
**LEDUP MANUFACTURING GROUP LTD.,
Petitioner**

v.

**SEASONAL SPECIALTIES, LLC,
Patent Owner**

IPR2024-01258
IPR2024-01259

U.S. Patent No. 11,096,252 and U.S. Patent No. 11,533,794

Petitioner's Demonstratives

PRESENTERS FOR PETITIONER

- William W. Cochran
- Chris Whitham – LEAP
- Bridget Cochran – Possible on Rebuttal

ORAL ARGUMENT

- Given 75 minutes total for both IPR2024-01258 and IPR2024-01259 combined.
 - Given an extra 15 minutes for LEAP presenters
 - Total 90 minutes
 - Request 70 minutes – Initial Argument
 - Request 20 minutes – Rebuttal
- Due to the similar nature of the cases, all references to documents and page numbers are to those in IPR2024-01258 ('252 patent) unless specifically noted as being for the '794 IPR (IPR2024-01259)

PRESENTERS

Bill Cochran

- Why Inoue and Smith are combinable

Chris Whitham

- Yu is a proper anticipatory reference
- Objective Indicia does not support patentability

FUNCTIONAL LANGUAGE IN INDEPENDENT CLAIMS 1, 9, 10

Functional statement in Claims 1, 9-10 that does not have patentable weight:

“bypass resistor... and conducting current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough”
(Pet. pg. 19)

As set forth in the Petition, this statement is not a limitation having patentable weight since:

- The statement is purely functional and does not require the bypass resistor to have any additional structure in the apparatus claim **(Pet. pg. 19)**
- The prior art meets the functional language **(Pet. pg. 19)**

Specifically, the petition set forth under claim construction stated:

“This is a functional statement in an apparatus claim and is not a limitation in the claims and should not be treated as a distinguishing feature of claim to determine patentability. See *Hewlett Packard v. Bausch & Lomb Inc.*, 909 Fed. 2d 1464, 1469, 15 USPQ 2d 1525, 1528 (Fed. Cir. 1990) stating “[A]pparatus claims cover what a device is, not what a device does.” Since claim 1 recites a “resistor bypass circuit...” Claim 1 is an article claim, i.e., an apparatus claim. **(Pet. pg. 19)**

A functional recitation of a property of a device shown in the prior art does not result in a claim distinguishing over the prior art. In *re Swinehart*, 169 USPQ 226 (CCPA 1971). **(Pet. pg. 19)**

Additionally, the functional statement in claims 1, 9:

..and wherein said bypass resistor is capable of operating on a one hundred percent duty cycle. **(Pet. pg. 19)**

Does not add any additional structure to the bypass resistor, and the prior art meets the functional language. **(Pet. pgs. 26, 30, 35, 41)**

Specifically, the petition stated:

Functional statements in a claim, such as, “capable of” or “adapted to” are not limitations in article (apparatus) claims. See *In re Hutchinson*, 69 USPQ 138 (CCPA). Accordingly, this clause is not a limitation in claim 1 and cannot be treated as a distinguishing feature of claim 1 or in determining patentability. **(Pet. pg. 20)**

CLAIM 1

1. A resistor bypass circuit for a series lighting circuit comprising a plurality of serially connected LED light sources and a bypass resistor being connected in parallel with at least one of the respective light sources, said bypass resistor being in circuit and conducting current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough and wherein said bypass resistor is capable of operating on a one hundred percent duty cycle. **EX1001, Col. 13**

CLAIM 9

9. A resistor bypass circuit for a series lighting circuit comprising a plurality of serially connected LED light sources and a bypass resistor being connected in parallel with at least one of the respective light sources, said bypass resistor being in circuit and conducting current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough and wherein said bypass resistor is capable of operating on a one hundred percent duty cycle further including an LED flashing light source which includes a flashing circuit which causes the entire light circuit to flash. **EX1001, Col. 14**

CLAIM 10

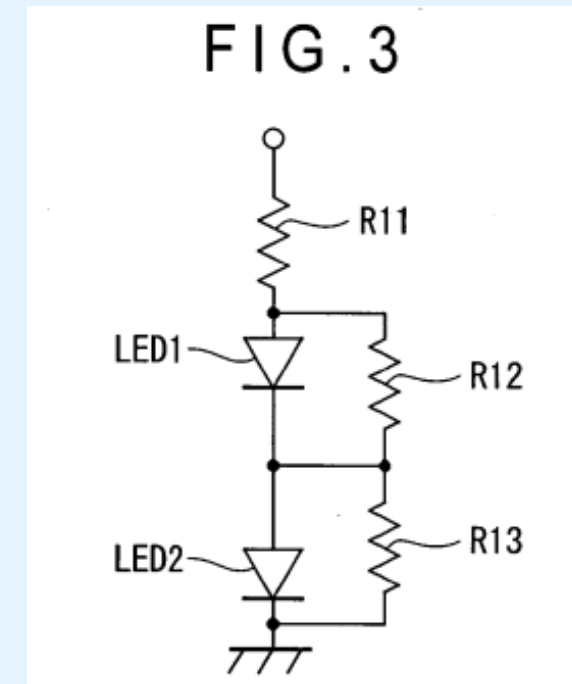
10. A resistor bypass circuit for a series lighting circuit comprising a plurality of serially connected LED light sources and a bypass resistor being connected in parallel with at least one of the respective light sources, said bypass resistor being in circuit and conducting current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough and wherein the resistance of the bypass resistor is equal to or greater than the inherent resistance of the light source to which the resistor is attached, thereby minimizing the burn out potential of other light sources in the light string. **EX1001, Col. 14**

GROUNDS 1-4, 6

GROUND 1 INOUE

Inoue anticipated claim 1. Inoue discloses every claim limitation of claim 1.

1. A resistor bypass circuit for a series lighting circuit (**Fig 3**) comprising a plurality of serially connected LED light sources (**Fig 3, LED1 and LED2**) and a bypass resistor being connected in parallel with at least one of the respective light sources (**Fig 3, either of R12 or R13**), said bypass resistor being in circuit (**Fig 3, both R12 and R13 are connected in the circuit**)... Pet. pgs. 24-26.



and conducting current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough (**Inoue performs this function [EX1017], 31-32, 70**) and wherein said bypass resistor is capable of operating on a one hundred percent duty cycle (**current continuously flows through resistors R12 and R13 [EX1017], 32**).

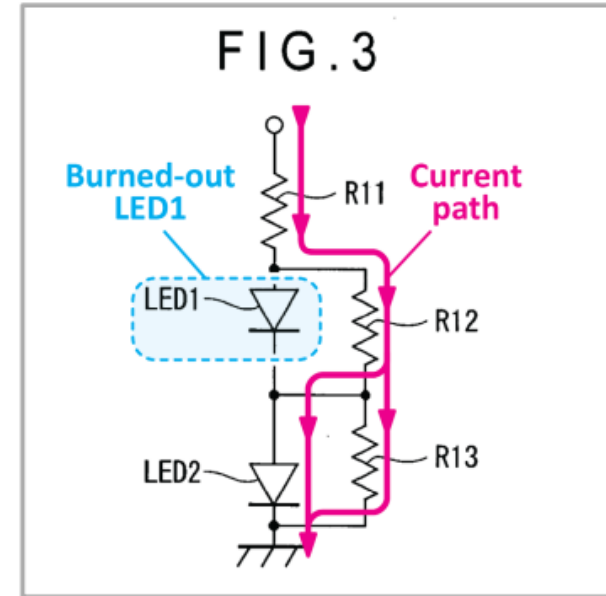


Figure caption: Inoue, Fig. 3, annotated, showing burned-out LED1 and functioning LED2, with current flowing through the bypass resistors R12, R13, and LED2, that, accordingly, remains lit.

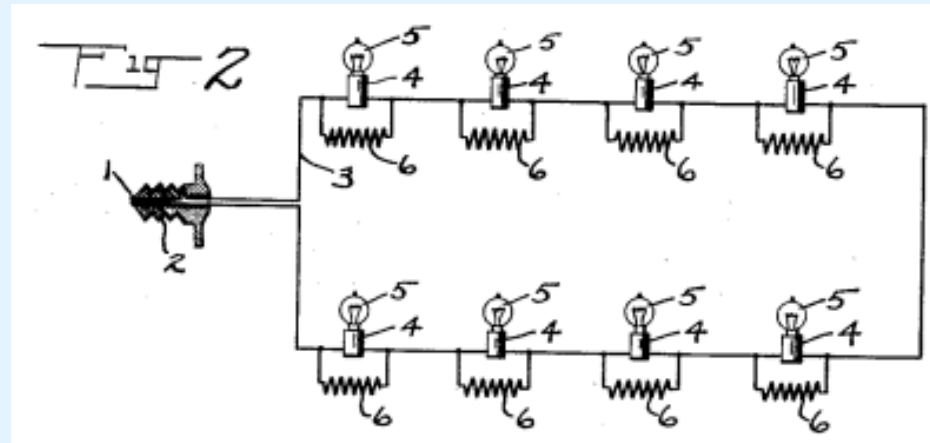
EX1017 PARAGRAPH 70 STATES

“That is, based on elementary circuit theory, Inoue’s bypass resistors R12 and R13 conduct “current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough.” Because Inoue has a resistive path from the positive to the negative power supply terminal, the current flows through the shunting bypass resistor regardless of the LEDs being functional or burned out.” **[EX1017], 70.**

GROUND 2 INOUE IN VIEW OF HOLLER

Claims 1, 10, 15 are obvious over Inoue in view of Holler.

Like Inoue, Holler teaches a series connected illumination device with bypass resistors (6) connected in parallel with a respective light source (5). '252 Petition, 16-17, [EX1004], Fig. 2.



Inoue disclosed all of the claim limitations for claim 1 in Ground 1.

Additionally, Holler also meets the functional language in Claim 1 that states:
“and wherein said bypass resistor is capable of operating on a one hundred percent duty cycle”

Holler states “[I]t has been found that **good results** are obtained if each of the resistances 6 is made of a resistance equal to that of the lamp with which it is in shunt and of approximately twice the current carrying capacity” (emphasis added). Holler, 1:96–101. The statement “approximately **twice the current carrying capacity**” indicates that the current carrying capacity of the resistors 6 of Holler are “capable of operating at” full current which by any definition corresponds to a full duty cycle. Schubert Dec. pg. 55, paragraph 1, pg. 56, paragraph 3, pg. 62, paragraph 3 and 4 and pg. 63, paragraph 5. **(Petition page 30)**.

