UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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JIAWEI TECHNOLOGY (HK) LTD., JIAWEI TECHNOLOGY (USA) LTD., SHENZHEN JIAWEI PHOTOVOLTAIC LIGHTING CO., LTD., ATICO INTERNATIONAL (ASIA) LTD., ATICO INTERNATIONAL USA, INC., CHIEN LUEN INDUSTRIES CO., LTD., INC. (SHIEN LUEN FLORIDA), CHIEN LUEN INDUSTRIES CO., LTD., INC. (SHIEN LUEN CHINA), COLEMAN CABLE, LLC, NATURE'S MARK, RITE AID CORP., SMART SOLAR, INC., AND TEST RITE PRODUCTS CORP.
Petitioner,

v.

SIMON NICHOLAS RICHMOND
Patent Owner.

_____

Case No. IPR2014-00938
Patent 7,429,827

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**PETITIONER'S NOTICE OF FILING DEMONSTRATIVE EXHIBITS**

Attached please find Petitioner's Demonstrative Exhibits to be used at the trial hearing on September 21, 2015 in regard to IPR2014-00935, IPR2014-00936 and IPR2014-00938.

Respectfully submitted,

**DENTONS US LLP**

Dated: September 18, 2015

/Mark C. Nelson/

Mark C. Nelson
Reg. No. 43,830
Lissi Mojica
Reg. No. 63,421
Kevin Greenleaf
Reg. No. 64,062
Daniel Valenzuela
Reg. No. 69,027

233 South Wacker Drive
Suite 7800
Chicago, IL 60606-6306

## CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the PETITIONER'S NOTICE OF FILING DEMONSTRATIVE EXHIBITS for *Inter Partes* Review of U.S. Patent No. 7,429,827 was served on the Counsel for the patent owner via email to these email addresses:

tfshiells@shiellslaw.com

admin@shiellslaw.com

marcusb@tlpmb.com

Respectfully submitted,

Dated: __September 18, 2015_____ ___/Nona Durham/_____

Nona Durham

# Overview

## Presented for
## IPR No. 2014-00936 - USPN 7,196,477 ('477 Patent)
## IPR No. 2014-00938 - USPN 7,429,827 ('827 Patent)

# Summary of Issues in 936 and 938 IPRs

## (1) Level of Ordinary Skill in the Art (935 IPR as well)

## (2) Light Sensitive Switch (936 IPR)

- Does Wu disclose a light sensitive switch
- If so, would it have been obvious to combine Chliwnyj with Wu

## (3) Remaining Switch Issues (936 and 938 IPRs)

- Exposed (936) and accessible (938) switches: obvious to combine Chliwnyj with Hung, Xu and/or Pu
- Desired fixed color (936) or desired lighting effect (938): obvious to combine Chliwnyj with Pu

## (4) RGB LEDs – obvious to combine Chliwnyj with Lau (938 IPR)

# Summary of the Patents and Prior Art

# USPN 7,196,477

US007196477B2

(12) **United States Patent**
**Richmond**

(10) **Patent No.: US 7,196,477 B2**
(45) **Date of Patent: Mar. 27, 2007**

(54) **SOLAR POWERED LIGHT ASSEMBLY TO PRODUCE LIGHT OF VARYING COLORS**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,999,060 A * 3/1991 Szekely et al. ..... 136/251
5,062,028 A * 10/1991 Frost et al. ..... 362/183

(76) Inventor: **Simon Nicholas Richmond**, Unit 3, 40-48 O'Dea Avenue, Waterloo, New

(*) Notice:

(21) Appl. N

(22) Filed:

(65)

US 200

(30)

Dec. 23. 20

(51) **Int. Cl.** *H05B*

(52) **U.S. C**

(58) **Field o**

See application file for complete search history.

29 Claims, 7 Drawing Sheets

(57) **ABSTRACT**

A garden light **10** having a body (**11**) with a post (**12**), the lower end of which is provided with a spike (**13**). The upper end of the post (**11**) receives a lens assembly (**12**). Secured to the lens assembly (**12**) is a cap assembly (**24**) that has three LEDs that are activated to produce a varying color light.

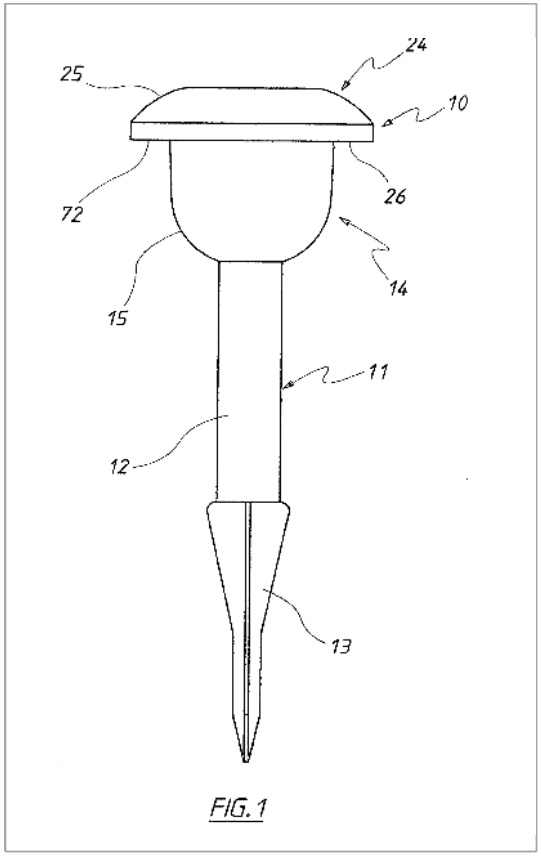


FIG. 1

[IPR 2014-00936 - Ex. 1001 (cover page/abstract), Figure 1; Rev. Pet. (Paper No. 14), at 6-7 and 9]

# USPN 7,429,827

(12) **United States Patent**
**Richmond**

(10) **Patent No.: US 7,429,827 B2**
(45) **Date of Patent: *Sep. 30, 2008**

(54) **SOLAR POWERED LIGHT ASSEMBLY TO PRODUCE LIGHT OF VARYING COLOURS**

(76) Inventor: **Simon Nicholas Richmond**, 992 Mercer Rd., Princeton, NJ (US) 08450

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 649 days.

(56) **References Cited**

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| 4,240,021 | A * | 12/1980 | Kashima et al. | 320/101 |
| 4,999,060 | A | 3/1991 | Szekely et al. | 136/251 |
| 5,062,028 | A | 10/1991 | Frost et al. | 362/183 |
| 6,016,038 | A | 1/2000 | Mueller et al. | 315/291 |
| 6,120,165 | A | 9/2000 | Shalvi | 362/276 |
| 6,150,774 | A | 11/2000 | Mueller et al. | 315/291 |

(21)
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(30) Dec.
(51)
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315/153, 154; 362/800, 276, 183, 194, 249–252
See application file for complete search history.

35 Claims, 8 Drawing Sheets

(57) **ABSTRACT**

A garden light **10** having a body (**11**) with a post (**12**), the lower end of which is provided with a spike (**13**). The upper end of the post (**11**) receives a lens assembly (**12**). Secured to the lens assembly (**12**) is a cap assembly (**24**) that has three LEDs that are activated to produce a varying color light.

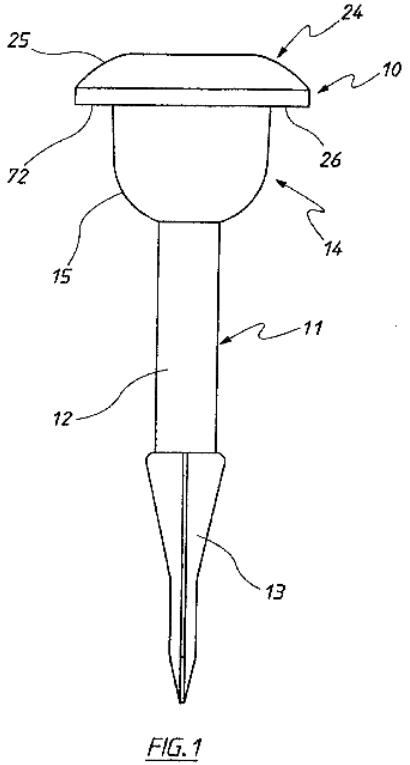



FIG. 1

[IPR 2014-00938 - Ex. 1001 ('827 patent), at couver page/abstract, Figure 1; Rev. Pet. (Paper No. 13), at 7, 8]

# U.S. App. Pub. No. 2003/0201874 - Wu

US 20030201874A1

(19) United States
(12) Patent Application Publication (10) Pub. No.: US 2003/0201874 A1
Wu (43) Pub. Date: Oct. 30, 2003

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2003/0201874 A1**

**Wu** (43) **Pub. Date: Oct. 30, 2003**

(54) **SHREW-EXPELLING DEVICE WITH ILLUMINATING FUNCTION**

(57) **ABSTRACT**

(57) **ABSTRACT**

A shrew-expelling device with an illumination function, the device is comprised of an electric circuitry, a main stem and a housing; wherein, the electric circuitry includes a power supplying circuit, a sound emitting circuit and a light emitting circuit, the power supplying circuit generates electricity in taking advantage of a solar-energy powered electricity generating element. The device with a buzzer and a light emitting element therein makes sound which is abominated by rodents and illuminates respectively; and thereby, the device has an effect of expelling rats and illuminating; wherein, by providing various modeling formed from a housing and a main stem, the device can completely immersed into the scenery of the environment to even beautify the latter.

Jiawei et al. Exhibit 1006 Page 1



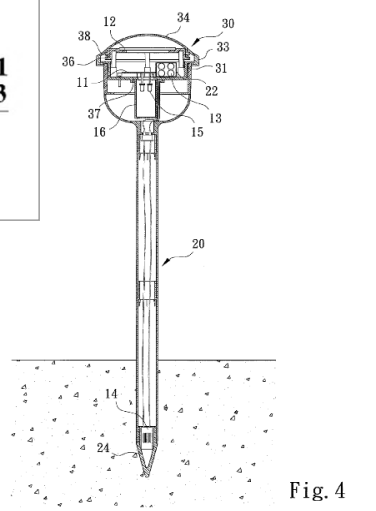



Fig. 4

Jiawei et al. Exhibit 1006 Page 6

[0020] Referring to **FIG. 4**, when in using of the present invention, it needs only to insert the present invention into the soil firmly, when it is irradiated by the sun light in the daytime, by transparency of the transparent hood **34** mounted on the housing **30**, the solar-energy powered electricity generating element **12** generates power by irradiation of the sun light, the electric energy is stored in the rechargeable battery **13** ready for use by the buzzer **14** and the light emitting element **15**. When in a particular time (such as at night), the buzzer **14** and the light emitting element **15** will automatically activated to generate low frequency sounds that the rodents abominate and to generate illumination, thereby, they can provide the effect of expelling rats and illuminating.

[0022] And more, the present invention can be provided with a plurality of light emitting elements **15** capable of providing different colors, by intercrossing light emitting, various light colors and flashing effects can be generated; further, the housing **30** and the main stem **20** can have quite a many changes of modeling; the present invention can thereby increase beauty as well as mood in cooperating with the circumstance it is located. The function of shrew-expelling or illumination will not make harm to the scenery of a courtyard, and thereby the present invention is practicable.

[IPR No. 2014-00936 - Wu (Ex. 1006) Abstract; Figure 4,at ¶¶ 0020, 0022; Rev. Pet. (Paper 14), at 24; Shackle I, (Ex. 1002) at 124-127; Pet. Reply Brief (Paper 48), at 12]

# U.S. Patent No. 5,924,784 - Chliwnyj

US005924784A

**United States Patent** [19]

**Chliwnyj et al.**

[11] **Patent Number: 5,924,784**

[45] **Date of Patent: Jul. 20, 1999**

[54] **MICROPROCESSOR BASED SIMULATED ELECTRONIC FLAME**

OTHER PUBLICATIONS

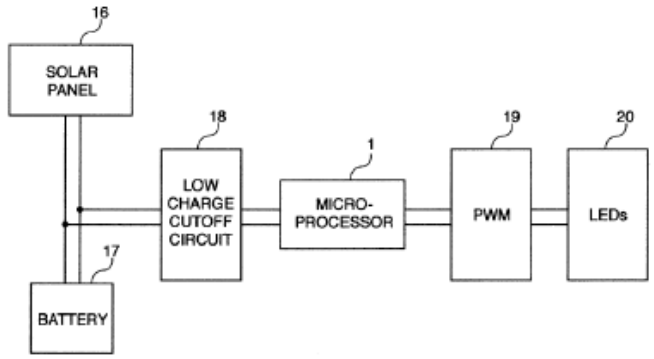


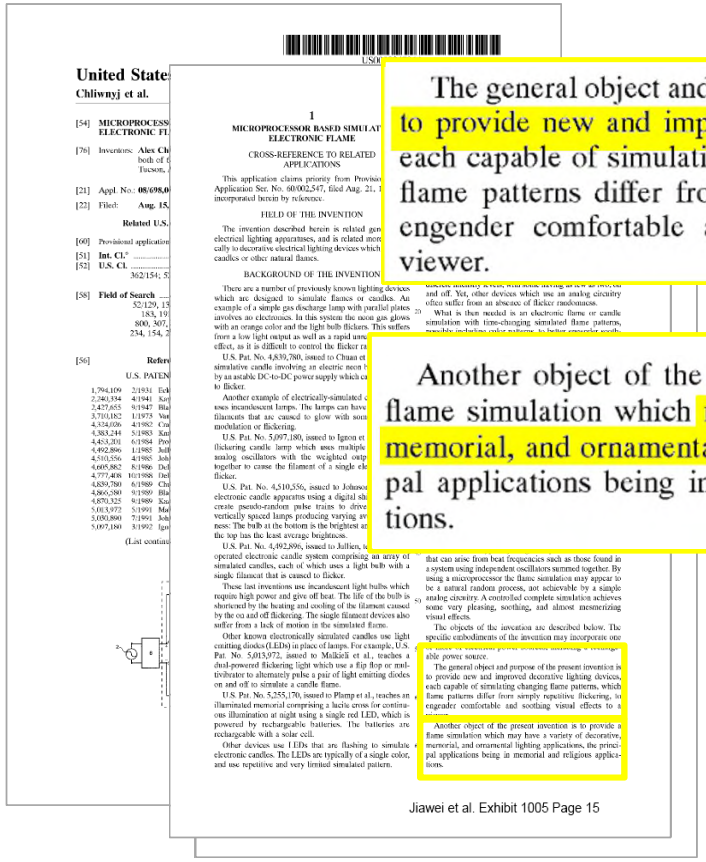

Figure 2

[57] **ABSTRACT**

Electronic lighting devices that simulate a realistic flame are disclosed. The preferred embodiment has a plurality of lighting elements in a plurality of colors which are modulated in intensity by a control circuit with a stored program. The control program includes stored amplitude waveforms for the generation of a realistic flame simulation. The program further contains random elements to keep the flame constantly changing. The control circuit has built in power management functions that can control the mean intensity of the simulated flame based on some power management budget with the ability to measure the charge/discharge duration of the power source, when used with a rechargeable power source. The currents to the individual lighting elements are selectable from a set of discrete quantization values. Tables of amplitude modulated time waveforms are stored in the microprocessor memory, from which the real time control data streams for the individual lighting elements are synthesized. By using these stored waveforms many different flame modes can be simulated. Effects such as a random gust of wind and other disturbances are inserted into the flame simulation from time to time. After a simulated disturbance the simulated flame settles back into more of a steady state condition just like a real flame does. The net result is that the simulated flame is a slowly changing series of patterns resulting in soothing and calming effects upon the viewer.

