tingler Declaration, the controller referred to in the data sheet is referred to in the '890 Patent as the "PWM Control IC" used in the preferred embodiment. *Id.* at ¶ 89 (citing Ex. 1001, 3:17–27).

The '890 Patent does, in fact, refer to this particular PWM Control IC, and we credit this intrinsic evidence. Although Patent Owner argues that the intrinsic reference in the '890 Patent does not establish publication of ST Micro prior to the critical date of the '890 Patent (Prelim. Resp. 31), for purposes of this decision, weighing all the indicia of publication available at this time, we find that ST Micro is reasonably likely to constitute prior art against the challenged claims.

Patent Owner argues that the Petition fails to demonstrate motivation to combine ST Micro and Biebl to arive at the claimed invention. Prelim. Resp. 35. Petitioner contends that these references are in "similar fields" and argues that a person of ordinary skill would be motivated to combine the UC2842 chip with Biebl. Pet. 31. Petitioner admits that ST Micro says nothing about controling LEDs. However, it is a PWM controller and Biebl controls LEDs using pulse width modulation. For purposes of this decision, we are not persuaded by Patent Owner's argument.

Patent Owner also argues that Petitioner fails to demonstrate how a person of ordinary skill could have combined ST Micro and Biebl. Prelim. Resp. 35. We are not persuaded by this argument. Petitioner explains with reference to the Tingler Declaration (Ex. 1006 ¶ 92), that Biebl discloses a control circuit that uses pulse width modulation to drive an LED array. Pet. 31–32. ST Micro discloses a commercially available control circuit

(UC2842 family) that describes sensing current and comparing to an internal reference to generate feedback used to modulate pulse width of a drive signal. Ex. 1006 ¶ 92.

For the reasons stated above in our discussion of means plus function construction, Biebl does not meet the requirements of claim 7. The same is true of claim 31 which requires the particular power supplies listed in the '890 Specification that are not taught by either Biebl or ST Micro .

However, given the broader scope (not limited by power supply type) of claims 15 and 23, and in view of our conclusion with respect to Biebl alone, above, Petitioner has established a reasonable likelihood of succeeding with its challenge concerning claims 15 and 23. Claim 31, like claim 7, requires specific power supplies as listed in the Specification. Therefore this challenge fails with respect to claim 31.

CONCLUSION

Taking into account the information presented in the Petition and in Patent Owner's Preliminary Response, along with all of the evidence relied upon by both parties, we conclude that the Petition establishes that there is a reasonable likelihood that Petitioner will prevail in the contention that claims 15 and 23 of the '890 Patent are unpatentable based on the teachings of Biebl or Biebl and ST Micro in combination.

We have not made a final determination of the patentability of any challenged claim.

ORDER

For the reasons given, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a) and 37 C.F.R. § 42.4, an *inter partes* review of the '890 Patent is hereby instituted on the following grounds:

1. Claims 15 and 23, under 35 U.S.C. § 102(a), as anticipated by Biebl; and
2. Claims 15 and 23, under 35 U.S.C. § 103(a), as obvious over the combined teachings of Biebl and ST Micro.

FURTHER ORDERED that we institute *inter partes* review on no other ground other than those specifically noted above; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is given of the institution of a trial on the grounds of unpatentability authorized above; the trial commences on the entry date of this decision.

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