Claim 10 is the same as claim 1, but adds:

“wherein the resistance of the bypass resistor is equal to or greater than the inherent resistance of the light source to which the resistor is attached, thereby minimizing the burn out potential of other light sources in the light string.”

Holler states, “it has been found that good results are obtained if each of the resistances 6 is made of a resistance equal to that of the lamp with which it is in shunt and of approximately twice the current carrying capacity” (**Holler, 1:96-101**), which meets the claim language “equal to or greater than,” (**Petition Page 31**), and a person of ordinary skill in the art would use the teachings of Holler to select resistors for an LED circuit (**Petition Pg. 32**).

Patent owner responded by arguing various scenarios of the combination of Inoue in view of Holler that were not relevant. POR, 16-17, 19-21. Holler is relied upon for teaching resistive values of bypass resistors. Response to POR, 3.

The Board stated:

“We do not agree with Patent Owner’s arguments as they are misplaced. Contrary to Patent Owner’s arguments, the Petition does not propose using Holler’s drive circuit with Inoue’s LED light sources. See Pet. 26–27. Instead, Petitioner proposes “using the teachings of Holler regarding the resistive values of bypass resistors in the circuit of Inoue” and “us[ing] the resistive value as taught by Holler in the circuit of Inoue.” Pet. 27.”, and “We also do not agree with Patent Owner’s arguments because these arguments too are misplaced. The Petition does not propose modifying Holler to substitute LEDs in place of incandescent lights. See Pet. 26–27.” (DOI, Pg 18)

'794 PATENT CLAIM 15

- 15. A method of bypassing an LED light source, having a predetermined resistance to current flow, in a serially connected LED light string having at least one light source, the method comprising the steps of
 - a. selecting a bypass resistor with the following characteristics:
 - i. a resistance greater than or equal to the predetermined resistance of said LED light source;
 - ii. the ability to carry all of the current in the light string; and
 - iii. the ability to operate at 100% duty cycle;
 - b. inserting said bypass resistor in parallel with said at least one LED light source.

AS STATED IN THE PETITION FOR THE '794 PATENT ON PG. 31:

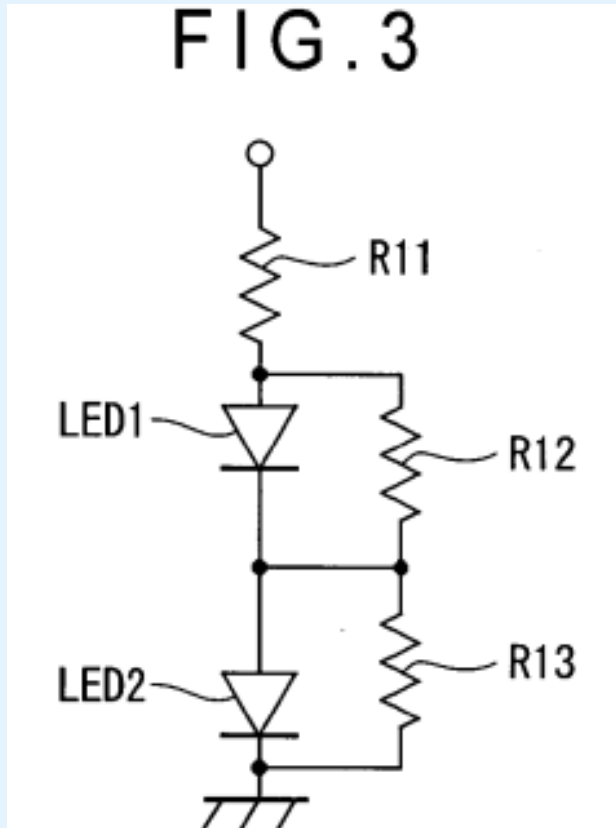
“Claim 15 is a product-by process claim. Hence, the patentability of claim 15 is based upon the product apparatus itself. See VI.J.I.” **(794 Petition Pg. 31)**

INOUE IN VIEW OF HOLLER RENDERS OBVIOUS:

A method of bypassing an LED light source, having a predetermined resistance to current flow, in a serially connected LED light string having at least one light source (**Inoue Fig. 3 illustrates a series lighting circuit having two light sources LED1, LED2 serially connected such that Inoue discloses at least one light source in a serially connected LED light string, ‘794 Petition Pgs. 31-32)**, the method comprising the steps of

- a. selecting a bypass resistor with the following characteristics (**a POSITA would know how to select a resistor having the characteristics, ‘794 Petition Pg. 32)**:
 - i. a resistance greater than or equal to the predetermined resistance of said LED light source (**Holler teaches this as previously discussed for claim 10, ‘794 Petition Pg. 32)**;
 - ii. the ability to carry all of the current in the light string (**previously shown obvious in claim 1, ‘794 Petition Pg. 33)**; and
 - iii. the ability to operate at 100% duty cycle (**both Inoue and Holler teach this as discussed in claim 1, ‘794 Petition Pg. 33)**;
- b. inserting said bypass resistor in parallel with said at least one LED light source (**Inoue Fig 3 and a POSITA would know to insert a bypass resistor in parallel, ‘794 Petition Pgs. 34)**.

EX1003



GROUND 3 HOLLER IN VIEW OF SMITH

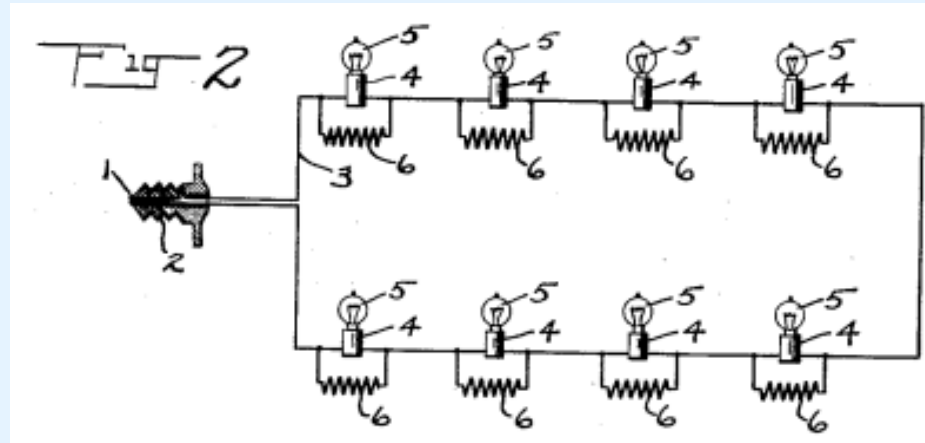
Claims 1, 10, 15 are obvious over Holler in view of Smith.

Claim 1

1. A resistor bypass circuit for a series lighting circuit comprising a plurality of serially connected LED light sources and a bypass resistor being connected in parallel with at least one of the respective light sources, said bypass resistor being in circuit and conducting current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough and wherein said bypass resistor is capable of operating on a one hundred percent duty cycle.

Holler discloses:

A resistor bypass circuit for a series lighting circuit (**Fig 2, Pet. pg. 33**) comprising a plurality of serially connected...light sources (**5, Pet. pg. 33**) and a bypass resistor being connected in parallel with at least one of the respective light sources (**6**), said bypass resistor being in circuit (**6 is connected in the circuit, Pet. pg. 35**) and conducting current at all times when current is flowing through the circuit regardless of whether the...light sources are conducting current therethrough (**Holler lines 51-56 states disabling one of the lamps will not result in the other lamps being extinguished, Pet. Pg. 32**) and wherein said bypass resistor is capable of operating on a one hundred percent duty cycle (**current flows through 6 at all times so resistors 6 are operating at 100% duty cycle, Holler lines 96-101, Pet. Pg 35**).



Claim 10 is the same as claim 1 but adds:

“wherein the resistance of the bypass resistor is equal to or greater than the inherent resistance of the light source to which the resistor is attached, thereby minimizing the burn out potential of other light sources in the light string.”

As discussed in Ground 2, Holler discloses the bypass resistor being equal to or greater than the light source **(Pet. pg. 37)**.

Holler teaches every claim limitation, but is silent regarding LED light sources. Smith teaches the advantages of LED light sources over incandescent lamps (**Smith Columns 1, 2, 6 teach LEDs having a longer lifespan, less heat, consumes less power, Pet. pg. 32**).

As discussed in the petition, a person having ordinary skill in the art would be motivated to use the teachings of Smith regarding LEDs applied to Inoue because of the advantages of LEDs over incandescent bulbs; i.e. longer lifespan, less heat, consumes less power (**Pet. pgs. 32-33**).

'794 PATENT CLAIM 15

15. A method of bypassing an LED light source, having a predetermined resistance to current flow, in a serially connected LED light string having at least one light source, the method comprising the steps of

- a. selecting a bypass resistor with the following characteristics:
 - i. a resistance greater than or equal to the predetermined resistance of said LED light source;
 - ii. the ability to carry all of the current in the light string; and
 - iii. the ability to operate at 100% duty cycle;
- b. inserting said bypass resistor in parallel with said at least one LED light source.

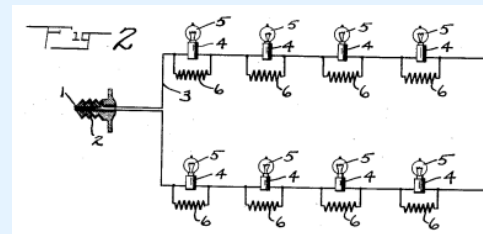
As previously discusses in Ground 2, “Claim 15 is a product-by process claim. Hence, the patentability of claim 15 is based upon the product apparatus itself. See VI.J.I.” **(794 Petition pg. 31)**

HOLLER IN VIEW OF SMITH RENDERS OBVIOUS:

A method of bypassing an LED light source, having a predetermined resistance to current flow, in a serially connected LED light string having at least one light source **(Holler in view of Smith provides a serial light string having LED light sources with resistive bypass elements, '794 Petition Pg. 40)**, the method comprising the steps of

- a. selecting a bypass resistor with the following characteristics **(a POSITA would know how to select a resistor having the characteristics, '794 Petition Pg. 32)**:
 - i. a resistance greater than or equal to the predetermined resistance of said LED light source **(Holler in view of Smith teaches this as previously discussed for claim 10, '794 Petition Pgs. 38-39)**;
 - ii. the ability to carry all of the current in the light string **(previously shown obvious in claim 1, '794 Petition Pg. 40)**; and
 - iii. the ability to operate at 100% duty cycle **(current is flowing through resistors 6 of Holler at all times, so resistors 6 are operating at 100% duty cycle, '794 Petition Pg. 41)**;
- b. inserting said bypass resistor in parallel with said at least one LED light source **(Holler Fig 2, and a POSITA would know to insert a bypass resistor in parallel, '794 Petition Pgs. 34, 41)**.