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), Abstract; Rev. Pets. (Paper Nos. 14 and 13), at 30 and 29]

# U.S. Patent No. 5,924,784 - Chliwnyj




The general object and purpose of the present invention is to provide new and improved decorative lighting devices, each capable of simulating changing flame patterns, which flame patterns differ from simply repetitive flickering, to engender comfortable and soothing visual effects to a viewer.

Chliwnyj (Ex. 1005), at 2:57-62

Another object of the present invention is to provide a flame simulation which may have a variety of decorative, memorial, and ornamental lighting applications, the principal applications being in memorial and religious applications.

Id., at 2:63-67

Another object of the present invention is to provide a flame simulation which may derive its electric power from certain alternative power sources; e.g., AC, DC, battery, and/or solar rechargeable power sources.

Id., at 3:5-9

It is a further object of the present invention to provide a flame-pattern simulation device for relaxation, which flame pattern a user may control by using a simple user interface.

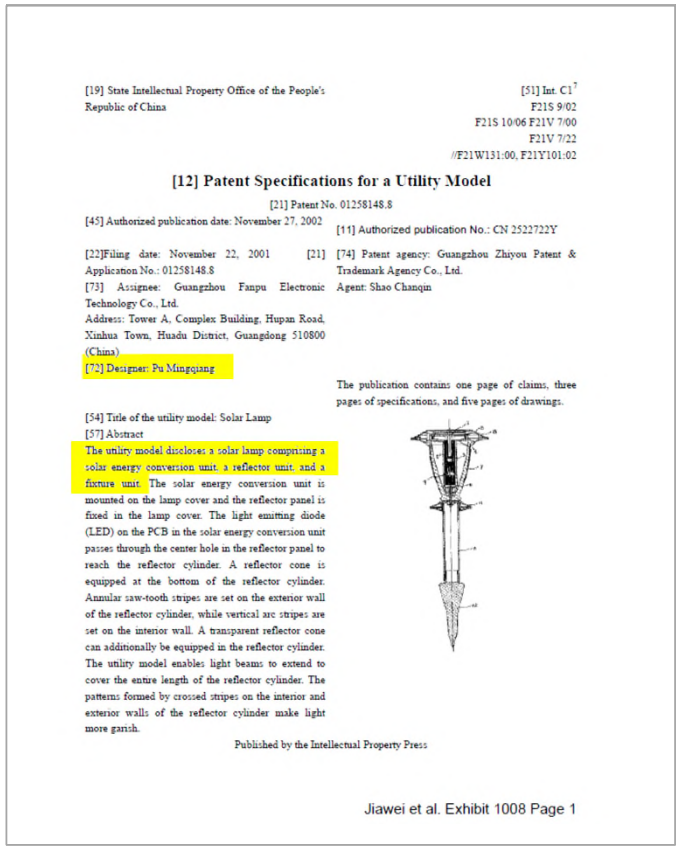
Id., at 4:3-5

It is therefore intended that the forgoing detailed description be regarded as illustrative rather than limiting, and that it be understood that it is the following claims, including all equivalents, which are intended to define the scope of this invention.

Id., at 16:1-5

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005); Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61, 68 (Ex. 1047), at ¶¶ 54-55, and 57 ; Ducharme Dep. (Exs. 1049 and 1046), at 133:6-134:12, 156:14-157:25]

# CN 2522722Y - Pu



[19] State Intellectual Property Office of the People's Republic of China

[51] Int. Cl[7]
F21S 9/02
F21S 10/06 F21V 7/00
F21V 7/22
//F21W131:00, F21Y101:02

**[12] Patent Specifications for a Utility Model**

[21] Patent No. 01258148.8

[45] Authorized publication date: November 27, 2002

[11] Authorized publication No.: CN 2522722Y

[22]Filing date: November 22, 2001 [21] Application No.: 01258148.8

[74] Patent agency: Guangzhou Zhiyou Patent & Trademark Agency Co., Ltd.
Agent: Shao Chanqin

[73] Assignee: Guangzhou Fanpu Electronic Technology Co., Ltd.
Address: Tower A, Complex Building, Hupan Road, Xinhua Town, Huadu District, Guangdong 510800 (China)

[72] Designer: Pu Mingqiang

The publication contains one page of claims, three pages of specifications, and five pages of drawings.

[54] Title of the utility model: Solar Lamp

[57] Abstract

The utility model discloses a solar lamp comprising a solar energy conversion unit, a reflector unit, and a fixture unit. The solar energy conversion unit is mounted on the lamp cover and the reflector panel is fixed in the lamp cover. The light emitting diode (LED) on the PCB in the solar energy conversion unit passes through the center hole in the reflector panel to reach the reflector cylinder. A reflector cone is equipped at the bottom of the reflector cylinder. Annular saw-tooth stripes are set on the exterior wall of the reflector cylinder, while vertical arc stripes are set on the interior wall. A transparent reflector cone can additionally be equipped in the reflector cylinder. The utility model enables light beams to extend to cover the entire length of the reflector cylinder. The patterns formed by crossed stripes on the interior and exterior walls of the reflector cylinder make light more garish.

Published by the Intellectual Property Press

Jiawei et al. Exhibit 1008 Page 1

[IPR Nos. 00936 and 00938 – Pu (Ex. 1008)]

A circuit shown in Figure 7 is designed for the embodiment so that the solar lamp can not only automatically provide flashes in three different colors, but also lock one light color. The principle of operation is as follows: In the day, the solar chip automatically converts optical energy into electric energy, and stores it into two nickel-cadmium batteries via diode IN5817. As night comes, the resistance of the photo resistor gradually increases due to a low luminance. When the resistance increases to a certain value, triode Q4 is turned on and the potential of the pin of the integrated block (15) decreases. Then, triodes Q6, Q7, and Q8 are turned on in turn so that the LED emits, in turn, red, yellow, and green light with a super luminance. Switch SW1 is a power switch and switch SW2 is used to select a light color. If switch SW2 is quickly moved to position 2 when the LED emits red light, oscillation signals are cut off and fail to enter the integrated block. In this way, red light is locked. And so on, yellow or green light can be locked.

[IPR Nos. 2014-00936 and 00938 – Pu (Ex. 1008), at 1, and 5; Rev. Pet. (Paper Nos. 14 and 13), at 34-36 and 24-25]

# WO 91/02192 - Hung

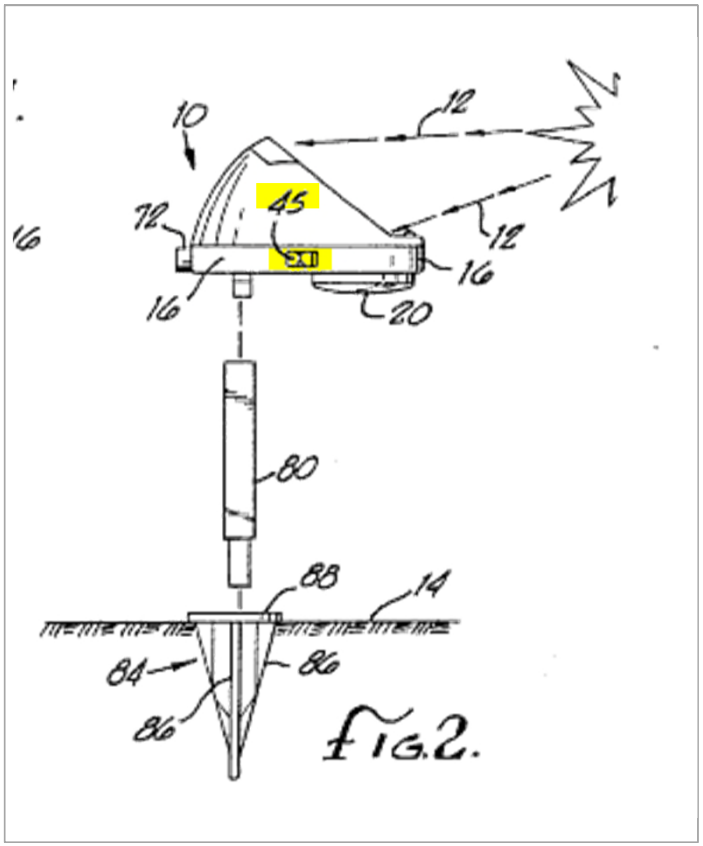


FIG.2.

A switch 45 is mounted on the outside of the base for selecting between an "Automatic" configuration for circuit 24 and an "Off" configuration. In the "Off" configuration, the light will be off at all times while still allowing charging of the battery by the solar panel. In the "Automatic" configuration, the solar panel charges the battery during the day while the light is off, and the light comes on at night using current stored in the battery. Alternatively, the "Off" configuration can disconnect the battery from both the solar panel and the lamp bulb.

[IPR No. 00936 (Ex. 1016), at Col. 7, Lines 9-20; Rev. Pet. (Paper No. 14), at 35-37]

# Grounds of Unpatentability

*D. Prior Art and Asserted Grounds*

| References | Basis under 35 U.S.C. | Claims Challenged |
|---|---|---|
| Chliwnyj[1], Wu[2], and Hung[3] | § 103 | 1, 2, 4–9, 20–22, and 26 |
| Chliwnyj, Wu, Hung, and Pu[4] | § 103 | 10–12, 23–25, and 27–29 |
| Chliwnyj, Wu, Hung, Xu[5] | § 103 | 3 and 13–16 |
| Chliwnyj, Wu, Hung, Xu, and Pu | § 103 | 17–19 |

[IPR 2014-00936 - Institution Dec. (Paper No. 21), at 4]

*D. Prior Art and Asserted Grounds*

| References | Basis under 35 U.S.C. | Claims Challenged |
|---|---|---|
| Chliwnyj[1], Wu[2], Pu[3], Dowling[4] | § 102* | 24–26 |
| Chliwnyj and Wu | § 103 | 27–29 and 31–35 |
| Chliwnyj, Wu, and Lau[5] | § 103 | 30 |

* Typographical error; §103

[IPR 2014-00938 - Institution Dec. (Paper No. 20), at 4]

# USPN 7,196,477 - Claims 1, 2, 4-9 (Ground 1)

**1**. A lighting device to produce light of varying colour, said device including:

a body including a spike;

a lens mounted on the body and generally enclosing a chamber having an upper rim surrounding a top opening, and a bottom region;

a cap assembly including securing means to releasably engage the rim so that cap assembly can be selectively removed from the lens; assembly including:

a base

a circuit having at least two lamps of different colours to produce a desired colour including varying colour, the lamp being mounted to direct light into said chamber, connection for at least one rechargeable battery to light and operatively associated with the a surface of the assembly so as to be exposed to light and operatively associated with the connections to charge the battery, and a switch operated to control delivery of electric power from the battery to operate said circuit, the switch being exposed to provide for access thereto a user.

**2**. The light device of claim **1** wherein, said circuit includes a light sensitive switch that renders the circuit operation at low light levels.

**4**. The device of claim **1** wherein, said circuit includes three lamps, each of a different colour.

**5**. The device of claim **1** wherein, said lens is a first lens, and said device includes a second lens, said second lens being attached to said base and providing a cavity into which the LEDs direct light, with the light leaving said second lens then passing through said first lens.

**6**. The device of claim **5** wherein, the first and second lenses diffuse light.

**7**. The device of claim **6** wherein, said body includes a post having opposite first and second ends, with said spike attached to said first end, and said first lens attached to said second end.

**8**. The device of claim **7** wherein, said second lens is detachably secured to said post.

**9**. The lighting device of claim **1** wherein, said circuit includes a light sub-circuit connected to the lamps to deliver electric power thereto so that the lamps produce said desired colour, with said switch being an on/off switch to deliver electric power from the batteries to said sub-circuit.

[IPR 2014-00936 - Ex. 1001 ('477 patent), at 7:19-64; Rev. Pet. (Paper No. 14), at 17-27]

# USPN 7,196,477 - Claims 20, 21-22, 26 (Ground 1)

**20**. A lighting device to produce light of varying colour, said device including:

a body including a spike;

a lens connected to the body;

a circuit having at least two lamps of different colours to produce a desire colour including a varying colour, the lamps being mounted to direct light into said lens, connections for at least one rechargeable battery to power the circuit and a solar cell mounted on a surface of the assembly so as to be exposed to light and operatively associated with the connections to charge the battery, and a user operated switch operable to control delivery of electric power from the battery to operate said circuit, the switch being exposed to provide for access thereto by a user thereby enabling a user to manipulate the switch to control the delivery of electric power from the battery.

**21**. The lighting device of claim **20** wherein, said circuit includes a light sensitive switch that renders the circuit operative at low light levels.

**22**. The lighting device of claim **21** wherein, said circuit includes a light sub-circuit connected to the lamps to deliver electric power thereto so that the lamps produce said desired colour, with said switch being an on/off switch to deliver electric power from the batteries to said sub-circuit.

**26**. The lighting device of claim **20** wherein, said circuit includes a light sub-circuit connected to the lamps to deliver electric power thereto so that the lamps produce said desired colour, with said switch being an on/off switch to deliver electric power from the batteries to said sub-circuit.

[IPR 2014-00936 - Ex. 1001 ('477 patent), at 8:36-60, 9:9-13; Rev. Pet. (Paper No. 14), at 28-30]

# USPN 7,196,477 - Claims 10-12, 23-25, 27-29 (Ground 2)

**10**. The device of claim **9** wherein, said switch is a first switch, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**11**. The device of claim **10** wherein, said second switch is on said exposed external surface.

**12**. The lighting device of any one of claim **1** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operated to select said desired fixed colour.

**23**. The lighting device of claim **22** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operable to select said desired fixed colour.