Holler Fig. 2



GROUND 4 FISHERMAN IN VIEW OF CALLAHAN

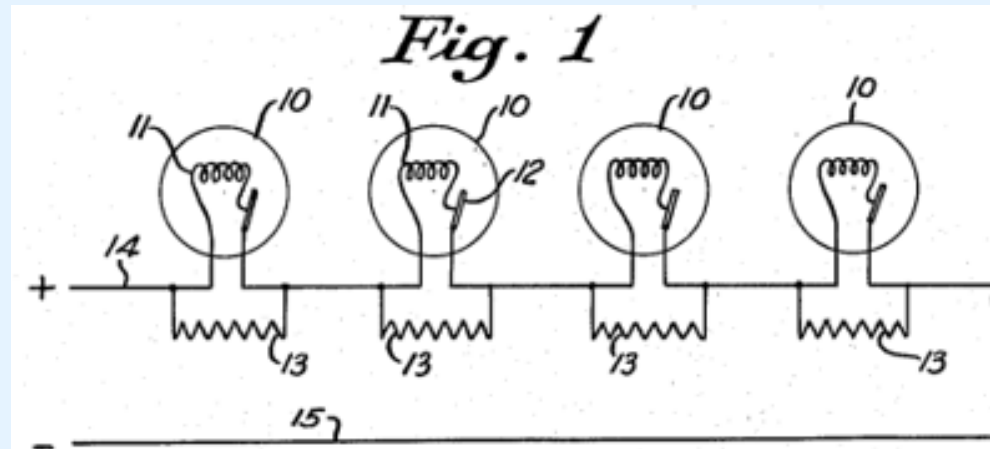
Claims 1, 9 are obvious over Fisherman in view of Callahan. **Pet. pgs.40, 45.**

Claim 1

1. A resistor bypass circuit for a series lighting circuit comprising a plurality of serially connected LED light sources and a bypass resistor being connected in parallel with at least one of the respective light sources, said bypass resistor being in circuit and conducting current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough and wherein said bypass resistor is capable of operating on a one hundred percent duty cycle.

Fisherman discloses:

A resistor bypass circuit for a series lighting circuit (**Fig. 1, '252 Pet. pg. 39**) comprising a plurality of serially connected ...light sources (**10, '252 Pet. pg. 40**) and a bypass resistor being connected in parallel with at least one of the respective light sources (**13, '252 Pet. pg. 40**), said bypass resistor being in circuit (**13 is connected to the circuit, '252 Pet. pg. 41**) and conducting current at all times when current is flowing through the circuit regardless of whether the ...light sources are conducting current therethrough (**If the lamp 10 of Fisherman, fails and is an open circuit, all of the current for the lamp 10 and resistor 13 flows through resistor 13, Schubert Dec. pg. 86, paragraph 4, Pet. Pg.41**) and wherein said bypass resistor is capable of operating on a one hundred percent duty cycle (**Since current is continuously passing through resistors 13, resistors 13 operate on a 100% duty cycle. [EX1013], pg. 43 Paragraph 3, pg. 79, paragraph 3, Pet. pg. 41**).



Fisherman discloses the claim elements of claim 1 but is silent regarding LEDs being the light source. **Pet. pgs. 39-42.**

Callahan teaches the advantages of LEDs over incandescent bulbs (**Callahan Para. 0003, Petition pg. 39**). It would have been obvious to a POSITA to use the teachings of Callahan regarding the advantages LEDs to Fisherman because LEDs provide improved power conservation, reliability, and more latitude of control over decorative lighting solutions in comparison to incandescent bulbs (**Callahan Para. 0003, Petition pg. 39**).

Claim 9 is the same as claim 1 and adds a limitation also taught by Callahan:

“further including an LED flashing light source which includes a flashing circuit which causes the entire light circuit to flash. **(Petition pgs 45-46)**”

GROUND 6 HOLLER IN VIEW OF CALLAHAN

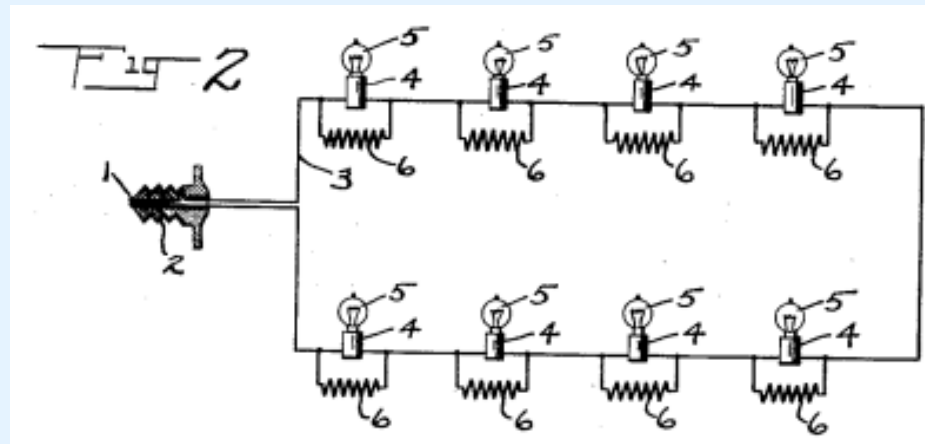
Claim 10 is obvious over Holler in view of Callahan. **Pet. pgs. 56-60.**

Claim 10

10. A resistor bypass circuit for a series lighting circuit comprising a plurality of serially connected LED light sources and a bypass resistor being connected in parallel with at least one of the respective light sources, said bypass resistor being in circuit and conducting current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough and wherein the resistance of the bypass resistor is equal to or greater than the inherent resistance of the light source to which the resistor is attached, thereby minimizing the burn out potential of other light sources in the light string.

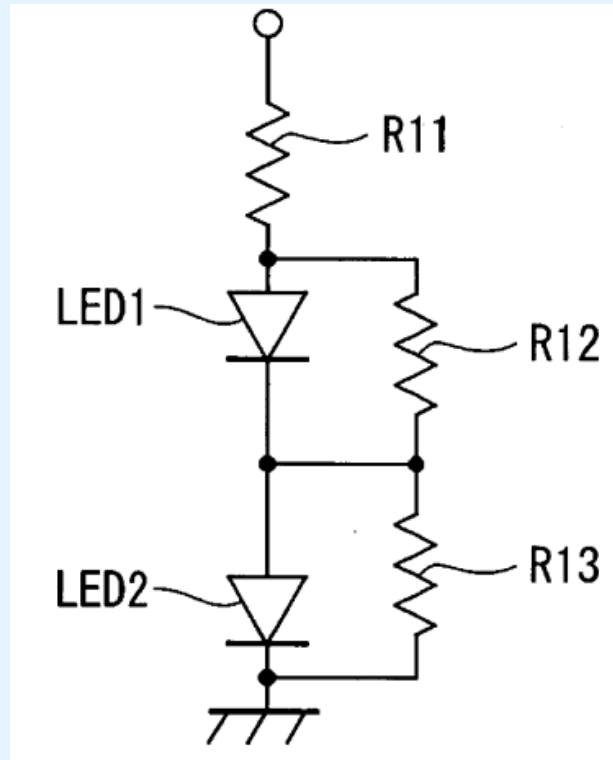
Holler discloses:

A resistor bypass circuit for a series lighting circuit (**Fig 2**) comprising a plurality of serially connected...light sources (**5**) and a bypass resistor being connected in parallel with at least one of the respective light sources (**6**), said bypass resistor being in circuit (**6 is connected in the circuit**) and conducting current at all times when current is flowing through the circuit regardless of whether the...light sources are conducting current therethrough (**Holler lines 51-56 states disabling one of the lamps will not result in the other lamps being extinguished, Pet. Pg. 32**) and wherein the resistance of the bypass resistor is equal to or greater than the inherent resistance of the light source to which the resistor is attached, thereby minimizing the burn out potential of other light sources in the light string (**addressed in ground 3 above, Petition Pgs. 56-60**).



Holler is silent regarding LEDs, but Callahan teaches the advantages of LEDs over incandescent bulbs (**Callahan Para. 0003, Petition pg. 57**). It would have been obvious to a POSITA to use the teachings of Callahan regarding the advantages LEDs to Fisherman because LEDs provide improved power conservation, reliability in comparison to incandescent bulbs (**Callahan Para. 0003, Petition pg. 57**).

GROUND 5 – CLAIM 2 OF '252 PATENT

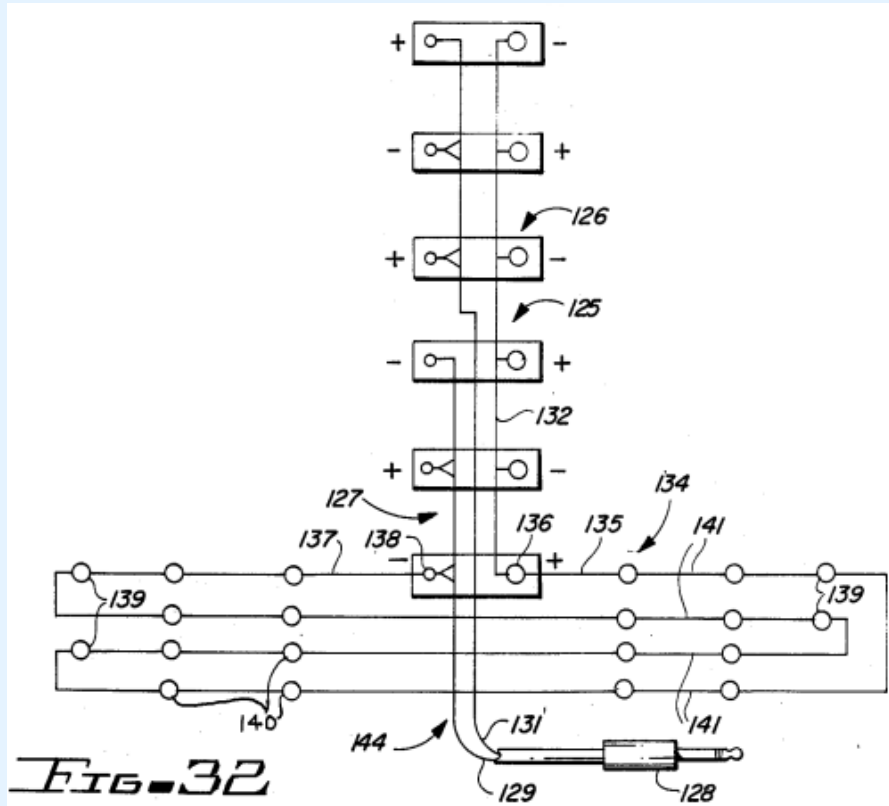


IPR2024-01258, EX1003, Fig. 3

2. The resistor bypass circuit of claim 1, where the circuit is series-parallel connected.

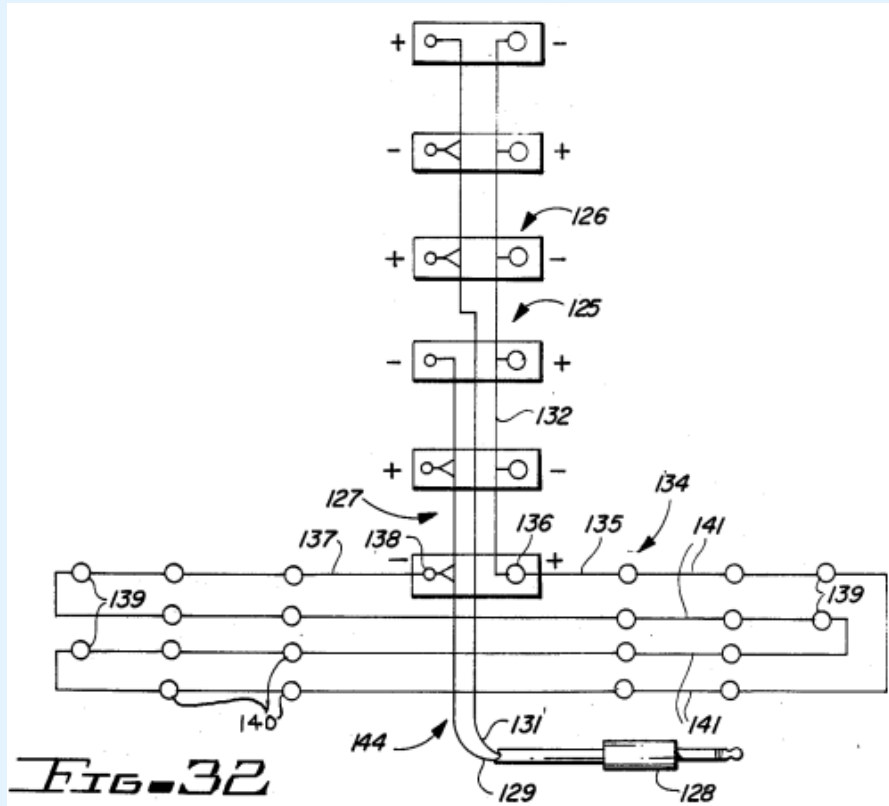
*IPR2024-01258, EX1001, Claim 2
(highlighting added unless otherwise noted)*

Inoue discloses a resistor bypass circuit.
Pet. Pg. 24-25, [EX1013] pgs. 35-37, 47-56.



IPR2024-01258, EX1007, Fig. 32

Smith discloses a series-parallel circuit.
 Pet. pgs. 47-49, [EX1013] pgs. 100-102, 39-42.



IPR2024-01258, EX1007, Fig. 32

Single power source plug 128 (yellow) supplies power strip or trunk line 126, 127 (blue) to power the series connected light string 141 (orange). [EX1007] Col. 22, L. 3-68, Col. 23, L. 1-8, [EX1013] pgs. 39-42.

WHY COMBINE TEACHINGS OF SMITH TO INOUE?

Petition states "the numerous record-supported advantages, set forth in Smith provide a clear motivation for use of the teachings of Smith as applied to Inoue, so as to enjoy the advantages set forth in Smith." Pet. p. 47.

"Record-Supported Advantages" means that the references themselves state the advantages and benefits of using the teachings of the references. Pet. 47.

For example, Abstract of Smith states:

1. Series-parallel enables more lights to be illuminated (improving the lengths of the string). [EX1007] Smith Abstract, L. 37, [EX1017], ¶71, 59. "[O]ne lighting string (one limb) includes 20 LED light sources." [EX1013] 40.
2. "with less power" [EX1007] Smith Abstract, L. 37-38. Incandescent bulbs consume "very significant amounts of electrical power." [EX1013] 41.
3. "for increasing the uniformity of illumination along the length of the string." [EX1007] Smith Abstract, 38, 39. [EX1017] 68. [EX1013] pg. 99.

PERMISSIBLE EXPANSION STATEMENTS OF MOTIVATION

Expert Declaration of Dr. Schubert [EX1013] pgs. 99-100 and Reply Declaration of Dr. Schubert [EX1017] both permissibly expand the statement of motivation in Petition.

Petition – Numerous Record Supported advantages in Smith are clear motivation to use teaching of Smith as applied to Inoue to enjoy the advantages set forth in Smith. Pet. 47.

DR. SCHUBERT DECLARATIONS – BASED ON DISCLOSURES IN SMITH

Dr. Schubert states the motivation for Inoue, as modified by Smith, for claim 2:

1. "series-parallel increases the uniformity of illumination" [EX1013] p. 99, [EX1017] ¶68, [EX1007] Abstract, L. 38. Reply to POR, pg. 7.
2. "minimizes light outage due to bulb burnout" [EX1017] ¶68, [EX1007] Abstract, L. 39-40. Reply to POR, pg. 7.

"Based on these specific advantages, a POSA familiar with the Inoue prior art would be motivated to adopt Smith's series-parallel lighting circuit configuration to increase uniformity of illumination and minimize light outage due to bulb burnout" [EX1017] ¶68.

DECLARATIONS OF DR. SCHUBERT [EX1013], [EX1017]

Dr. Schubert states the references, Inoue and Smith, both disclose series-parallel circuit configurations.

1. Inoue shows LEDs connected in series and resistors connected in parallel. [EX1013] p. 101. Dr. Schubert states this is a series-parallel connected circuit. [EX1013] pgs. 98-100, [EX1017] ¶20.
2. Smith shows series-parallel connected circuit. A "trunk line" (power strip) supplies power from a single power source to multiple limb lines (series connected LEDs) that are connected to the trunk line in parallel with other limb lines. [EX1007] L. 3-68, [EX1017] ¶23. Hence, series-parallel connection.

DR. SCHUBERT'S STATEMENTS OF MOTIVATION ARE A PERMISSIBLE EXTENSION OF MOTIVATION STATED IN PETITION.

Petition, 47

"Numerous record supported advantages set forth in Smith, as applied to Inoue, provide a clear motivation for use of teachings of Smith, as applied to Inoue, so as to enjoy the advantages set forth in Smith."

Expert Declaration, [EX1013]

"A POSA would be motivated to add the advanced functionality of Smith into the light circuits of Inoue." [EX1013] p. 99.

"[T]he combination of Inoue with Smith would broaden the capabilities of the LED lighting circuits disclosed by Inoue to include the advanced LED functionalities of Smith." [EX1013] p. 100.

CONTINUED

Dr. Schubert was not deposed and his statements were not challenged. As such, Dr. Schubert's statements of motivation and why the references can be combined are unrebutted.

EXPERT DECLARATION STATES THESE ADVANTAGES OF SMITH

Advantages and Benefits of Smith

"[V]arious AC and DC control circuits are provided for driving light emitting diodes for
driving the light emitting diodes...
blinking effects...
alternating between two colors...
alternating between three colors...
improving the length of the string and uniformity of intensity of illumination and the like."

[EX1013] pg. 99.

Motivation

Statements of motivation Pet. 47, [EX1013] pgs. 99-100, in combination with benefits of combination [EX1013 pg. 99 provide the reasons for combining Inoue and Smith.

GROUND 5 – CLAIM 3 OF '252 PATENT [EX1001]

3. The resistor bypass circuit of claim 1 wherein at least one of the light sources is a semiconductor providing a twinkling effect, and wherein the semiconductor light source utilizes electronic circuits that control the flashing rate of the light source. [EX1001] Col. 3-4 (underlining added).

DR. SCHUBERT EXPERT DECLARATION [EX1013] 102

Where are the limitations of claim 3 shown in the references?

“[V]arious AC and DC control circuits are provided for driving the light-emitting diodes for blinking effects....” [EX1007] Abstract, L 22-24.

Petition identifies circuitry for blinking:

"Fig. 39 of Smith illustrates circuitry for creating blinking and switching." Pet. 49, [EX1007] Col. 33, L. 32-67, Col. 7, L. 6-9, Col. 10, L. 3-4, Col. 25, L. 24-68, Col. 26, L. 1-7. [EX1013] pg. 102.

WHY USE BLINKING OR FLASHING?

Blinking inherently provides attention and decorative value to the lighting circuit.
(Petitioner's Reply to POR) pg. 9

CLAIM 4

4. The resistor bypass circuit of claim 1, wherein the LED light source uses 0.20 watts or less. [EX1001] Col. 14, L. 4-5.

It would have been obvious to a POSA to use LEDs having 0.20 watts or less as a matter of design choice. Nothing in record or known in art suggests this range produces unexpected results. Pet. 50.

Low power LEDs have low power consumption and a POSA would be motivated to use low power LEDs over incandescents and to save energy costs. [EX1013] 103-105. This statement by Dr. Schubert was not challenged and is unrebutted evidence on the record.

GROUND 5 – CLAIM 5

5. The resistor bypass circuit of claim 1, at least one of the light sources is a semiconductor light source providing a twinkling effect. [EX1001] Col. 14, L. 6-8.

Both Inoue [EX1003] Abstract L. 2 and Smith [EX1007] Abstract L. 2 use LEDs. LEDs are semiconductors. [EX1007] Col. 10, L. 56-57, [EX1013] pg. 105, 102.

Smith discloses blinking. [EX1007] Abstract L. 23-24., [EX1013] pg. 105, 102.

Blinking and flashing may be used interchangeably. [EX1013] Footnotes 32-33, p. 100, [EX1013] 102.

Variable duty cycle controllers are used to provide a desired number of switching signals which includes flashing rate. Smith discusses both AC and DC power sources that can be switched “extremely fast” due to the solid state nature of the LEDs. Pet. pgs. 51-52.

CLAIM 6

6. The resistor bypass circuit of claim 1, at least one of the light sources is a semiconductor light source utilizing electronic circuits that control the flashing rate of the light source, which would only affect the individual lighting element as the resistive bypass would allow current to continue to flow in remaining lighting elements in the series circuit.

Smith states that "various AC and DC control circuits are provided for driving light emitting diodes, for blinking effects..." [[EX1007] Abstract, L. 22-24, [EX1013] 106

"It would be apparent to a POSA that Smith's statement, as quoted above, would be applicable to an individual LED, and individual group of LEDs, multiple groups of LEDs, or the entire string of LEDs." [EX1013] 106

Dr. Schubert was not deposed and his statements are unrebutted. As such, these statements stand.