**24**. The device of claim **21** wherein, said circuit includes a sub-circuit, said switch is a first switch said first switch being an on/off switch to deliver electric power from the battery to said sub-circuit, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**25**. The device of claim **24** wherein, said second switch is on said exposed external surface.

**27**. The lighting device of claim **20** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operable to select said desired fixed colour.

**28**. The device of claim **20** wherein, said circuit includes a sub-circuit, said switch is a first switch said first switch being an on/off switch to deliver electric power from the battery to said sub-circuit, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**29**. The device of claim **28** wherein, said second switch is on said exposed external surface.

[IPR 2014-00936 - Ex. 1001 ('477 patent), at 7:65-8:9, 8:61-9:6, 9:14-10:13; Rev. Pet. (Paper No. 14), at 34-40]

# USPN 7,196,477 - Claims 3, 13-16, 17-19 (Grounds 3 and 4)

## Ground 3 Claims

**3**. The device of claim **2** wherein, said switch is on an exposed downwardly facing surface.

**13**. The device of claim **1** wherein, said switch is on an exposed downwardly facing surface.

**14**. The device of claim **13** wherein, said circuit includes three lamps, each of a different colour.

**15**. The device of claim **14** wherein, said lens is a first lens, and said device includes a second lens, said second lens being attached to said base and providing a cavity into which the LEDs direct light, with the light leaving said second lens then passing through said first lens.

**16**. The lighting device of claim **14** wherein, said circuit includes a light sub-circuit connected to the lamps to deliver electric power thereto so that the lamps produce said desired colour, with said switch being an on/off switch to deliver electric power from the batteries to said sub-circuit.

## Ground 4 Claims

**17**. The device of claim **16** wherein, said switch is a first switch, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**18**. The device of claim **17** wherein, said second switch is on said exposed external surface.

**19**. The lighting device of claim **14** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operated to select said desired fixed colour.

[IPR 2014-00936 - Ex. 1001 ('477 patent), at 7:43-44, 8:10-35; Rev. Pet. (Paper No. 14), at 38-40]

# USPN 7,429,827 - Claims 24-26 (Ground 1)

**24**. A lighting device to produce light of varying colour, said device comprising:

a lens generally enclosing a chamber;

a circuit including:

at least two lamps of different colours to produce a desired colour, the lamps being mounted to direct light into said chamber;

connections for at least one rechargeable battery to power the circuit;

a solar cell mounted on a surface so as to be exposed to light and operatively associated withthe connections to charge the battery;

a light sub-circuit having an integrated circuit for controlling said lamps to produce lighting effects, and a selection switch, said selection switch being connected to said integrated circuit and operable to select a desired lighting effect; and

a volatile memory retained for a period of time and associated with said integrated circuit, said memory causing operation of said circuit to produce said lighting effects.

**25**. The device according to claim **24**, wherein said lighting effect is selected from the group of lighting effects consisting of: a specific colour changing effect, a colour brightness effect, a colour changing frequency effect, a colour changing sequence effect, and a colour light intensity effect.

**26**. The device according to claim **24**, wherein said desired colour includes a varying colour.

[IPR 2014-00938 - Ex. 1001 ('827 patent), at 11:6-33; Rev. Pet. (Paper No. 13), at 18-29]

# USPN 7,429,827 - Claims 27-29 and 35 (Ground 2)

**27**. A lighting device to produce light of varying colour, said device including:
a lens;
a circuit having
at least two lamps of different colours to produce a varying colour, said lamps being mounted to direct light through said lens,
connections for at least one rechargeable battery to power said circuit,
a solar cell mounted so as to be exposed to light and operatively associated with said connections to charge said battery, and
a user operated switch operable to control said circuit, with said switch being accessible by a user thereby enabling said user to manipulate said switch to control delivery of power to said lamps; and a spike for positioning said connections above a ground surface.

**28**. The lighting device of claim **27**, wherein said circuit includes a light sub-circuit connected to said lamps to deliver power thereto so that said lamps produce a desired color, with said switch controlling said sub-circuit.

**29**. The lighting device of claim **27**, wherein said circuit includes a light sub-circuit connected to said lamps to deliver power thereto so that said lamps produce light, with said switch being an on/off switch to deliver power from said battery to said sub-circuit.

**35**. A lighting device to produce light of varying color, said device including:
a body including a post;
a lens connected to said body;
a circuit having:
a plurality of lamps of different colors to produce a varying color, said lamps being mounted to direct light through said lens,
connections for at least one rechargeable battery to power said circuit,
a solar cell mounted so as to be exposed to light and operatively associated with said connections to charge said battery, and
at least one user operated switch operable to control said circuit, with said switch being accessible by a user thereby enabling said user to manipulate said switch to control delivery of power to said lamps.

[IPR 2014-00938 - Ex. 1001 ('827 patent), at 11:34-59, 12:40-59; Rev. Pet. (Paper No. 13), at 31-41]

# USPN 7,429,827 - Claim 30 (Ground 3)

**30**. The lighting device of claim **27**, wherein any one of said at least two lamps is a single diode that emits light when energized, and wherein said at least two lamps are at least three lamps comprising a diode that emits red light, a diode that emits blue light and a diode that emits green light.

[IPR 2014-00938 - Ex. 1001 ('827 patent), at 12:1-5; Rev. Pet. (Paper No. 13), at 43-44]

# The Board's Claim Constructions ('477 and '827 Patents)

| | |
|---|---|
| desired colour | "[a color] that is desired by the user or intended by the designer" |
| varying color | a "perceptible changing of color over time" |
| securing means | Function: releasably engage the rim so that the cap assembly can be selectively removed from the lens<br><br>Corresponding structure: flange segments 36 |

[IPR 2014-00936 - Institution Dec. (Paper No. 21), at 6, 8, and 10]
[IPR 2014-00938 - Institution Dec. (Paper No. 20), at 6-7]

# Summary of Issues in 936 and 938 IPRs

**(1) Level of Ordinary Skill in the Art (935 IPR as well)**

**(2) Light Sensitive Switch (936 IPR)**

- Does Wu disclose a light sensitive switch that renders the circuit operative at low light levels
- If so, would it have been obvious to combine Chliwnyj with Wu

**(3) Remaining Switch Issues (936 and 938 IPRs)**

- Exposed (936) and accessible (938) switches: obvious to combine Chliwnyj with Hung, Xu and/or Pu
- Desired fixed color (936) or desired lighting effect (938): obvious to combine Chliwnyj with Pu

**(4) RGB LEDs – obvious to combine Chliwnyj with Lau (938 IPR)**

# Dr. Shackle is Qualified to Testify

## Qualifications

- Ph.D. in Physics
- 20+ years in lighting industry
- Elected Senior Life Member of IEEE

[IPR Nos. 2014-00935, 00936, and 00938 - Shackle I (Ex. 1002), at 2-3; Shackle II (Exs. 1073, 1050, and 1047), at ¶¶ 13-16, ¶¶ 13-17, ¶¶ 13-17 respectively; Reply Briefs (Paper Nos. 44, 48, and 50), at 6-7, 7, and 7, respectively]

- Experience in photovoltaics, photodiodes, PW, and LED drivers in lighting

[IPR Nos. 2014-00935, 00936, and 00938 - Shackle II (Exs. 1073, 1050, and 1047), at ¶¶ 33-39, 41; Reply Briefs (Paper Nos. 44, 48, and 50), at 6-7, 7, and 8, respectively]

## PO's Criticisms Unfounded

- PO's alleged "required" experience in photovoltaics cells and consumer products very low

[IPR Nos. 2014-00935, 00936, and 00938 - Reply Briefs (Paper Nos. 44, 48, and 50), at 7, and 8, respectively; Shackle II (Exs. 1073, 1050, and 1047), at ¶ 32]

- Supervision of engineers in lighting context not relevant (apparatus claims), claims do not require product to be made in China

[IPR Nos. 2014-00935, 00936, and 00938 - Reply Briefs (Paper Nos. 44, 48, and 50), at 8, 8, and 8, respectively; Shackle II (Exs. 1073, 1050, and 1047), at ¶ 32]

- Dr. Shackle did not employ hindsight in his analysis.

[IPR Nos. 2014-00935, 00936, and 00938 - Reply Briefs (Paper Nos. 44, 48, and 50), at 8, 8, and 8-9, respectively; Shackle II (Exs. 1073, 1050, and 1047), at ¶ 40]

# Dr. Ducharme Views the Scope and Content of the Prior Art Broadly

- Scope and content of the prior art is "LED. garden lights "

[IPR Nos. 2014-00936 and 00938 - Ducharme Dep. (Exs. 1049 and 1046), at 76:14-77:2, 77:19-78:9]

- Dr. Ducharme defines "garden lights" as "[a] light that's used outdoors in a decorative fashion."

[IPR Nos. 2014-00936 00938 - Ducharme Dep. (Exs. 1049 and 1046), at 79:19-22]

- Dr. Ducharme recants this testimony on redirect, stating the scope and content is limited to "solar" garden lighting.

[IPR Nos. 2014-00936 and 00938 - Ducharme Dep. (Exs. 1049 and 1046), at 202:5-203:10]

# Level of Ordinary Skill in the Art

## Petitioners' POSA

- **Graduate degree in electrical or electronics engage, or physics with experience in circuit design, or**

- **B.S. degree in electrical or electronics engage or physics with at least two years industrial experience and experience in circuit design**

[IPR Nos. 2014-00935, 00936 and 00938 - Revised Petitions (Paper Nos. 10, 14, and 13), at 11, 7-8, 7; Shackle I (Ex. 1002), at ¶ 36]

## Patent Owner's POSA

- **Primary expertise of POSA is industrial design and physical manufacture experience**

[IPR Nos. 2014-00935, 00936 and 00938 – PO's Prelim. Responses (Paper Nos. 29, 20 and 19), at 7-8, 21 and 20 respectively]

- **Primary expertise of POSA is knowledge of EE**

[IPR Nos. 2014-00935, 00936 and 00938 – PO's Responses (Paper Nos. 29, 31, and 34), at 3, 3, and 4, respectively]

- **Ability to recognize how pre-designed circuit operates** [*Id.*]
- **Address a subset of product design**

[*Id.* at 4, 5, and 5-6, respectively]

- **Ability to alter appearance of product, but not re-create product** [*Id.*]

[*See generally* IPR Nos. 2014-00935, 00936 and 00938 - PO Responses (Paper Nos. 29, 31 and 34), at 2-10, 2-10, and 3-14]

# Petitioners' Level of Ordinary Skill is Correct

- Problems existing in the art
- Known solutions to those problems
- Rate at which new innovations are made
- Sophistication of the technology
- Education level of active workers in the field

[IPR Nos. 2014-00935, 00936, and 00938 - Pet. Reply Briefs (Paper Nos. 44, 48 and 50), at 2-5, 2-7, and 2-6]

# Existing problems related to circuitry

- Adjusting lighting functions and not producing uniform desired color

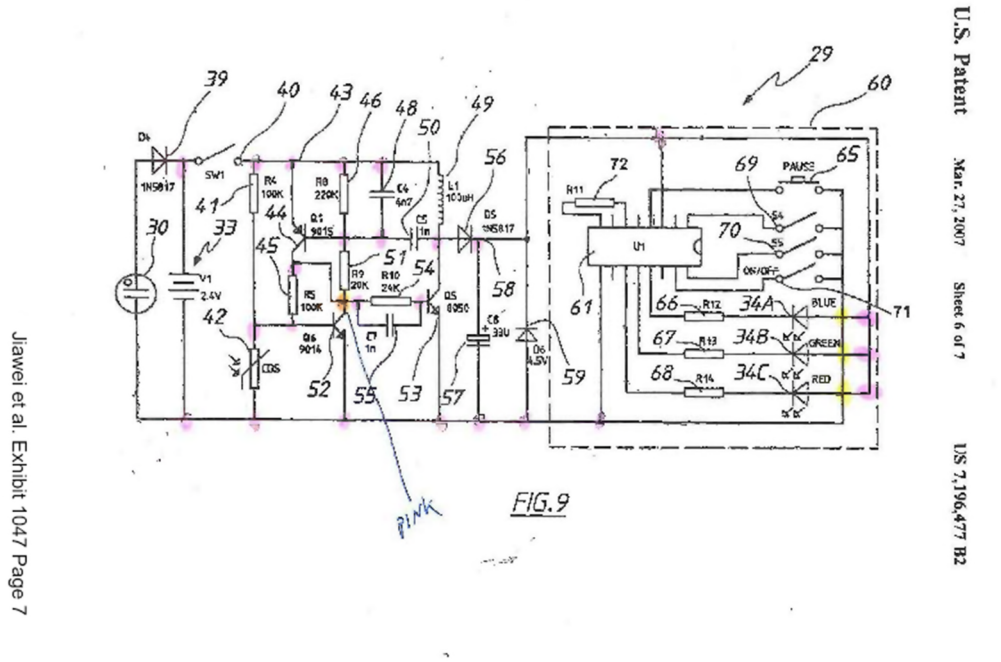
[IPR Nos. 2014-00936 and 00938 - Rev. Pet. (Paper Nos. 14 and 13), at 9]

- Majority of specification describes circuitry

[IPR Nos. 2014-00936 and 00938 - Rev. Pet. (Paper Nos. 14 and 13), at 9; Shackle II (Exs. 1050 and 1047), at ¶ 18]

- PO's POSA would not have understood Figure 9

[IPR Nos. 2014-00936 and 00938 - Ducharme Dep., (Exs. 1049 and 1046), at 50:19-24 and 80:1-89:18; Pet. Reply Briefs (Paper Nos. 48 and 50), at 3 and 3-4 respectively; Shackle II (Ex. 1050 and 1047), at ¶¶ 19, 29]




[IPR Nos. 2014-00936 and 00938 - Fig. 9 Markup, Exs. 1047 and 1045; Pet. Reply Briefs (Paper Nos. 48 and 50), at 3-5; Ducharme Dep., (Exs. 1049 and 1046), at 50:19-24 and 80:1-89:18; Shackle II (Exs. 1050 and 1047), at ¶¶ 19, 29]

# Richmond's Educational Level

Richmond only capable of basic block level design:

- "battery, solar cell light switch, light, light needs to vary in color"

[IPR Nos. 2014-00936 and 00938 - Ducharme Dep. (Exs. 1049 and 1046), at 48:22-51:12; Pet. Reply Briefs(Paper Nos. 48 and 50), at 5, 5-6, respectively; Shackle II (Exs. 1050 and 1047), at ¶ 25]

Conception is the "formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice."

[*Hybritech Inc. v. Monoclonal Antibodies Inc.,* 802 F.2d 1367, 1376 (Fed. Cir. 1986); IPR Nos. 2014-00936 and 00938 - Pet. Reply Briefs (Paper Nos. 48 and 50), at 5 and 6, respectively]

# Richmond's Educational Level

> Additionally, PO's assertions regarding of level of skill in the art are inconsistent with its own admission that, to implement the desired functions that the circuit needs to perform, the PO's POSA would have needed to
>
> > take the description of the function or functions to an electrical circuit designer or programmer in order to have that person modify, program, or otherwise manufacture the electrical component, including the software or methods implementing equivalent steps.
>
> Response, Paper 29, 6 (emphasis added). In other words, PO admits that their POSA would not have been able to make the alleged invention, including the claimed "*activation circuit*," without the underlying knowledge of circuit design, which is typically possessed by a degreed electrical engineer.

[IPR Nos. 2014-00935 - Pet. Reply Brief (Paper No. 44), at 5; PO Response (Paper 29), at 6]

# Known solutions to those problems

- Chliwnyj and Dowling relate to the specifics of circuitry and/or use of PW

[IPR Nos. 2014-00936 and 00938 - Pet. Reply Briefs (Paper Nos. 48 and 50), at 3-4 and 4; Shackle I (Exs. 1002), at ¶¶ 80, 92-96 ]

- Richmond's patents similarly relate to the specifics of circuitry

[IPR Nos. 2014-00936 and 00938 - Pet. Reply Briefs (Paper Nos. 48 and 50), at 3-4 and 4; Shackle II (Ex. 1050 and 1047), at ¶ 18; '477 and '827 Patents (Ex. 1001)]

# Rate of new innovation and the sophistication of the technology

- Not exceptionally fast or slow

[IPR Nos. 2014-00936 and 00938 - Pet. Reply Briefs (Paper Nos. 48 and 50), at 5; Shackle II (Ex. 1050 and 1047), at ¶ 23]

- Not overly sophisticated, but some of the circuitry sophisticated for PO's POSA

[IPR Nos. 2014-00936 and 00938 - Pet. Reply Briefs (Paper Nos. 48 and 50), at 4-5 and 5; Shackle II (Ex. 1050 and 1047), at ¶ 24]

# Educational Level of Workers in the Field

- Many of the inventors of the prior art have B.S. or advanced degrees

[IPR Nos. 2014-00936 and 00938 - Pet. Reply Briefs (Paper Nos. 48 and 50), at 6-7; Shackle II (Ex. 1050 and 1047), at ¶¶ 26-27; Exs. 1051-1060 (00936 IPR), Exs. 1048-1053 (000938 IPR)]

[IPR Nos. 2014-00935 - Pet. Reply Brief (Paper No. 44), at 6; Shackle II (Ex. 1073), at ¶ 27; Exs. 1070-1071, 1076-1083 (000935 IPR)]

- Others have less, but work experience

[IPR Nos. 2014-00936 and 00938 - PO Responses (Paper Nos. 31 and 34), at 3-4 and 11-12; Ex. 2028; *see also Id*. above]

# Summary of Issues in 936 and 938 IPRs

**(1) Level of Ordinary Skill in the Art (935 IPR as well)**

**(2) Light Sensitive Switch (936 IPR)**

- Does Wu disclose a light sensitive switch that renders the circuit operative at low light levels
- If so, would it have been obvious to combine Chliwnyj with Wu

**(3) Remaining Switch Issues (936 and 938 IPRs)**

- Exposed (936) and accessible (938) switches: obvious to combine Chliwnyj with Hung, Xu and/or Pu
- Desired fixed color (936) or desired lighting effect (938): obvious to combine Chliwnyj with Pu

**(4) RGB LEDs – obvious to combine Chliwnyj with Lau (938 IPR)**

# Summary of PO Response to Ground 1

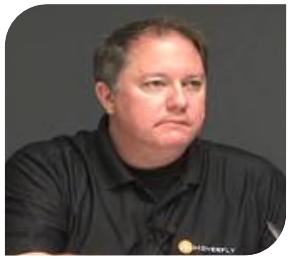
- Wu does not teach a light sensitive switch that renders the circuit operative at low light levels

[IPR 2014-00936 - PO Response (Paper No. 31), at 20-29]

- Even if Wu did teach a light sensitive switch, a POSA would not have thought it obvious to modify Chliwnyj to operate only at low light levels

[IPR 2014-00936 - PO Response (Paper No. 31), at 30-37]

# Light Sensitive Switches Were Known Circuit Elements



Q. (By Mr. Nelson) Were there light sensitive switches known prior to the time Mr. Richmond filed the application that led to the 477 patent?

MR. BENAVIDES: Objection; form.

THE WITNESS: Were there light sensitive switches as an electronic device available before he submitted this?

Q. (By Mr. Nelson) Yes.

A. Yes.

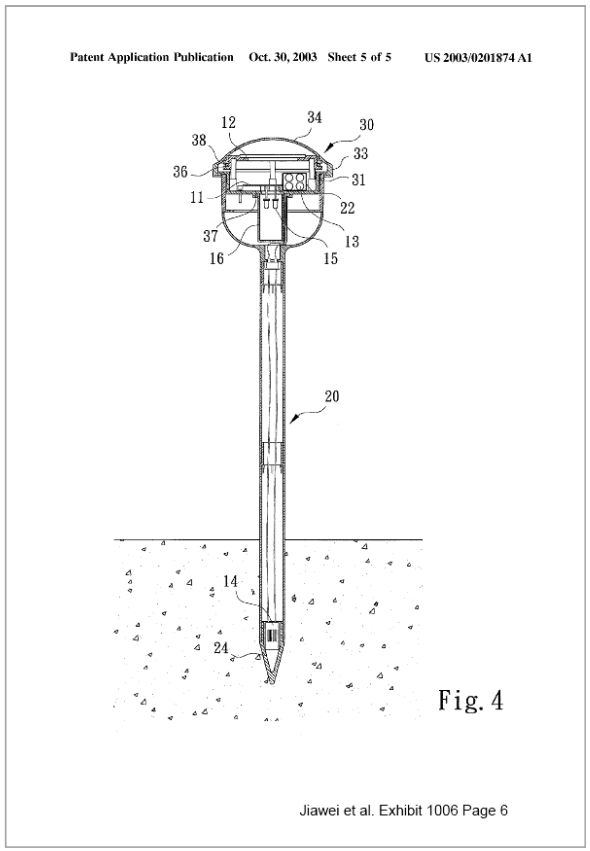
Q. Those were well known. Weren't they?

MR. BENAVIDES: Objection; form.

THE WITNESS: Yeah. They were known.

[IPR Nos. 2014-00936 - Ducharme Dep. (Exs. 1049 and 1046), at 54:23-55:11; Shackle I (Ex. 1002), at 57; Shackle II (Ex. 1050), at ¶ 64; Pet. Reply Brief (Paper No. 48), at 17-18]

# Wu discloses a light sensitive switch

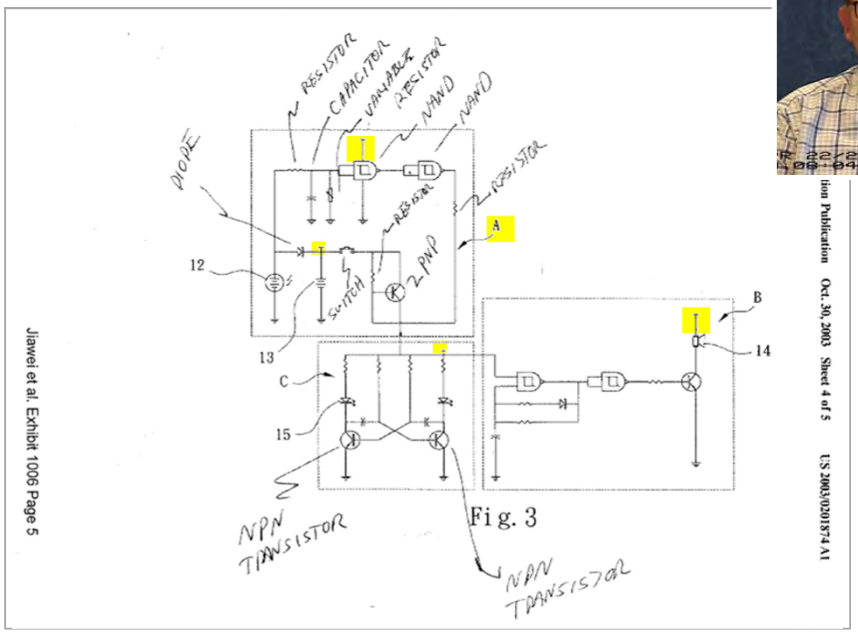



125. I understand Wu to disclose a circuit that includes a light sensitive switch that renders the circuit operable at low light levels. This is made plain by the description accompanying Figure 4 of Wu:

[0020] Referring to **FIG. 4**, when in using of the present invention, it needs only to insert the present invention into the soil firmly, when it is irradiated by the sun light in the daytime, by transparency of the transparent hood **34** mounted on the housing **30**, the solar-energy powered electricity generating element **12** generates power by irradiation of the sun light, the electric energy is stored in the rechargeable battery **13** ready for use by the buzzer **14** and the light emitting element **15**. When in a particular time (such as at night), the buzzer **14** and the light emitting element **15** will automatically activated to generate low frequency sounds that the rodents abominate and to generate illumination, thereby, they can provide the effect of expelling rats and illuminating.

[IPR 2014-00936 - Wu (Ex. 1006), at 0020; Shackle I, (Ex. 1002), at ¶¶ 124-125; Rev. Pet. (Paper No. 14), at 24]

# Wu discloses a light sensitive switch

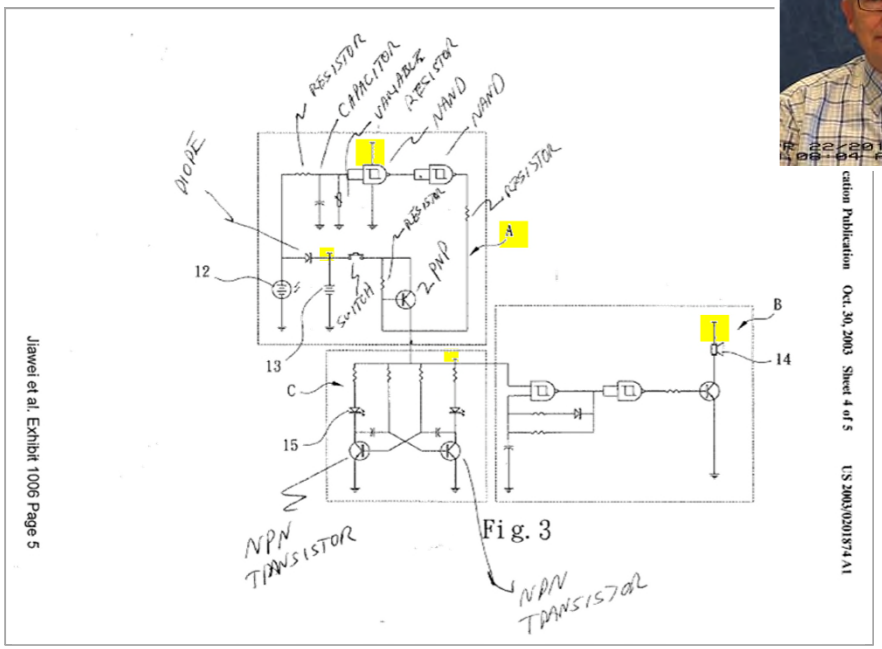



52. The preferred embodiment of Wu is depicted in Figure 3. It consists of three modules: A, C, and B. A person of ordinary skill in the art would have understood that each of these three modules can function by themselves when provided with power and control inputs. Module A is a light sensitive switch. Module C is the light circuit. Module B is the noise circuit. Referring to module A, on the lower left side is the solar cell connection (12). A resistor, a capacitor, and a variable resistor are shown on the top of the figure followed by two NAND gates and another resistor on the right side. A switch is shown in the middle. Dr. Ducharme stated it could be a single pole single throw or momentary contact, or other type of switch. Duchm. Depo. (Ex. 1049), at 115:9-116:2. Finally, the circuit shows the battery (13), a diode, another resistor, and a PNP transistor (labeled PNP).

[IPR 2014-00936 - Wu (Ex. 1048), at 5; Pet. Reply Brief (Paper No. 48), at 12-14; PO Mot. for Obs. (Paper No. 59), at 3-5]

[IPR 2014-00936 - Shackle II (Ex. 1050), at ¶ 52; Pet. Reply Brief (Paper No. 48), at 12-13; Pet. Resp. to PO Mot. for Obs. (Paper No. 59), at 3-5]

# Wu discloses a light sensitive switch

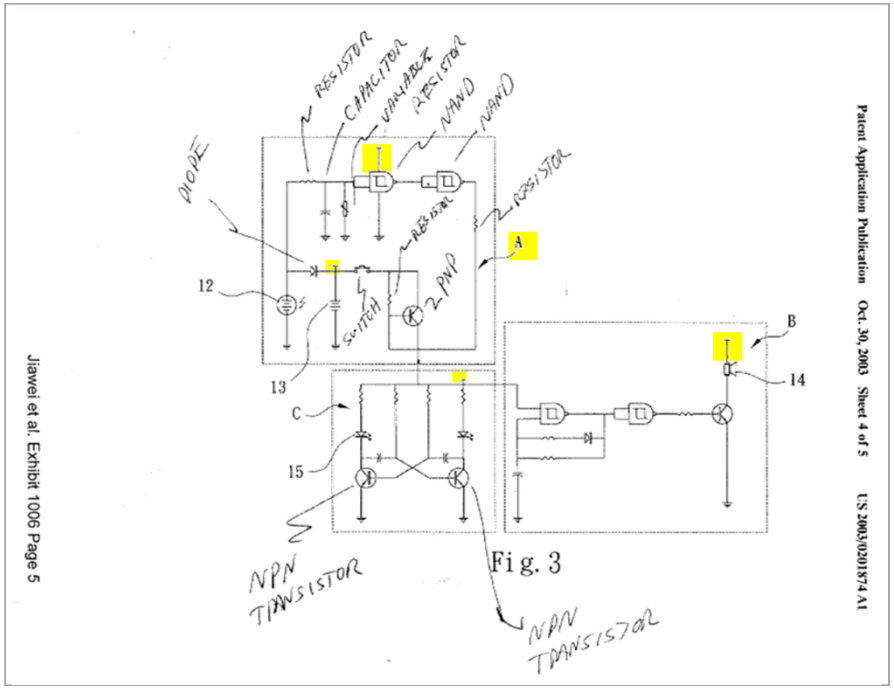



54. One of ordinary skill in the art would have known that Wu's switch element in module A is closed to make the circuit function, otherwise, the circuit does nothing but provide power to and from the battery. Once the switch is closed, the voltage, or lack thereof, from photovoltaic cell 12 causes Wu's circuit module A to switch the PNP transistor on or off. When light impinges photovoltaic cell 12, it creates a high voltage at the input of the first two-input NAND gate, which results in a low output, which is input to the second two-input NAND gate to produce a high output. This high output voltage is then input to the base of the PNP transistor, which causes it to be in the OFF state and causes the collector to have a high impedance. Alternatively, when light does NOT impinge on photovoltaic cell 12, there is a low input at the input of the first two-input NAND gate, which results in a low output of the second two-input NAND gate, thereby causing the PNP transistor to switch ON.