CLAIM 8

8. The resistor bypass circuit of claim 1 being utilized in AC or DC circuits powered form (sic) a power source selected from the list consisting of batteries, step down transformers, AC utility power, or converters from AC to DC or DC to AC power, pulsed DC, and filtered or unfiltered DC, or partially filtered AC. [EX1001] Col. 14, L. 22-27. Reply to POR, pg. 12.

Inoue itself meets the Markush Group claim limitation by disclosing a battery as a power supply. [EX1013] 108, [EX1003] [0030]. Inoue clearly provides a suggestion or teaching. Reply to POR, pgs. 6-18.

Smith discloses both AC and DC power sources. Pet. 54 citing [EX1007] Abstract, Col. 30, 33-39, Col. 36, 19-68, Col. 40, 52-53, Col. 39, 10-11. Reply to POR, pgs. 6-18.

Inoue requires a power source to operate. Pet. pgs. 54-55.

CLAIM 9

9. A resistor bypass circuit for a series lighting circuit comprising a plurality of serially connected LED light sources and a bypass resistor being connected in parallel with at least one of the respective light sources, said bypass resistor being in circuit and conducting current at all times when current is flowing through the circuit regardless of whether the LED light sources are conducting current therethrough and wherein said bypass resistor is capable operating on a one hundred percent duty cycle further including an LED flashing light source which includes a flashing circuit which causes the entire light circuit to flash. (Underlining Added.) [EX1001] Col. 14, L. 28-38.

Claim 9 is the same as claim 1 but includes and additional clause:

"further including an LED flashing light source which includes a flashing circuit which causes the entire light circuit to flash." [EX1001] Col. 14, L. 36-38, Reply to POR, pg. 11.

"It would be apparent to a POSA that Smith's statement, as quoted above, would be applicable to an individual LED, and individual group of LEDs, multiple groups of LEDs, or the entire string of LEDs." [EX1013] 106, Reply to POR, pg. 11.

Dr. Schubert was not deposed and his statements were unrebutted. As such, these statements stand.

WHAT IS A PERMISSIBLE EXPANSION OF AN ARGUMENT PREVIOUSLY MADE UNDER THE PTAB RULES?

Rembrandt Diagnostics LP v. Alere, Inc., 76 F.4th 1376 (Fed. Cir. 2023). Reply to POR, pgs. 6-18.

Petitioner in an IPR must identify with particularity the evidence that supports the grounds for the challenge to each claim... quoting 35 USC § 312(a)(3); 37 CFR § 42.23(b) Id 1383.

General rule is that Petitioner can reply to arguments raised by opposing party or Board as long as no new evidence Id. at 1383 and no new theories of unpatentability are presented. Rembrandt, Id. at 1385.

REMBRANDT DIAGNOSTICS V. ALERE, INC. ID.

In several cases the Court declined consideration of arguments based on new theories of unpatentability. Reply to POR, pgs. 6-18.

Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd., 821 F.3d 1359 (Fed. Cir. 2016)

The Petitioner first argued a single reference disclosed a limitation and then later argued, in a reply, that there was motivation to combine references to get limitation. Federal circuit said this was a new theory of invalidity. Rembrandt at 1383.

Henny Penny Corp. v. Frymaster LLC, 938 F.3d 1324 (Fed. Cir. 2019)

- Argued for first time that reference disclosed a limitation. Rembrandt at 1383.

Wasica Fin. GmbH v. Cont'l Auto. Sys., Inc., 853 F.3d 1358 (Fed. Cir. 2017)

- Entirely new theory of prima facie obviousness that was absent from Petition. Rembrandt at 1383.

Ariosa Diagnostics v. Verinata Health, Inc., 805 F.3d 1359, 1367 (Fed. Cir. 2015)

- In response to argument to incompatibility of reference, Petitioner switched theories. Petitioner replied on new embodiment of reference. Rembrandt at 1383.

Apple v. Andrea Electronics, 949 F.3d 697 (Fed. Cir. 2020)

- Arguments relied on new embodiment of reference which is a new theory of unpatentability. Rembrandt at 1384.

REMBRANDT V. ALERE, ID. AT 1384

“[A] reply may be proper if it is responsive and simply expands on previously made arguments.” Reply to POR, pgs. 12-18.

Erickson, 901 F.3d at 381 – Petitioner merely expanded on a previously argued rational as to why prior art disclosures are insubstantially distinct from the challenged claims.
Board should not parse arguments on reply with too fine a filter. Id. at 380. Rembrandt at 1385.

Chamberlain Grp. V. One World Tech Inc., 944 F.3d 919 (Fed. Cir. 2019)

“Parties are not barred from elaborating on their arguments on issues previously raised.”
Rembrandt at 1384.

Belden Inc. v. Berk-Tek LLC, 805 F.3d 1064, 1081-82 (Fed. Cir. 2015)

“[R]ebuttal evidence should be response such that it is offered ‘to explain, repel, counteract, or disprove the evidence of the adverse party.’” Rembrandt at 1384.

CONTINUATION: “[A] reply may be proper if it is responsive and simply expands on previously made arguments.”

Rembrandt, Id. made “assertions of no motivation to add multiple test strips or an expectation of success.” Rembrandt at 1385. (underlining added) Reply to POR, pgs. 6-18.

By “discussing time and cost savings as a form of efficiency, it also properly expands on and is a fair extension of its previously raised efficiency argument.” (Underlining Added.) Rembrandt at 1385. Reply to POR, pgs. 6-18.

“Alere cited previously unidentified disclosures of Mackay and Lee-Own for teaching the benefits of removing wicking material.” Rembrandt at 1385. (Underlining Added.) Reply to POR, pgs. 6-18.

Here, the Federal Circuit has stated that the benefits recited in the reference was not new evidence and was a valid argument for motivation. Reply to POR, pg. 14.

CONTINUATION: “[A] reply may be proper if it is responsive and simply expands on previously made arguments.”

“Alere’s reply argument elaborates on the motivation-to-combine argument that Alere made in its Petition – that there were benefits known in the art of removing wicking material – by relying on Mackay and Lee-Own. See Erickson, 901 F.3d at 381.” Rembrandt at 1385. Reply to POR, pgs. 6-18.

“Alere’s reply argument involves the same ‘legal ground’ based on the ‘same legal argument’ – the motivation to remove Tyding’s wicking material and reverse its orientation. Id. at 706.” Rembrandt at 1385. Reply to POR, pgs. 6-18.

PRESENT CASE IS SIMILAR TO REMBRANDT

Claims 2-6, 8 and 9 (Ground 5) – Inoue and Smith

Inoue and Smith teach the benefits of the combination [EX1007] Abstract, L. 37-39, 22-24, 32, 35-36, and, hence, motivation to combine Inoue and Smith. Petition p. 47 states that there are numerous record supported advantages set forth in Smith to combine the references. Reply to POR, pgs. 6-18.

Claim 2

Smith teaches series-parallel connections that provide uniform illumination. [EX1007] L. 32,38. Fig. 32 of Smith illustrates how to connect series circuits, such as Inoue, in a series-parallel connection. [EX1007] Fig. 32, Col. 22, L. 3-68. Reply to POR, pgs. 6-9.

Claims 3, 5, 6, and 9

Smith teaches blinking as claimed in these claims and all of the beneficial ways of blinking, such as blinking rate, individual lights blinking, alternating blinking, color blinking, whole string blinking. [EX1013] 102, 106. [EX1007] Abstract, 23-24, Col. 33, L. 32-67. Reply to POR, pgs. 9-11.

Petitioner's Reply relies upon the same legal arguments and same references and embodiments set forth in Petition pgs. 46-55 and Expert Declaration [EX1013], pgs. 98-111.

Claim 4

LEDs of .2 watts or less are a matter of design choice. Pet. 50. Lower power saves energy costs [EX1013] 103-104. Reply to POR, pg. 11.

Claim 8

Inoue has suggestion or teaching of power sources (car battery) [EX1003] [0030]. And Smith discloses AC and DC power sources [EX1007] Col. 30, 33-39, Col. 36, 19-68, Col. 40, 52-53, Col. 39, 10-11. Reply to POR, pg. 12.

SIMILARITY OF REMBRANDT AND PRESENT CASE

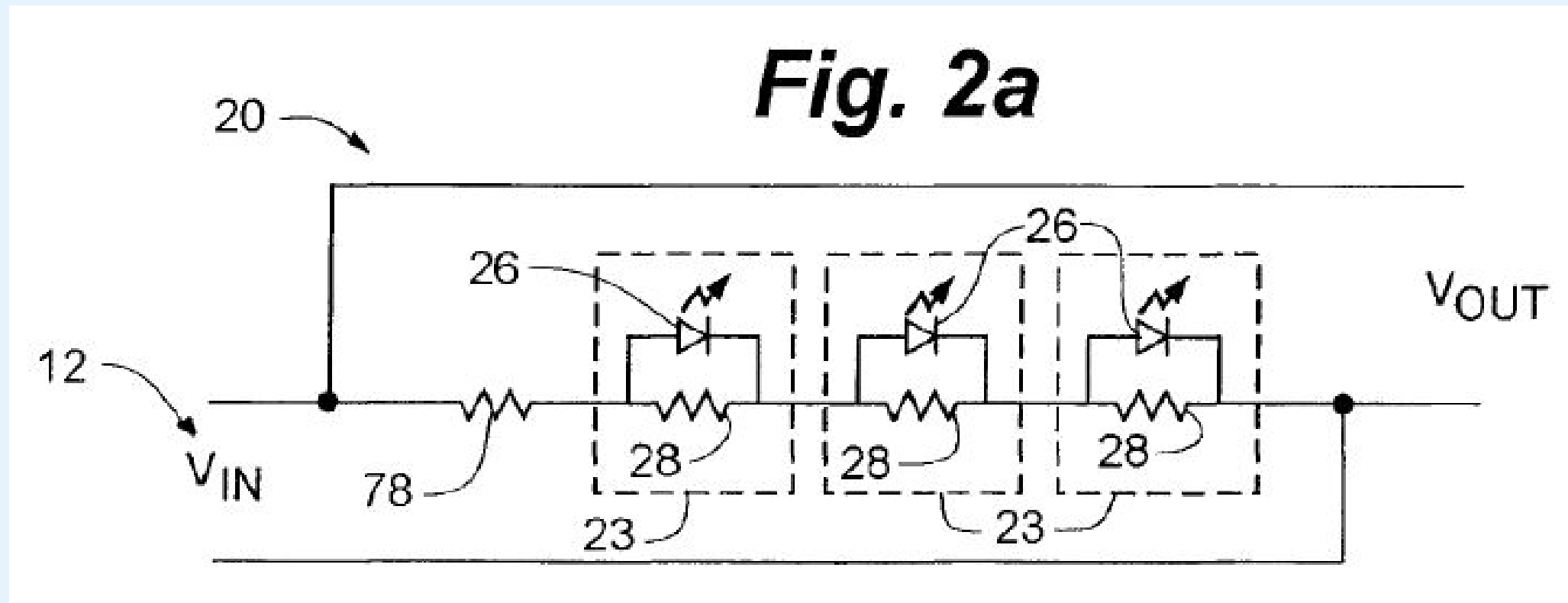
- Both have a statement of motivation in Petition. Reply to POR, pgs. 6-18.
- Both expand the statement of motivation
 - Rembrandt – Efficiency → Time and Cost Savings. Rembrandt at 1385.
 - Present Case – Record Supported Advantages → Broaden capabilities of Inoue to include advanced LED functionalities. [EX1013] pg. 100.
Uniformity of illumination, C1.2 [EX1013] pg. 99, 102.
Selective blinking, C1.6, C1.9 [EX1013] pg. 103, 105, 106.
Flashing rate, C1.3, C1.6 [EX1007] Col. 55, L. 21-25.
Energy savings from low power, C1.4 [EX1013] pgs. 103-105, Pet. 50-51.
Reply to POR, pgs. 6-18.