[IPR 2014-00936 - Wu (Ex. 1048), at 5; Pet. Reply Brief (Paper No. 48), at 12-14; PO Mot. for Obs. (Paper No. 59), at 3-5]

[IPR 2014-00936 - Shackle II (Ex. 1050), at ¶ 54; Pet. Reply Brief (Paper No. 48), at 13-14; Pet. Resp. to PO Mot. for Obs. (Paper No. 59), at 3-5]

# Wu discloses a light sensitive switch

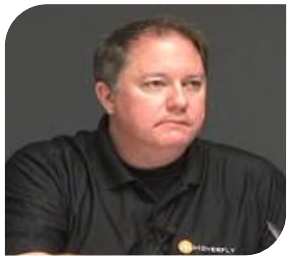



[IPR 2014-00936 - Wu (Ex. 1048), at 5; Pet. Reply Brief (Paper No. 48), at 12-14; PO Mot. for Obs. (Paper No. 59), at 3-5]

- PO's argument to the contrary relies on an interpretation of the Wu circuit that its expert states would not make sense to him as a designer.

[IPR 2014-00936 - Ducharme Dep. (Ex. 1049), at 116:16-117:20; Pet. Reply Brief (Paper No. 48), at 13; Shackle II (Ex. 1050), ¶ 53; Pet. Resp. to PO Mot. for Obs. (Paper No. 59), at 3-5]

# Wu Discloses a Light Sensitive Switch



Q. (By Mr. Nelson) Okay. And so, if I understand how you view this circuit, you view this circuit as basically being -- and by "this circuit," I mean the whole of the circuit. You view this circuit as basically being always on and powered from the battery. Is that fair?

MR. BENAVIDES: Objection; form.

THE WITNESS: Yeah. I -- I view this circuit as having all of those T symbols being connected. And so if the battery has power, then the circuit is on.

Q. (By Mr. Nelson) And under that interpretation, what's the purpose of the first and second NAND gates up there?

MR. BENAVIDES: Objection; form.

THE WITNESS: They serve no purpose if all of those points are connected.

Q. (By Mr. Nelson) What about the PNP transistor? What's the purpose of that?

A. Well, ultimately, it has no purpose because they're all connected.

Q. Do you think it would make to have in all these elements in a circuit if they served no purpose?

MR. BENAVIDES: Objection; form.

THE WITNESS: Does it make sense to me as a designer?

Q. (By Mr. Nelson) Yes.

A. No. It doesn't make any sense to me as a designer.

[IPR 2014-00936 - Ducharme Dep. (Ex. 1049), at 116:16-117:20; Pet. Reply Brief (Paper No. 48), at 13; Shackle II (Ex. 1050), ¶ 53; Pet. Resp. to PO Mot. for Obs. (Paper No. 59), at 3-5]

# Wu Discloses a Light Sensitive Switch

53. Dr. Ducharme interpreted the circuit to require that modules B and C are always on so long as the battery has charge because he interpreted the T-like symbols to require that all modules were directly connected to the battery. A POSA would have known that, when the modules are connected to work together, the collector of a PNP transistor would not be tied to positive power because otherwise the vast majority of the circuit elements in module A (the resistors, capacitor, NAND gates, and the PNP transistor) would have no purpose. Dr. Ducharme agrees. Duchm. Depo. (Ex. 1049), at 116:16-117:20; 118:24-119:3. Dr. Ducharme admits that the circuit interpretation in his declaration "would not make sense to [him] as a designer." *Id.* at 117:12-20.

[IPR 2014-00936 – Pet. Reply Brief (Paper No. 48), at 13; Shackle II (Ex. 1050), at ¶ 53]

Q. And is that your understanding of the interpretation of rendering the circuit operative at low light levels, that as long as it's operative at low light levels, regardless of the light levels, that is something that is on all the time, is a circuit -- is a switch that renders the circuit operative at low light levels; is that your understanding of the meaning of that?

A. I believe when you read the text and understand the intention of Wu, it was very clear that he put that light-sensitive switch there intending to turn a thing on when it got dark. And as Dr. Ducharme remarked, if you put in a short circuit across the light-sensitive switch, it makes no sense at all.

So somebody who understands these circuits looks at that, and in this case you have to interpret those Ts as being the place where the power gets connected. And in this case, that power is connected from the collector of the PNP and it's being connected to the right place.

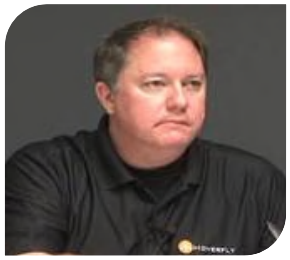
And so that T still sitting there merely just signifies this is the power rail where the power gets connected, and it is being connected there. So the interpretation of the circuit follows from the intention of the inventor, which is described clearly in the specification.

Q. Notwithstanding that the figure is drawn differently?

A. It has to be interpreted by one who understands these things. And the interpretation that we are marking here's where you connect the power is different, subtly different from saying you just draw a power line straight across from one T to the next.

[IPR 2014-00936 – Shackle Dep. Aug. 14, 2015 (Ex. 2056), at 12:8-13:14; *see generally* 5:15-16:16]

# Wu discloses a light sensitive switch



Q. (By Mr. Nelson) Can you take the circuit of Module A in isolation in your view, is it a light sensitive switch as you define it?

MR. BENAVIDES: Objection; form.

THE WITNESS: If you consider the point between circuit elements or circuit blocks A and C as being, you know, that point as being the, say, driving point of Block A, and you close that switch, then I do understand Circuit Element A to be a light sensitive switch.

[IPR 2014-00936 - Ducharme Dep. (Ex. 1049), at 119:4-13; Pet. Reply Brief (Paper No. 48), at 14; Shackle II (Ex. 1050), at ¶ 57; Pet. Resp. to PO Motion for Obs. (Paper No. 59), at 3-5]]

# Wu Discloses a Light Sensitive Switch

- PO also argues that "[a] 'nighttime' is not a 'particular time when low light levels are expected.'"

[IPR 2014-00936 - PO Response (Paper No. 31), at 27]

[0020] Referring to **FIG. 4**, when in using of the present invention, it needs only to insert the present invention into the soil firmly, when it is irradiated by the sun light in the daytime, by transparency of the transparent hood **34** mounted on the housing **30**, the solar-energy powered electricity generating element **12** generates power by irradiation of the sun light, the electric energy is stored in the rechargeable battery **13** ready for use by the buzzer **14** and the light emitting element **15**. When in a particular time (such as at night), the buzzer **14** and the light emitting element **15** will automatically activated to generate low frequency sounds that the rodents abominate and to generate illumination, thereby, they can provide the effect of expelling rats and illuminating.

[IPR 2014-00936 - Wu (Ex. 1006), at ¶ 0020; Rev. Pet. (Paper 14), at 24; Shackle I, (Ex. 1002) at 124-127; Pet. Reply Brief (Paper 48), at 12]

# Summary of PO Response to Ground 1

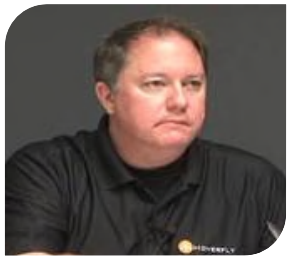
- Wu does not teach a light sensitive switch

[IPR 2014-00936 - PO Response (Paper No. 31), at 20-29]

- Even if Wu did teach a light sensitive switch, a POSA would not have thought it obvious to modify Chliwnyj to operate only at low light levels

[IPR 2014-00936 - PO Response (Paper No. 31), at 30-37]

# It Would Have Been Obvious to Combine Chliwnyj with Wu



[IPR 2014-00936 - (Ex. 1005) at 173:20-174:16; Pet. Reply Brief (Paper No. 48), at 14]

Q. And again, in forming your opinion with respect to that it was not obvious to mod -- to modify Chliwnyj in light of Wu, again, did you focus on the eternal flame solely on the eternal flame embodiment?

MR. BENAVIDES: Objection; form.

THE WITNESS: I mean I consider devices that were solar powered similar to the -- to the devices at hand. Some of these other devices like the relaxation device, you know, in the urn, you are plugging into IC power so it's not what I considered.

Q. (By Mr. Nelson) So the answer is yes, you basically focused on the eternal flame embodiment?

A. I --

MR. BENAVIDES: Objection; form.

THE WITNESS: I focused on what seemed to be similar.

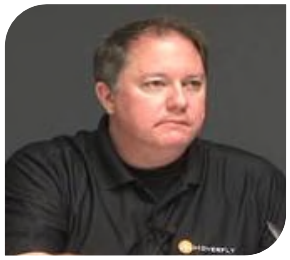
Q. (By Mr. Nelson) And is that the eternal flame embodiment? Is that?

A. Yes.

- PO's analysis focused on eternal flame embodiment of Chliwnyj

[IPR 2014-00936 - PO Response (Paper No. 31), at 30-37]

# It Would Have Been Obvious to Combine Chliwnyj with Wu



Q. Well, Chliwnyj's invention is not simply a memorial type device. It's a simulated flame. Isn't it?

MR. BENAVIDES: Objection; form.

THE WITNESS: In terms of solar garden lights, I consider that the memorial, the eternal flame embodiments.

Q. (By Mr. Nelson) I'm not sure I understand your answer. So basically, based on solar garden lights somehow you limited your analyses to Chliwnyj's eternal flame embodiment?

MR. BENAVIDES: Objection; form.

Q. (By Mr. Nelson) Is that what I understand you to be saying?

A. That's the one that's most similar to the patents at issue.

Q. Okay. So in -- in your opinions regarding whether it was obvious or not obvious to combine Chliwnyj with different things, you focused on the eternal flame embodiment of Chliwnyj. Is that correct?

A. Yes.

[IPR Nos. 00936 and 00938 - Ducharme Dep. (Exs. 1049 and 1046), at 172:9-173:5; Pet. Reply Brief (Paper No. 48), at 14]

# But the Board previously found:

- "Chliwnyj is directed to a simulated flame, and its disclosure is not limited to only the eternal flame embodiment." [IPR 2014-00936 – Institution Dec., (Paper 21), at 14]

- "Accordingly, Patent Owner's arguments directed to only a subset of Chliwnyj's disclosure are not persuasive." [IPR 2014-00936 – Institution Dec., (Paper 21), at 14]

- "[W]e note that the Supreme Court has cautioned courts from reading too much into the intended purpose of prior art." [*Id.*, quoting *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007); *see also Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807 (Fed. Cir. 1989) ("The fact that a specific [embodiment] is taught to be preferred is not controlling, since all disclosures of the prior art, including preferred embodiments, must be considered."). [IPR 2014-00936 – Institution Dec., (Paper 21), at 14]

# Numerous Reasons to Combine Chliwnyj with Wu

## (1) Chliwnyj's Disclosure is broad:

- Provide new and improved decorative lighting devices

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at 2:57-62; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61 (Ex. 1047), at ¶¶ 54-55, and 57 ; Ducharme Dep. (Exs. 1049 and 1046), at 156:14-157:25]

- Provide a flame simulation which may have a variety of decorative, memorial, and ornamental lighting applications

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at 2:62-67; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61 (Ex. 1047), at ¶¶ 54-55, and 57 ; Ducharme Dep. (Exs. 1049 and 1046), at 156:14-157:25]

- Provide a flame simulation which may derive electrical power from alternative sources (*e.g.*, AC, DC, battery, solar rechargeable)

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at 3:5-9; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61 (Ex. 1047), at ¶¶ 54-55, and 57 ; Ducharme Dep. (Exs. 1049 and 1046), at 156:14-157:25]

# Numerous Reasons to Combine Chliwnyj with Wu

## (1) Chliwnyj's Disclosure is broad:

- **Use PW to implement an economical and very low power approach to controlling current**

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at 3:13-21; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61 (Ex. 1047), at ¶¶ 54-55, and 57 ; Ducharme Dep. (Exs. 1049 and 1046), at 156:14-157:25]

- **To provide a flame of high brightness with low power consumption, power management, and rechargeable power**

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at 4:23-24, 34-36; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61, 80 (Ex. 1047), at ¶¶ 54-55, and 57; Ducharme Dep. (Exs. 1049 and 1046), at 156:14-157:25]

- **To provide a flame-pattern simulation for relaxation that the user may control by a simple user interface**

[IPR Nos. 2014-00936and 00938 - Chliwnyj (Ex. 1005), at 4:3-5; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61 (Ex. 1047), at ¶¶ 54-55, 57, and 80 ; Ducharme Dep. (Exs. 1049 and 1046), at 156:14-157:25]

- **The detailed descriptions are "illustrative" and there are "many variations available to circuit designers to control the current through the LEDs"**

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at 14:62-63, 16:1-5; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61 (Ex. 1047), at ¶¶ 54-55, and 57 ; Ducharme Dep. (Exs. 1049 and 1046), at 156:14-157:25]

# Numerous Reasons to Combine Chliwnyj with Wu

## (2) Both Chliwnyj and Wu teach circuits that vary color

### Chliwnyj

A microprocessor-based simulated electronic flame in its best mode uses multiple LEDs as controlled lighting elements to give the appearance of flame motion, typically when viewed through a diffuser. The plurality of controlled lights allow the simulated flame motion. Additionally, the use of a plurality of colors also enhances the effect of flame motion.

Ex. 1005, at 5:10-17

The turning on and turn off of the LEDs, caused by a pulse width modulation of an LED current, tends to broaden the spectrum of the LEDs. This leads to an increased apparent brightness of the flame. Super Brite™ light emitting diodes (Super Brite™ LEDs), which may be supplied by high-power AlInGaP amber and reddish-range LED lamps, have a wider spectrum than other LEDs. Super Brite™ LEDs may also enhance the flame motion due to color changes.

LED control may be accomplished with a current switching means being connected in an electrical path between each lighting element and an AC or DC voltage source. The

Ex. 1005, at 5:18-29

simulation circuitry. The device **8** initially consisted of a set of five Super Brite™ LEDs **7***a*, **7***b*, **7***c*, **7***d*, and **7***e* (LEDs **7***a–e*) in 2 or 3 different colors. The Super Brite™ LEDs may be supplied by High Power AlInGaP Amber and Reddish-orange Lamps from Hewlett Packard. Also known as Super Brite™, or Ultra Brite™, the LEDs are high efficiency LEDs and are known to be available in red, amber, and yellow colors. However, light-emitting diodes are generally available in a number of suitable colors from many different manufacturers.

Ex. 1005, at 6:28-36

[IPR Nos. 2014-00936 and 00938 – Reply (Paper Nos. 48 and 50), at 15-16 and 14-15, respectively; Shackle II (Exs. 1050 and 1047), at ¶¶ 59-61 and 54-57, respectively; Chliwnyj (Ex. 1005); Rev. Pets. (Paper Nos. 14 and 13), at 17-18, 27, 30; and 18, 20, and 29, 33]

### Wu

[**0022**] And more, the present invention can be provided with a plurality of light emitting elements **15** capable of providing different colors, by intercrossing light emitting, various light colors and flashing effects can be generated; further, the housing **30** and the main stem **20** can have quite a many changes of modeling; the present invention can thereby increase beauty as well as mood in cooperating with the circumstance it is located. The function of shrew-expelling or illumination will not make harm to the scenery of a courtyard, and thereby the present invention is practicable.

[IPR No. 2014-00936 – Pet. Reply Brief (Paper No. 48), at 16; Shackle II (Ex. 1050), at ¶ 63; Wu (Ex. 1006), at ¶ 0022]

# Numerous Reasons to Combine Chliwnyj with Wu

## (3) Both references recognize that power consumption/management is important

- Chliwnyj records the passing of day/night and teaches power management techniques to preserve the battery's charge.

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at 12:41-13:8; Shackle II (Ex. 1050), at ¶ 64; Pet. Reply Brief (Paper 48), at 15-17]

- Wu utilizes the previously-discussed light sensitive switch to conserve power.

[IPR Nos. 2014-00936 - Shackle II (EX. 1050), at ¶¶ 62-63, 65-66; Wu (Ex. 1006), at ¶ 0020; Pet. Reply Brief (Paper 48), at 15-17]

- Power management was a recognized problem further indicating that a POSA would look to power management solutions.

[IPR No. 2014-00936 - Shackle II (EX. 1050), at ¶¶ 65-66; Wu (Ex. 1006), at ¶ 0020; Pet. Reply Brief (Paper 48), at 15-17; US5,255,170 (Ex. 2035 to IPR No. 2014-00938)]

# Numerous Reasons to Combine Chliwnyj with Wu

## (4) A POSA would have recognized the potential to increase the market for increasing Chliwnyj's simulated flame

- Chliwnyj's simulated flame had broad application.

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at 2:57-67, 3:5-9, 13-21; 4:3-5, 23-24, 36-36; 14:62-63; 16:1-5; Shackle II (Exs. 1050 and 1047), at ¶¶ 59-60; Pet. Reply Briefs (Papers 48 and 50), at 15 and 14-15, respectively]

- "It often may be the case that market demand, rather than scientific literature, will drive design trends."

[*KSR Int'l Co. v. Teleflex Inc.* , 550 U.S. 398, 419 (2007); IPR 2014-00936 - Pet. Reply Brief (Paper 48), at 17]

# Numerous Reasons to Combine Chliwnyj with Wu

## (5) Both references are analogous art focused on solving similar issues

- Both Chliwnyj and Wu are outdoor, solar powered lighting devices that are functional and used in decorative settings
- Both Chliwnyj and Wu have circuits that produce varying color
- Both Chliwnyj and Wu are concerned with power management issues and utilize power management circuitry
- Both Chliwnyj and Wu are placed in the ground

[IPR 2014-00936 - Rev. Pet. (Paper 14) at 30-34; Pet. Reply Brief (Paper 48), at 15-17; Shackle II (Ex. 1050), at ¶¶ 62-66]

# It would have been obvious to Combine Chliwnyj with Wu

**(1) Chliwnyj's Disclosure is broad**

**(2) Both Chliwnyj and Wu teach circuits that vary color**

**(3) Both references recognize that power consumption/management is important**

**(4) A POSA would have recognized the potential to increase the market for increasing Chliwnyj's simulated flame**

**(5) Both references are analogous art focused on solving similar issues**

[*See* citations on slides 46-51]

# Summary of Issues in 936 and 938 IPRs

**(1) Level of Ordinary Skill in the Art (935 IPR as well)**

**(2) Light Sensitive Switch (936 IPR)**

- Does Wu disclose a light sensitive switch that renders the circuit operative at low light levels
- If so, would it have been obvious to combine Chliwnyj with Wu

**(3) Remaining Switch Issues (936 and 938 IPRs)**

- Exposed (936) and accessible (938) switches: obvious to combine Chliwnyj with Hung, Xu and/or Pu
- Desired fixed color (936) or desired lighting effect (938): obvious to combine Chliwnyj with Pu

**(4) RGB LEDs – obvious to combine Chliwnyj with Lau (938 IPR)**

# Obvious to Combine Chliwnyj with Hung to provide for "the switch being exposed to provide for access…"

## Claim Construction

### PO's Position

"switch is made visible to the user—not concealed—or is deprived of shelter or protection for a user to access the switch" and "visible in the line of sight."

[IPR 2014-00938 - Ducharme Dec., (Ex. 2021), at ¶ 106; PO Response (Paper 31), at 39; Ducharme Dep. (Ex. 1049), at 68:4-70:13]

### Petitioners' Proposed Construction

"visible, apparent, or uncovered"

**exposed,** *modif.* **1.** [In sight]— *Syn.* visible, apparent, clear; see **obvious** 1. **2.** [Revealed in the true light]— *Syn.* disclosed, revealed, divulged, unmasked, unveiled, bared, uncovered, unsealed, made public, laid bare, pointed out, ferreted out, dug up, brought to light, brought to the light of day, brought to justice, solved, resolved, untied, unriddled, discovered, found out, seen through, detected, debunked.— *Ant.* HIDDEN, concealed, disguised.

EX. 1064

**ex-pose** (ĕk-spōz', ĭk-) *tr.v.* **-posed, -posing, -poses. 1.** To lay open, as to something undesirable or injurious. **2.** To subject (a photographic film or plate) to the action of light. **3.** To make visible or known; make manifest; display, reveal, or exhibit: *Cleaning exposed the grain of the wood.* **4.** To disclose or unmask, as a crime; lay bare; make known. **5.** *Roman Catholic Church.* To leave (the Host) displayed on the altar for venera-

EX. 1065

**ex-posed** (ik spōzd'), *adj.* **1.** left or being without shelter or protection: *The house stood on a windy, exposed cliff.* **2.** laid open to view; unconcealed: *an exposed king of spades.* **3.** susceptible to attack; vulnerable. [1620–30; EXPOSE + -ED²] —**ex-pos-ed-ness** (ik spō'zid'nis), *n.*

EX. 1066

[IPR 2014-00938 - Ducharme Dec., (Ex. 2021), at ¶ 106; Pet. Reply Brief (Paper 48), at 18-21; Shackle II (Ex. 1050), at ¶ 71]

# No Dispute that Hung Discloses an Accessible & Exposed Switch

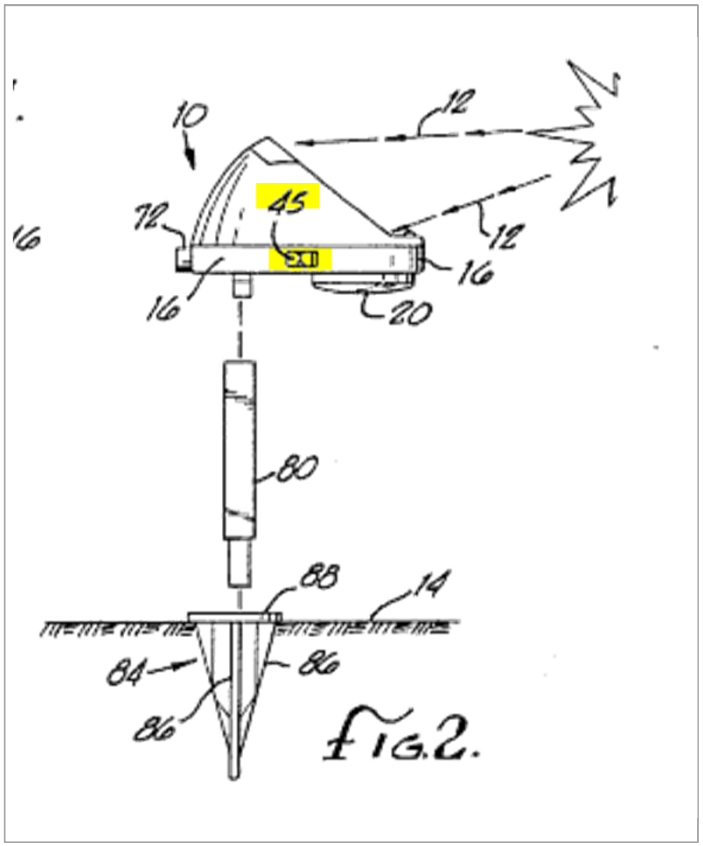
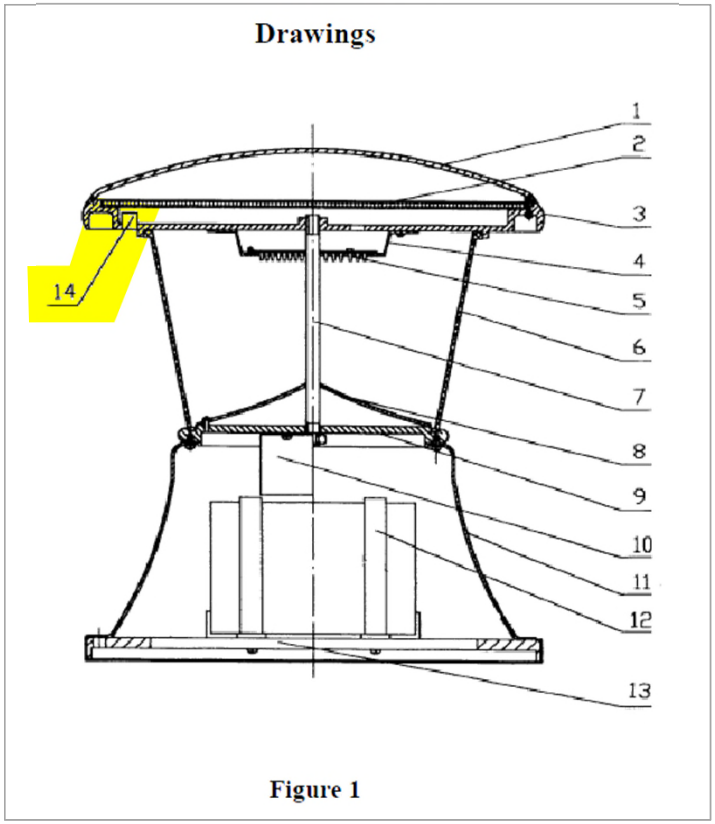


FIG.2.

A switch 45 is mounted on the outside of the base for selecting between an "Automatic" configuration for circuit 24 and an "Off" configuration. In the "Off" configuration, the light will be off at all times while still allowing charging of the battery by the solar panel. In the "Automatic" configuration, the solar panel charges the battery during the day while the light is off, and the light comes on at night using current stored in the battery. Alternatively, the "Off" configuration can disconnect the battery from both the solar panel and the lamp bulb.

[IPR No. 00936 - Hung (Ex. 1016), at Col. 7, Lines 9-20; Rev. Pet. (Paper 14), at 23]

# No Dispute that Xu Discloses an Exposed Switch on a Downwardly Facing Surface ('477 Patent Claim 3, 13-16)




- "[T]he key switch [14] is mounted peripherally on the upper lid."
- "[T]he key switch [14] is installed on the upper lid (3)."

[IPR2104-00936 – Xu (Ex. 1012), at Summary and Claim 3; Rev. Pet. (Paper 14), at 39-40; Pet. Reply Brief (Paper 48), at 23-24]

# Summary of PO's Exposed/Accessible Switch Arguments

- It would not have been obvious to modify Chliwnyj to add the exposed switch of Hung, Xu, or Pu because Chliwnyj's switches are "hidden" and teach away

  [IPR 2014-00936 - PO Response (Paper No. 31), at 37-52]
  [IPR 2014-00938 - PO Response (Paper No. 34), at 21-29 referring to Pu]

- PO argues that the "eternal flame" embodiment of Chliwnyj is "technologically incompatible" with an exposed accessible switch and thus it would not be obvious to combine Chliwnyj with Hung.

  [IPR 2014-00936 – PO Response (Paper 31), at 40]
  [IPR 2014-00938 – PO Response (Paper 34), at 25]

- Pu does not disclose an "accessible" switch (applies only to claims '827 claims 27-29, 35)

  [IPR 2014-00938 - PO Response (Paper 34), at 21-29]

# Pu's Switches are Accessible

A circuit shown in Figure 7 is designed for the embodiment so that the solar lamp can not only automatically provide flashes in three different colors, but also lock one light color. The principle of operation is as follows: In the day, the solar chip automatically converts optical energy into electric energy, and stores it into two nickel-cadmium batteries via diode IN5817. As night comes, the resistance of the photo resistor gradually increases due to a low luminance. When the resistance increases to a certain value, triode Q4 is turned on and the potential of the pin of the integrated block (15) decreases. Then, triodes Q6, Q7, and Q8 are turned on in turn so that the LED emits, in turn, red, yellow, and green light with a super luminance. Switch SW1 is a power switch and switch SW2 is used to select a light color. If switch SW2 is quickly moved to position 2 when the LED emits red light, oscillation signals are cut off and fail to enter the integrated block. In this way, red light is locked. And so on, yellow or green light can be locked.

[IPR 2014-00938 – Pu (Ex. 1008), at 5; Rev. Pet. (Paper 13), at 24-25; Pet. Reply Briefs (Paper Nos. 1048 and 1050), at 22 and 17, respectively; Shackle II (Exs. 1050 and 1047), at ¶¶ 73 and 59]

# PO's "Hidden Switch"/"Teach-Away" Arguments are Legally Incorrect

- "[T]he 'mere disclosure of alternative designs does not teach away' … just because better alternatives exist … does not mean that an inferior combination is inapt for obviousness purposes."

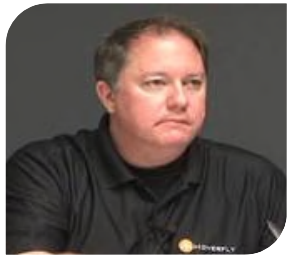
[*In re Mouttet,* 636 F.3d 1322, 1344 (Fed. Cir. 2012);
IPR Nos. 2014-00936 and 00938 - Pet. Reply Brief, (Paper Nos. 48 and 50), at 18 and 16, respectively]

- All disclosures in a reference "must be evaluated for what they fairly teach one of ordinary skill in the art."