YU (EX1010) IS A PROPER ANTICIPATORY REFERENCE (PET., 65-71; PET. REPLY, 18-22)

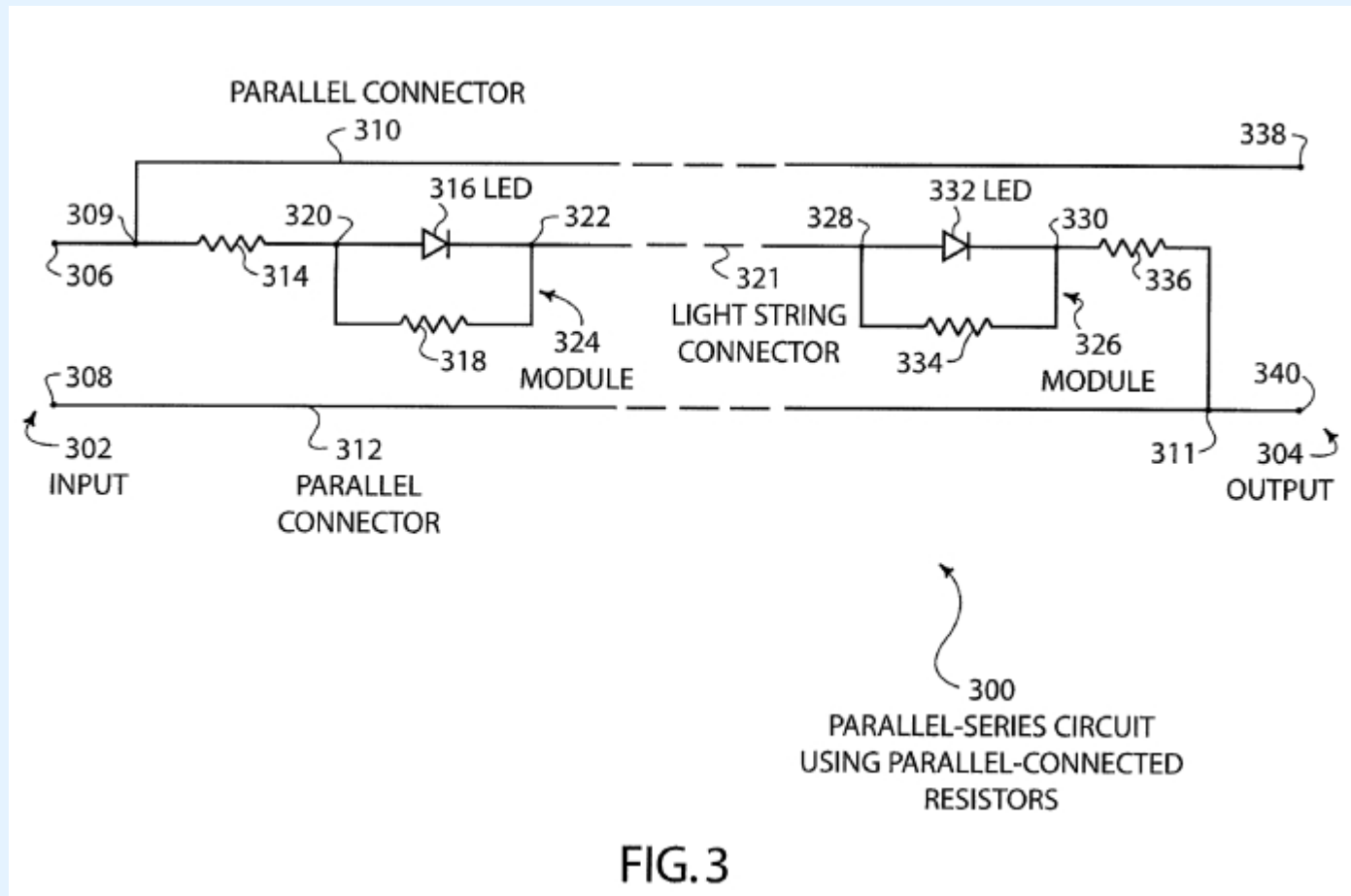
YU (EX1010) DISCLOSES THE INVENTION OF '252 (EX1001) & '794 ('794 IPR EX1001)

- The invention of claims 1, 2, and 10 of '252 (EX1001) are disclosed by Yu (EX1010) (Pet., 65-70)
- The invention of claims 1, 2, 10 and 15 of '794 ('794 IPR EX1001) are disclosed by Yu (EX1010) ('794 IPR Pet., 66-73)
- Patent Owner did not address the merits of the disclosed anticipation of either '252 or '794 by Yu (Pet. Reply, 18; '794 IPR Pet. Reply, 18; *see* record generally)
- Patent Owner only argues that the declarations of David Altamura submitted during prosecution of '252 (EX1002, 110-11, 122-23) and '794 (EX2005) remove Yu from consideration as prior art (POR, 34-35)

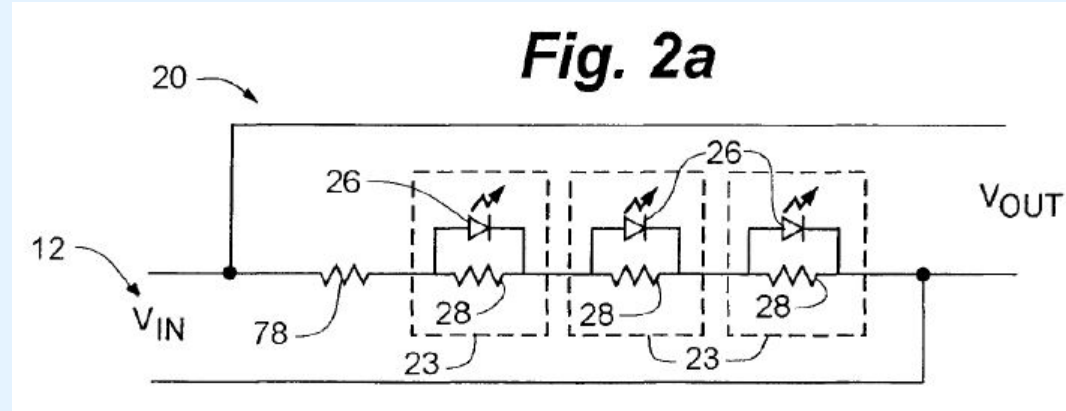
ALTAMURA '252 (EX1001) & '794 ('794 IPR EX1001) DISCLOSURE - FIGURE 2A



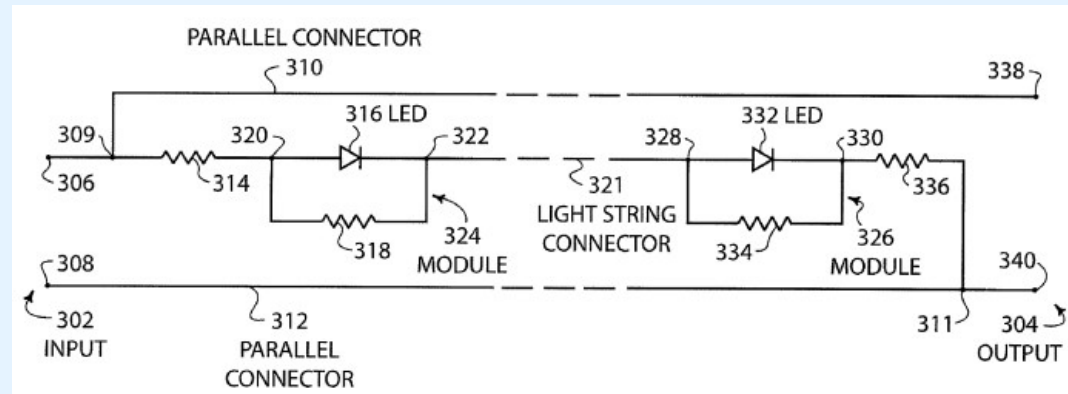
YU (EX1010) DISCLOSURE - FIGURE 3



Altamura (EX1001, '794 IPR EX1001)
Fig. 2a



Yu (EX1010) Fig. 3



PATENT OWNER ARGUES ALTAMURA DECLARATIONS REMOVE YU _(EX1010) FROM CONSIDERATION AS PRIOR ART _(POR, 34-35)

- PO argues the ‘794 Altamura Declaration (EX2005) is sufficient evidence on its own for reduction to practice prior to the July 31, 2006, filing date of Yu under the rule of reason (POR, 34)
- PO additionally argues it has established its burden of production to remove Yu from consideration as prior art (POR, 34-35)

THE BOARD INVITES PARTIES TO PROVIDE FURTHER BRIEFING TO DETERMINE IF MR. ALTAMURA'S DECLARATION TESTIMONY IS SUFFICIENTLY CORROBORATED (DOI, 42-43; PET. REPLY, 20)

- Board asserted inventor testimonial requires independent evidence (Brown v. Barbacid, 276 F.3d 1327, 1335 (Fed Circ. 2002)) to prevent fraud (Kridl v. McCormick, 105 F.3d 1446, 1450 (Fed. Cor. 1997)) (DOI, 42-43)
- Board acknowledges that without independent corroboration there would be temptation to perjury where the adverse party would be precluded from rebuttal (Price v. Symsek, 988 F.2d 1187, 1194-95 (Fed. Cir. 1993)) (DOI, 43)