[*In re Boe*, 355 F.2d 961, 965 (CCPA 1966);
IPR Nos. 2014-00936 and 00938 - Pet. Reply Brief, (Paper Nos. 48 and 50), at 19 and 16-17, respectively]

# It would have been obvious to combine Chliwnyj, Hung, Xu, and Pu

## (1) Using exposed/accessible switches to control lighting devices was well known



Q. (By Mr. Nelson) What about circuits used to turn lights on and off? Those were certainly known before 2002. Correct?

MR. BENAVIDES: Objection; form.

THE WITNESS: Yes. There were circuits to turn lights on and off.

Q. (By Mr. Nelson) And even -- and let's limit this to certain garden lighting. There were switches to turn garden lights on and off. Weren't there?

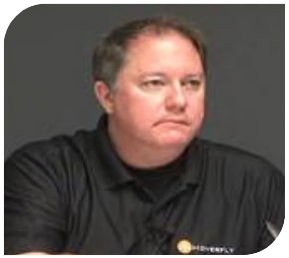
A. I imagine there were.

[IPR Nos. 00936 and 00938 - Ducharme Dep. (Exs. 1046 and 1049), at 53:24-54:9; Reply Brief (Paper No. 48), at 19-20; Shackle II (Ex. 1050), at ¶¶ 69-71]

# It would have been obvious to combine Chliwnyj with Hung, Xu and Pu

## (2) Chliwnyj teaches user interaction and switches were known mechanisms for such interaction

- Dr. Ducharme identifies a "keypad," an "on-off switch" and sound control or voice control that could have been used to control Chliwnyj's relaxation embodiment.



Q. (By Mr. Nelson) What other kind of switches could it have?
A. What other kinds of switches?
Q. Yeah.
MR. BENAVIDES: Objection to form.
Q. (By Mr. Nelson) To control the relaxation mode?
A. I don't know.
Q. So not -- not really any limitation on -- on the kind. Just something that would turn it on or off?
MR. BENAVIDES: Objection; form.
THE WITNESS: Yeah. I didn't say it was unlimited. I just said I don't know what kinds of switches that you could use. A switch is a switch.

[IPR Nos. 00936 and 00938 - Ducharme Dep. (Exs. 1046 and 1049), 133:6-134:12; Shackle II (Ex. 1050), at ¶ 68; Pet. Reply Brief (Paper Nos. 48 and 50), at 19-20 and 15-16, respectively]

[IPR Nos. 00936 and 00938 - Ducharme Dep. (Exs. 1046 and 1049), 134:20-135:10; Shackle II (Ex. 1050), at ¶ 68; Pet. Reply Brief (Paper Nos. 48 and 50), at 19-20 and 15-16, respectively]

# It would have been obvious to combine Chliwnyj with Hung, Xu and Pu

## (2) Chliwnyj teaches user interaction and switches were known mechanisms for such interaction

- Chliwnyj's relaxation embodiment specifically teaches a user interface for user interaction.

> It is a further object of the present invention to provide a flame-pattern simulation device for relaxation, which flame pattern a user may control by using a simple user interface.

Ex. 1005, at 4:3-5

> A final embodiment uses the flame simulation as a relaxation device by providing a very simple keypad interface to allow the user to control some parameters of the simulation.

Ex. 1005, at 14:12-14

- Dowling also teaches a user interface

[IPR 2014-00938 – Dowling (Ex. 1010), 5:66; Rev. Pet. (Paper No. 13), at 26-27)

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at above; Rev. Pet. (Paper 13), at 24-25; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15; Shackle II (Ex. 1050), at ¶¶ 59-61, 68, (Ex. 1047), at ¶¶ 54-55, and 57; Ducharme Dep. (Exs. 1049 and 1046), at 133:6-134:12]

# It would have been obvious to combine Chliwnyj with Hung, Xu and Pu

## (3) Chliwnyj's disclosure is broad

- Chliwnyj discloses a simulated flame motion suitable for
  - new and improved lighting devices
  - a variety of decorative, memorial, and ornamental lighting applications

[IPR Nos. 2014-00936 and 00938 - Chliwnyj (Ex. 1005), at 2:57-67; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61 (Ex. 1047), at ¶¶ 54-55, and 57 ; Ducharme Dep. (Exs. 1049 and 1046), at 156:14-157:25]

- Chliwnyj itself teaches accessible switches

[IPR 2014-00938 - Pet. Reply Brief (Paper No. 50), at 15-16; Shackle II (Ex. 1047), at ¶¶ 55, 62]

# It would have been obvious to combine Chliwnyj with Hung, Xu and Pu

## (4) A POSA would have recognized numerous advantages to having an exposed/accessible switch

- Easy to activate the product or turn it off
- Change the mode of operation
- Expand the potential market

[IPR Nos. 00936 and 00938 - Pet. Reply Briefs (Paper Nos. 48 and 50), at 22-25 and 16-19; Shackle II (Exs. 1050 and 1047), at ¶¶ 75-78, 81, 83-84, ¶¶ 61, 63-64; Rev. Pets. (Paper Nos. 14 and13), at 30 and 29 respectively]

# It would have been obvious to combine Chliwnyj with Hung, Xu and Pu

**A POSA would have been motivated to look to Hung, Xu, and Pu to provide known uses and placements of switches.**

A. A motivation could be if you wished to enhance or increase the utility of the product so that in addition -- or in addition to being a pleasing, twinkling memorial it also sheds some usable amount of light, or maybe even could be moved from one location to another, and in this case, in the circumstance of wanting to move it you might perhaps wish to store it, in which case you'd switch it off and plant it down again in its new location. So for enhance -- if you're going to enhance the repertoire of usefulness of this device, indeed it might be nice to put a switch on it that could be switched on and off, really.

[Shackle Depo. (Ex. 2022), at 107:18-108:4]

# It would have been obvious to combine Chliwnyj with Hung, Xu and Pu

**A POSA would have understood that the location and placement of a switch was a matter of design choice and that market forces would encourage additional uses.**

[IPR No. 2014-00936 - Reply Brief (Paper No. 48), at 24-25; Shackle II (Ex. 1050), at ¶¶ 83-84]

A. When I -- in a sense we already had this conversation. If you were trying to broaden the usefulness of this invention, an invention goes beyond the specific objectives and embodiments that are described. Then putting in the switch allows it to be used for other things as well. And as you correctly pointed out, perhaps it might be a compromise. That particular version would then be less useful for memorials. Perhaps the manufacturer might be motivated to have two versions, one specifically for memorials, not to be tampered with, and another version which could be switched on and off where you might be using it more for general illumination.

[Shackle Depo. (Ex. 2022), at 114:4-15]

# It would have been obvious to combine Chliwnyj with Hung, Xu and Pu

## (5) Analogous art focused on solving the same issues

- Chliwnyj, Hung, Pu and Xu are outdoor, solar powered lighting devices that are functional and used in decorative settings

[IPR Nos. 2014-00936 and 00938 - Rev. Pets., (Paper Nos. 14 and 13), at 31, 33, 39 and 14, 42, respectively; Chliwnyj, (Ex. 1005), at 3:44-57; Pu, (Ex. 1008), at 3; Hung, (Ex. 1016), at 3:7-10; Xu, (Ex. 1012), at 3]

- The references have circuits that produce varying color

[IPR Nos. 2014-00936 and 00938 - Rev. Pets., (Paper Nos. 14 and 13), at 14, 18, 22 and 14, 19, 21, 29, 41, respectively; Chliwnyj, (Ex. 1005), at 6:25-36; Pu, (Ex. 1008), at 5; Xu, (Ex. 1012), at 3, 8]

- The references teach user interaction

[IPR Nos. 2014-00936 and 00938 - Rev. Pets., (Paper Nos. 14 and 13), at 23, 27, 33, 35-41 and 15, 25, 30-31, 35, respectively; Chliwnyj, (Ex. 1005), at 12:27-31, 14:11-20; Pu, (Ex. 1008), at 5; Hung, (Ex. 1016), at 7:10-20; Xu, (Ex. 1012), at 5]

- It was well understood that switches permit interactions with the user

*Id.*

# It would have been obvious to combine Chliwnyj with Hung, Xu and Pu

- **Dr. Ducharme admitted that a POSA would have understood that a switch could be moved from the top of a surface where it was visible to the underside of a surface.**

[IPR No. 2014-00936 - Ducharme Dep. (Ex. 1049), at 23:2-14; Shackle II (Ex. 1050), at ¶ 80]

- **Dr. Ducharme admitted it might be beneficial to have a switch in certain cases.**

[IPR No. 2014-00938 - Reply (Paper 50), at 17; Ducharme Dep. (Ex. 1046), at 168:6-21]

- **A switch might activate the device, change color, change mode of operation, turn it off**

[IPR No. 2014-00938 - Reply (Paper 50), at 17; Shackle II (Ex. 1047), at ¶¶ 62-63]

- **A POSA would have understood that the location of a switch was a matter of design choice and that such design choices are routine in the predictable, mechanical arts and thus obvious.**

[IPR No. 2014-00936 - Pet. Reply Brief (Paper 48), at 23-25; Shackle II (Ex. 1050), at ¶¶ 81, 83-84]

# It would have been obvious to Combine Chliwnyj with Hung, Xu and Pu

**(1) Using exposed/accessible switches to control lighting devices was well known**

**(2) Chliwnyj teaches user interaction and switches were known mechanisms for such interaction**

**(3) Chliwnyj's disclosure is broad**

**(4) A POSA would have recognized numerous advantages to having an exposed/accessible switch**

**(5) Analogous art focused on solving the same issues**

[*See* citations on slides 60-68]

# Summary of Issues in 936 and 938 IPRs

**(1) Level of Ordinary Skill in the Art (935 IPR as well)**

**(2) Light Sensitive Switch (936 IPR)**

- Does Wu disclose a light sensitive switch that renders the circuit operative at low light levels
- If so, would it have been obvious to combine Chliwnyj with Wu

**(3) Remaining Switch Issues (936 and 938 IPRs)**

- Exposed (936) and accessible (938) switches: obvious to combine Chliwnyj with Hung, Xu and/or Pu
- Desired fixed color (936) or desired lighting effect (938): obvious to combine Chliwnyj with Pu

**(4) RGB LEDs – obvious to combine Chliwnyj with Lau (938 IPR)**

# PO's Arguments Focus on Preferred "Eternal Flame" Embodiment of Chliwnyj

- "A device like the Solar-powered Eternal Flame Memorial embodiment of Chliwnyj expressly and implicitly teaches that switches are hidden and unexposed," and thus teaches away

[IPR 2014-00936 – PO Response (Paper 31), at 47; Ducharme Dec. (Ex. 2021) at ¶ 122]
[IPR 2014-00938 – PO Response (Paper 31), at 21-29]

- "Neither of these types of switches of Hung and Pu would have been useful in Chliwnyj, which is designed for day/night use and where locking a color is contrary to how Chliwnyj operates in simulating a flame."

[IPR 2014-00936 – PO Response (Paper 31), at 48; Ducharme Dec. (Ex. 2021), at ¶ 123]

- Chliwnyj's flame is random thus teaches away from selecting a "desired lighting effect," (applies to claims 24-26) and desired color (Claim 28)

[IPR 2014-00938 - PO Response (Paper 34), at 29-31]

# No Dispute That Pu Teaches a Switch to Select a Particular Color

A circuit shown in Figure 7 is designed for the embodiment so that the solar lamp can not only automatically provide flashes in three different colors, but also lock one light color. The principle of operation is as follows: In the day, the solar chip automatically converts optical energy into electric energy, and stores it into two nickel-cadmium batteries via diode IN5817. As night comes, the resistance of the photo resistor gradually increases due to a low luminance. When the resistance increases to a certain value, triode Q4 is turned on and the potential of the pin of the integrated block (15) decreases. Then, triodes Q6, Q7, and Q8 are turned on in turn so that the LED emits, in turn, red, yellow, and green light with a super luminance. Switch SW1 is a power switch and switch SW2 is used to select a light color. If switch SW2 is quickly moved to position 2 when the LED emits red light, oscillation signals are cut off and fail to enter the integrated block. In this way, red light is locked. And so on, yellow or green light can be locked.

[IPR 2014-00938 – Pu (Ex. 1008), at 5; Rev. Pet. (Paper 13), at 24-25]

# PO's "Teach-Away" Arguments are Legally Incorrect

- "[T]he 'mere disclosure of alternative designs does not teach away' … just because better alternatives exist … does not mean that an inferior combination is inapt for obviousness purposes."

[*In re Mouttet,* 636 F.3d 1322, 1344 (Fed. Cir. 2012);
IPR Nos. 2014-00936 and 00938 - Pet. Reply Briefs, (Paper Nos. 48 and 50), at 18 and 16, respectively]

- All disclosures in a reference "must be evaluated for what they fairly teach one of ordinary skill in the art."

[*In re Boe*, 355 F.2d 961, 965 (CCPA 1966);
IPR Nos. 2014-00936 and 00938 - Pet. Reply Briefs, (Paper Nos. 48 and 50), at 19 and 16-17, respectively]

# Chliwnyj is not limited as PO Suggests

- **Chliwnyj teaches that:**

  The various simulated flames may derive electrical power from AC, DC, battery, and/or solar rechargeable sources.

  [IPR 2014-00936, (Ex. 1005), at 3:5-8; Reply (Paper Nos. 48 and 50), at 15, 22, 24, and 19, respectively; Shackle Ii (Exs. 1050 and 1047), at ¶¶ 59-61, and 66 respectively]

  Modifications may be made to the preferred embodiments, and

  [Id., at 14:44-45]

  The detailed descriptions are "illustrative rather than limiting."

  [Id., at 16:1-2]

- **Dr. Ducharme did not even consider the later language in his analysis.**

  [IPR 2014-00936 - Ducharme Dep. (Ex. 1049), at 156:15-157:25; Reply (Paper No. 48), at 24]

# It Would Have Been Obvious to Combine Chliwnyj With Pu

- **Chliwnyj specifically teaches user interaction (*e.g.,* a keypad (small array switch)) and selecting mode of operation**.