CONTINUED

- Board further acknowledges that while a rule of reason exists (Price, 1195), the rule does not dispense with requirements for some evidence of independent corroboration (Coleman v. Dines, 754 F.2d 353, 360 (Fed. Cir. 1985)) (DOI, 43)
- Board held that aside from declaration testimony and accompanying exhibits of Mr. Altamura, PO does not offer any additional evidence to establish reduction to practice (DOI, 42)
- Consequently, the Board invited the parties to provide further briefing on the issue (DOI, 43)

CONTINUED

- Despite this invitation, PO submitted the same deficient arguments in its POR that were submitted in the POPR (EX1018; Pet. Reply, 19; POR, 30-35; POPR, 30-34; *see* DOI 42-43)
- As PO provided no additional corroborative evidence, Mr. Altamura's Declarations, on their own, fail to establish a conception date prior to the July 31, 2006, filing date of Yu (Pet. Reply, 20)

PATENT OWNER HAS NOT MET ITS BURDEN OF PRODUCTION TO REMOVE YU FROM CONSIDERATION AS PRIOR ART (PET. REPLY, 20)

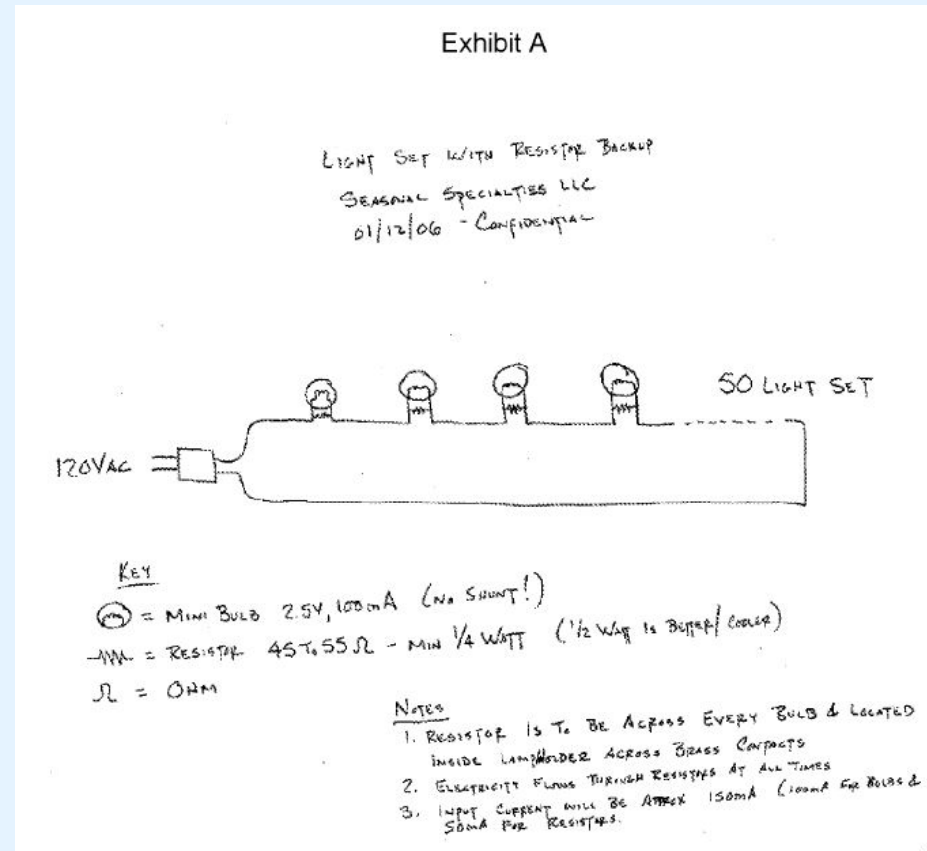
- PO provided no evidence that either the ‘252 (EX1002, 110-11, 122-23) or ‘794 (EX2005) Declarations of Mr. Altamura were considered by the Examiner during patent prosecution of either patent (Pet. Reply, 20; *see, generally*, POR, 30-35)
- Accordingly, consideration of the Altamura Declarations are necessarily considered *de novo* (Pet. Reply, 20)
- PO’s failure to provide corroborative evidence is fatal to its contention Yu (EX1010) is not prior art (Pet. Reply, 20)

EVEN IF TAKEN AT FACE VALUE, THE DECLARATIONS OF MR. ALTAMURA ARE DEFICIENT ON THEIR OWN

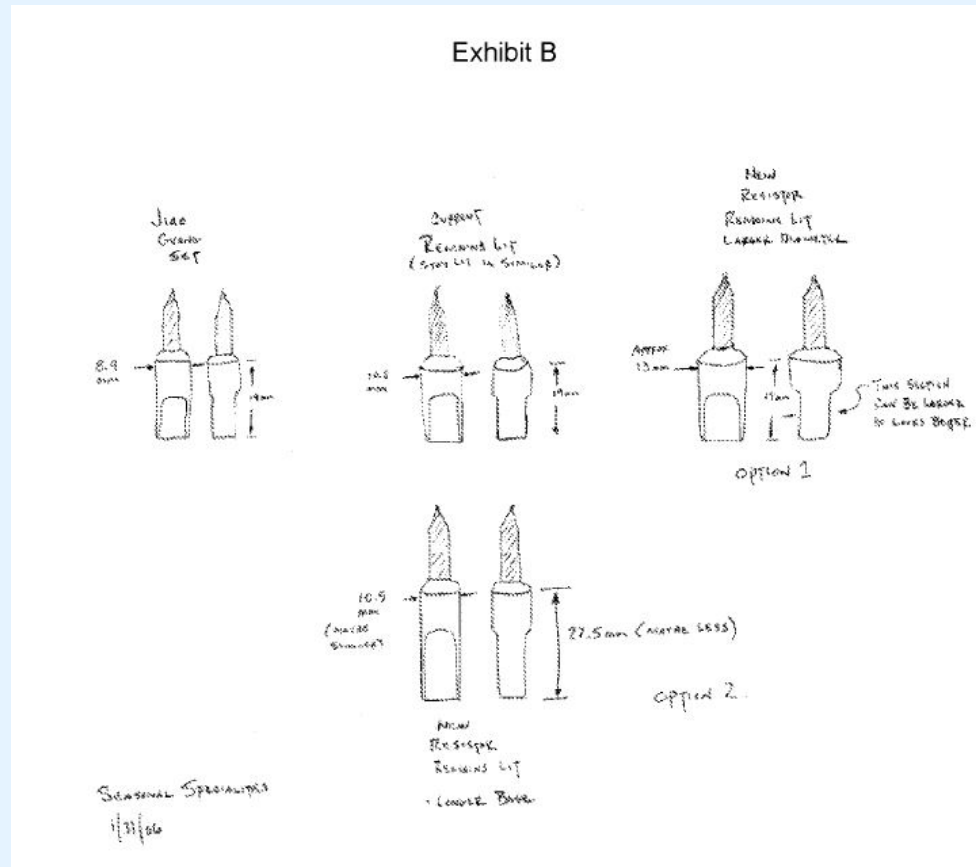
(PET. REPLY, 20-21)

- Notably, the ‘252 Declaration (EX1002, 110-11, 122-23) was missing Exhibits A-D cited in the ‘252 Declaration (Pet., 71; Pet. Reply, 21)
- Exhibits A-D submitted with the ‘794 Declaration (EX2005) are dated, but lack either a creator or witness signature, simply a note stating “Seasonal Specialties” next to the date (Pet. Reply, 20)
- Exhibits A-D (EX2005) further show light sources as incandescent mini-bulbs and not LEDs (Pet. Reply, 20; EX1017, ¶¶78-79)
- Thus, Mr. Altamura’s Declarations fail to meet the requirements of 37 C.F.R. § 1.131(b) (Pet. Reply, 20-21)

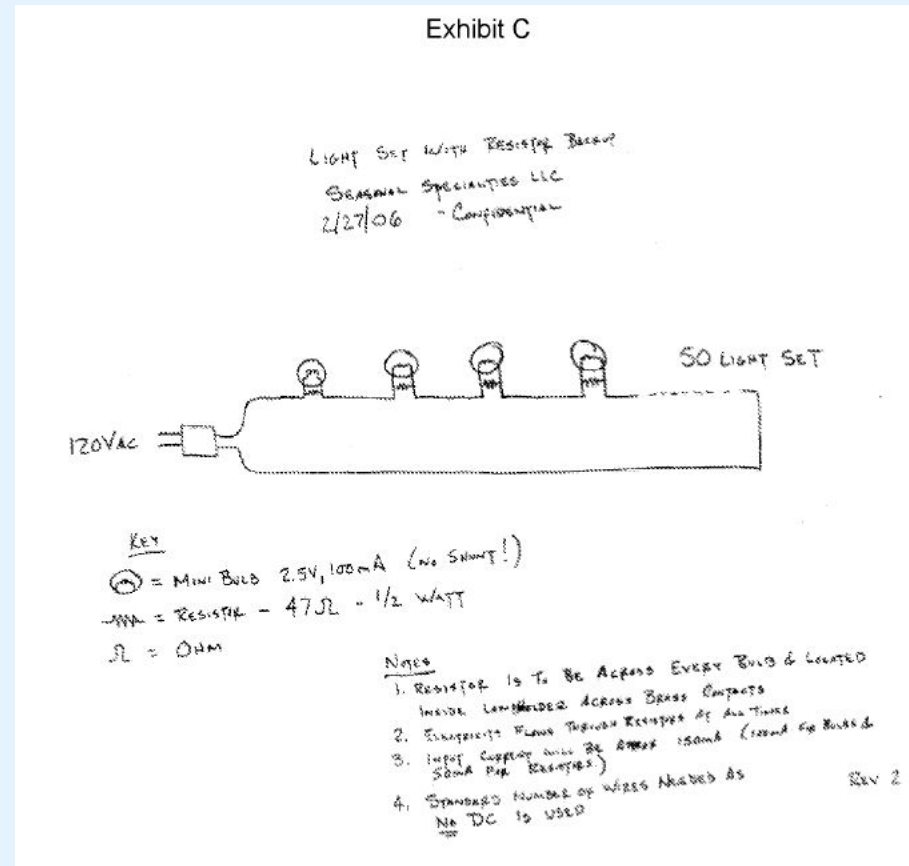
'794 ALTAMURA DECLARATION (EX2005) EXHIBIT A



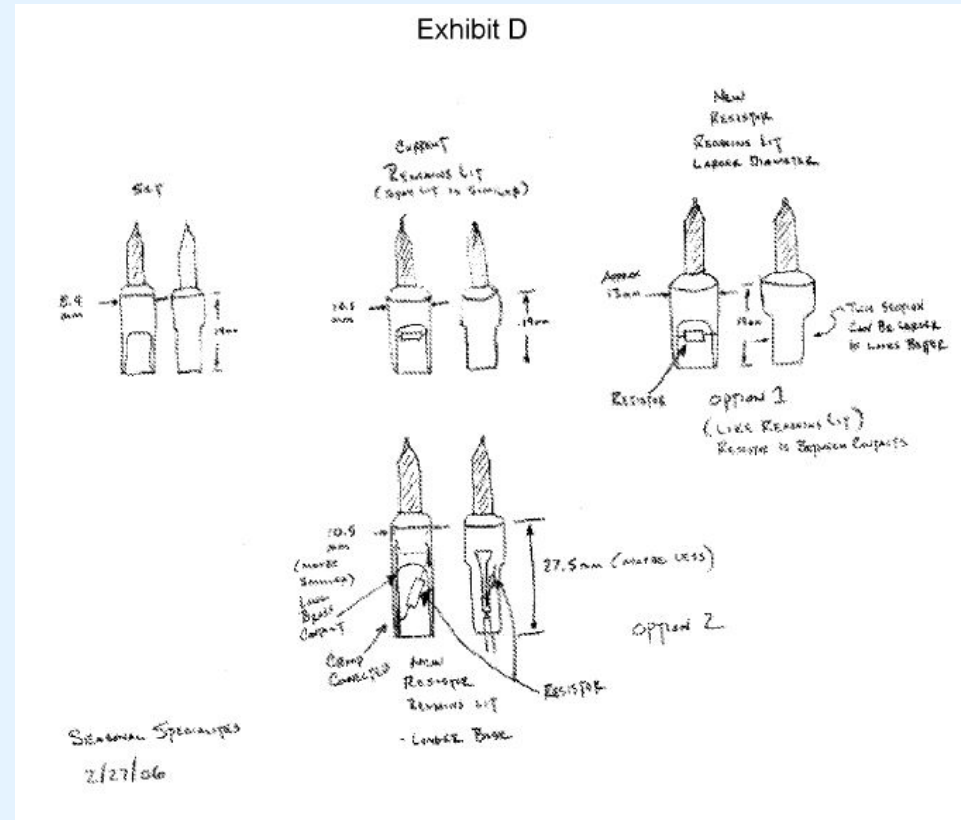
'794 ALTAMURA DECLARATION (EX2005) EXHIBIT B



'794 ALTAMURA DECLARATION (EX2005) EXHIBIT C



'794 ALTAMURA DECLARATION (EX2005) EXHIBIT D



MR. ALTAMURA'S DECLARATION CHANGED WITH TIME AND CIRCUMSTANCES (EX1019; PET. REPLY, 21-22)

45. At the time, in 2005 ~~and early 2006~~, most light strings were still using incandescent ~~bulb~~elements since they were much less expensive than LED elements, but I was working on a resistor by-pass circuit for both LED and incandescent elements. ~~Both LED and incandescent elements have~~simultaneously. I built LED and incandescent prototype light strings at the same ~~failure problem which can benefit similarly with~~time. It was not known to me, until building the LED prototype, that the LED prototype would function, because it was unknown whether sufficient voltage and current would be applied across the LED if a solution, such as described bypass resistor was ~~in the above patent application parallel.~~

CONTINUED (EX1019; PET. REPLY, 21-22)

~~67.~~ I documented in writing further refinements of this bypass concept on Jan 31, 2006 and Feb 27, 2006, showing an illumination element having a bypass resistor in the base of a mini-lamp socket. The socket is used to hold either incandescent or LED elements. See Exhibits B, C and D. I built a prototype of the subject matter of Exhibits A, B, C and D at least as early as 15 Jan 2006, in order to have it reviewed by a customer.

~~78.~~ I ~~built~~ personally hand made a prototype ~~of the subject matter of Exhibits A, B, C and D in~~ the at least as early spring of as 15 Jan 2006, to further test the concept of my invention in order ~~to have it reviewed by a potential customer. Such review would normally occur in March/April of every year~~ the above application.

OBJECTIVE INDICIA DO NOT SUPPORT PATENTABILITY

(PET. REPLY, 22-26)

OBJECTIVE INDICIA DO NOT SUPPORT PATENTABILITY (PET. REPLY, 22-23)

- Upon filing of the Petition, the burden of production shifted to PO to provide credible evidence supporting objective indicia (Dynamic Drinkware, LLC v. Nat'l Graphics, Inc., 800 F.3d 1375, 1379-1380 (Fed. Cir. 2015)) (Pet. Reply, 23)
- The Board invited the parties to provide further briefing on the issue (DOI, 40; Pet. Reply, 23)
- The POR offers the same conclusory attorney argument for objective indicia the Board already rejected at the institution stage (Pet. Reply, 23, *see* DOI, 38-40)
- The Federal Circuit has rejected such conclusory testimony (*see e.g.*, Bosch Auto. Serv. Sol., LLC v. Matal, 878 F.3d 1027, 1037 (Fed. Cir. 2017)) (Pet. Reply, 23)

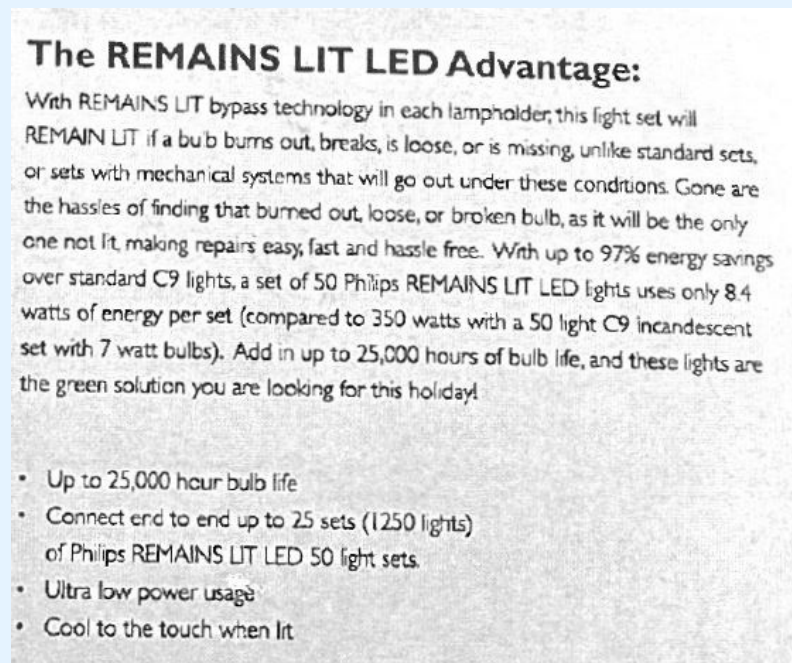
PATENT OWNER FAILED TO PROVIDE EVIDENCE ESTABLISHING COMMERCIAL SUCCESS (PET. REPLY, 23)

- PO's sole evidentiary offer is Interrogatory Response #4 (EX2011, 19), which contains the bare assertion "Seasonal's products ... have been commercially successful" (Pet. Reply, 23)
- PO provided no factual evidence of sales figures, market share, revenue, or other objective metrics (Pet. Reply, 23; *see* POR, 39-41)
- Thus, PO has failed to meet its burden of production (Pet. Reply, 23)

PRESUMPTION OF NEXUS IS NOT APPROPRIATE HERE (PET. REPLY, 24)

- PO incorrectly states the law alleging if PO's product embodies the challenged claims and is coextensive with them, commercial success is presumed (POR, 40) citing *Polaris Indus. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed. Cir. 2018) (Pet. Reply, 24)
- This is wrong, *Polaris* at 1072 holds that a nexus may be presumed—there is no presumption of commercial success (Pet. Reply, 24)
- Here, there is no presumption of nexus because PO's commercial product combines multiple features beyond those claimed in the patent (*see Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373-74 (Fed. Cir. 2019)) (Pet. Reply, 24)

PO'S OWN MARKETING MATERIALS (EX1021) PROMOTES MULTIPLE FEATURES NOT CLAIMED IN THE PATENT, SO IT IS NOT CO-EXTENSIVE (PET. REPLY, 24)



THERE IS NO EVIDENCE OF NEXUS (PET. REPLY, 24-25)

- Without co-extensiveness, a legally sufficient relationship between that which is patented and that which is sold must be shown (Polaris at 1072) (Pet. Reply, 24)
- Ultimately, the patentee bears the burden of showing that a nexus exists (WMS Gaming, Inc. v Int'l Game Tech, 184 F.3d 1339, 1359 (Fed. Cir. 1999)) (Pet. Reply, 24-25)

PATENT OWNER FAILED TO DEMONSTRATE LONG-FELT, UNMET NEED (PET. REPLY, 25)

- PO relies solely on the Interrogatory Answers of EX2011 as supporting evidence of long-felt need (POR, 41-42; Pet. Reply, 25)
- EX2011 is not evidence of need, it is an interrogatory response filed in district court containing attorney argument (Pet. Reply, 25)
- The PO is required to submit actual evidence of long-felt need as opposed to argument (In re Kahn, 441 F.3d 977, 990-91 (Fed. Cir. 2006)) (Pet. Reply, 25)

CONTINUED

- To the extent PO's unsupported attorney argument is considered for long felt problems remaining with circuit bypasses, those alleged problems were solved by the prior art (*see* EX1004, 1:387-58; EX1008, 2:22-32; Ex1010, ¶0016; *see also* EX1013, pp. 37-38) (Pet. Reply, 25)
- Where prior art addressed the alleged problem, no long-felt need exists (Geo. M. Martin Co. v. All. Machine Systems Int'l LLC, 618 F.3d 1294, 1305 (ed. Cir. 2010)) (Pet. Reply, 25)

EVIDENCE OF SIMULTANEOUS INVENTION FURTHER DEMONSTRATES OBVIOUSNESS (PET. REPLY, 25-26)

- Yu (EX1010) was filed on July 31, 2006, before the challenged patent's December 22, 2006 priority date demonstrating independent simultaneous adoption of the claimed resistor bypass feature (Pet. Reply, 26)
- This record evidence of Yu demonstrates independent, simultaneous invention that further confirms objective evidence of obviousness (Pet. Reply, 25-26)