[IPR 2014-00936 - (Ex. 1005), at 4:3-5; 8:19-25; and 14:12-15; Shackle II (Ex. 1050), at ¶ 74; Pet. Reply Briefs (Paper Nos. 48 and 50), at 15 and 14-15; Shackle II (Ex. 1050), at ¶¶ 59-61 (Ex. 1047), at ¶¶ 54-55, 57, and 80 ; Ducharme Dep. (Exs. 1049 and 1046), at 156:14-157:25]

- **Chliwnyj recognizes that static colors are well known, and does not limit the flame to any particular color scheme.**

[IPR 2014-00936 - (Ex. 1005), at 1:65-67; 5:15-17; Reply (Paper No. 48), at 22-23; Shackle II (Ex. 1050), at ¶ 76]

- **A POSA would have found it obvious to combine the teachings of Chliwnyj and Pu to permit the user to control the simulated flame to select a desired lighting effect or color.**

[IPR 2014-00936 - Shackle II (Ex. 1050), at ¶¶ 78, 83-84; Rev. Pet. (Paper 14), at 37-38; Pet. Reply Brief (Paper 48), at 21-23, 24-25]
[IPR 2014-00938 - Shackle II (Ex. 1047), at ¶ 68; Rev. Pet. (Paper 13), at 29-30; Pet. Reply Brief (Paper 54), at 19-21]

- **POSA would have been motivated to combine the references to increase the number of decorative devices where Chliwnyj's simulated flame could be used.**

[IPR Nos. 00936 and 00938 - Pet. Reply (Paper Nos. 48 and 50), at 22-25; and 20-21, respectively; Shackle II (Exs. 1050 and 1047), at ¶¶ 83-84 and 68, respectively]

# Summary of Issues in 936 and 938 IPRs

**(1) Level of Ordinal Skill in the Art (935 IPR as well)**

**(2) Light Sensitive Switch (936 IPR)**

- Does Wu disclose a light sensitive switch that renders the circuit operative at low light levels
- If so, would it have been obvious to combine Chliwnyj with Wu

**(3) Remaining Switch Issues (936 and 938 IPRs)**

- Exposed (936) and accessible (938) switches: obvious to combine Chliwnyj with Hung, Xu and/or Pu
- Desired fixed color (936) or desired lighting effect (938): obvious to combine Chliwnyj with Pu

**(4) RGB LEDs – obvious to combine Chliwnyj with Lau (938 IPR)**

# Claim 30 is Obvious

**30**. The lighting device of claim **27**, wherein any one of said at least two lamps is a single diode that emits light when energized, and wherein said at least two lamps are at least three lamps comprising a diode that emits red light, a diode that emits blue light and a diode that emits green light.

[IPR 2014-00938 - Ex. 1001 ('827 patent) at 12:1-5]

# PO's Arguments Lack Merit

**PO argues that it would not have been obvious to combine Chliwnyj with Lau because:**

- Chliwnyj will only operate if its LEDs are within a limited color gamut (red, amber, orange)

[IPR 2014-00938 - PO Response, (Paper 34), at 31-34; Ducharme Dec., (Ex. 2021), at ¶¶ 100-101]

- Using red, blue and green LEDs in Chliwnyj would lead to an unpredictable result

[IPR 2014-00938 - PO Response, (Paper 34), at 35; Ducharme Dec., (Ex. 2021), at ¶ 102]

# Chliwnyj Discloses LEDs of Many Colors

and yellow colors. However, light-emitting diodes are generally available in a number of suitable colors from many different manufacturers.

[IPR 2014-00938 - Chliwnyj, (Ex. 1005), at 6:28-31; Pet. Reply Brief (Paper 50), at 21-23; *see also* Rev. Pet., (Paper 13), at 18-20 and 44]

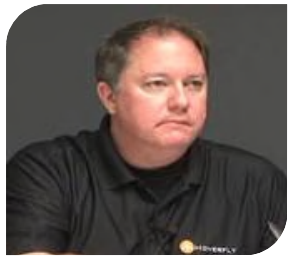
A microprocessor-based simulated electronic flame in its best mode uses multiple LEDs as controlled lighting elements to give the appearance of flame motion, typically when viewed through a diffuser. The plurality of controlled lights allow the simulated flame motion. Additionally, the use of a plurality of colors also enhances the effect of flame motion.

[IPR 2014-00938 - Chliwnyj, (Ex. 1005), at 5:11-17; Pet. Reply Brief (Paper 50), at 21-23; *see also* Rev. Pet., (Paper 13), at 18-20 and 44]

Similarly, the present invention is not in any way limited to the particular choice of light emitting diodes (LEDs) described herein, and the novel inventive features described herein may be utilized with many different types of LEDs or other electric lamps.

[IPR 2014-00938 - Chliwnyj, (Ex. 1005), at 15:1-5; Pet. Reply Brief (Paper 50), at 21-23; *see also* Rev. Pet., (Paper 13), at 18-20 and 44]

# Dr. Ducharme's Testimony Supports Petitioners' Argument



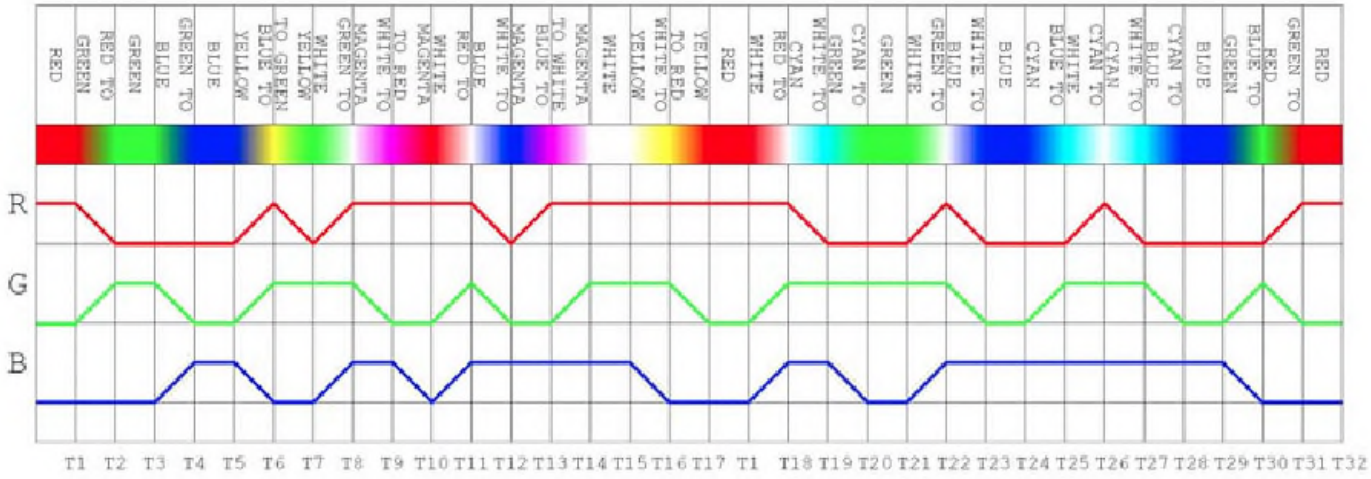
Q. And so are there any, I guess, colors he's ruling out because I'm not sure what the total scope of flame colors are in the universe, but are there any flame colors that you think he's ruling out in this -- in this patent?

MR. BENAVIDES: Objection; form.

THE WITNESS: Did he specifically say you should not use a particular color? I don't recall seeing that.

[IPR 2014-00938 - Ducharme Dep. (Ex. 1046), at 138:16-24; Shackle II (Ex. 1047, ¶ 70-72]

# Both Parties' Experts Agree that Red, Green and Blue LEDs can Produce Any Color



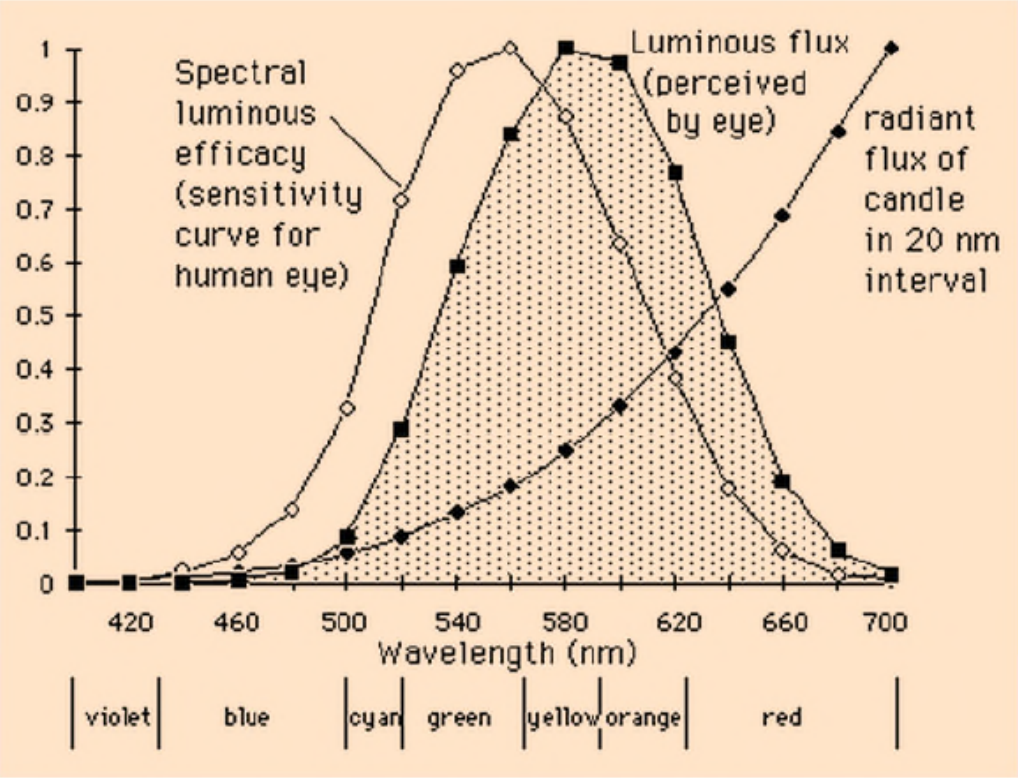

- Super Bright Red, Green, and Blue LEDs analyzed by Dr. Ducharme showing the color spectrum.

[IPR 2014-00938 - Shackle II (Ex. 1047), at ¶ 69; Pet. Reply Brief (Paper 50), at 22; Ducharme Expert Report in Rebuttal (IDC) (Ex. 1063), at 90]

- Both experts agree that to RGB diodes can cover the spectrum of colors when varying the intensity of the LEDs.

[IPR 2014-00938 - Rev. Pet. (Paper 13), at 11; Shackle I (Ex. 1002), at ¶¶ 44, 46, 121, and 194-97; Shackle II (Ex. 1047), at ¶ 69; Pet. Reply Brief, (Paper 50), at 22; Ducharme Dec., (Ex. 2021), at ¶¶ 97-98]

# Both Parties' Experts Agree that Red, Green and Blue LEDs can Produce Any Color




[IPR 2014-00938 - Shackle II (Ex. 1047), at ¶ 70; Pet. Reply Brief, (Paper 50), at 22]

# It is undisputed that flames can be many colors

**Board:** [F]lames are well known to be various colors, including blue and green

[IPR 2014-00938 – Institution Dec., (Paper 20), at 18; Pet. Reply Brief (Paper 50), at 23-24]

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**Patent Owner:** "Q: Does a flame have to amber colored?" A. "No"

[IPR 2014-00938 – Ducharme Dep. (Ex. 1046), at 191:8-11; Pet. Reply Brief, (Paper 50), at 22]

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**Petitioner:** A POSA would have known that flames can be many different colors.

[IPR 2014-00938 - Shackle II (Ex. 1047), at ¶ 72; Pet. Reply Brief (Paper 50), at 22; *see also* Shackle August 14, 2015 Dep., (Ex. 2064), at 26:16-27:18]

# It is undisputed that flames can be many colors and shapes

[IPR 00938 - Shackle II (Ex. 1047), at ¶ 72; Pet. Reply Brief (Paper 50), at 22;
*See also* Pet. Resp. to PO Motion to Exclude, (Exs. 1065-1068), at 6-10]

# A POSA Would Have Found It Obvious to Combine Chliwnyj with Lau

- POSA would have understood Chliwnyj taught multiple color LEDs
- POSA would have understood that RGB LEDs can produce a wide range of colors, including flame colors
- POSA would have understood that flames may have multiple colors
- A POSA would have understood that LEDs were simple devices that could be substituted with ease

[IPR 2014-00938 - Rev. Pet. (Paper 13), at 20, 44; Shackle I (Ex. 1002), at ¶¶ 44, 46, and 121; Shackle II (Ex. 1047), at ¶¶ 69-72; Pet. Reply Brief, (Paper 50), at 22; Ducharme Dec., (Ex. 2021), at ¶¶ 97-98]

# PO's "No Predictability" Argument also Fails

- **Chliwnyj's waveforms are preset (*i.e.*, have a constant shape with varying frequency). They do not change based on color.**

[IPR 2014-00938 - Chliwnyj (Ex. 1005), at 7:55-8:43; Ducharme Dep. (Ex. 1046), at 192:15-22; 165:2-13; Shackle II (Ex. 1047), at ¶ 71]

- **Color relationships using RBG are well known.**

[IPR 2014-00938 - Rev. Pet. (Paper 13), at 11; Shackle I (Ex. 1002), at ¶¶ 44, 46, 121, and 194-97; Shackle II (Ex. 1047), at ¶ 69; Pet. Reply Brief, (Paper 50), at 22; Ducharme Dec., (Ex. 2021), at ¶¶ 97-98]

- **Chliwnyj not limited to common flame colors (e.g., relaxation embodiment)**

[IPR 2014-00938 - Chliwnyj (Ex. 1005), at14:11-43; 58:23-60; Shackle II (Ex. 1047), at ¶ 71]

# P.O. Objections

# "Varying Color" Appears To No Longer Be At Issue

- PO's response included arguments regarding varying color, but stated PO "will apply the Board's construction for the purpose of this IPR."

[IPR Nos. 00936 and 00938 – Response Briefs (Paper Nos. 31 and 34), at 17 and 18 respectively]

- PO confirmed that it is applying Board's construction of "varying" color in arguing that Petitioners' Exhibits 1061-1063 (concerning the meaning of "varying") are moot.

[IPR Nos. 00936 and 00938 – PO Mot. To Exclude (Paper Nos. 53 and 54), at 5-6; Reply (Paper Nos. 62 and 64), at 2 and 2-3, respectively]

# Chliwnyj teaches "varying color"

## Claim Construction

### PO's Proposed Constructions

"a color that continuously changes over time by varying the intensity of one or more of the lamps with time."

[IPR Nos. 2014-00936 and 00938 - Prelim. Resp. (Paper Nos. 20 and 19), at 22-24]

"color that changes over time by varying the intensity of one or more of the lamps with time" [IPR Nos. 2014-00936 and 00938 - PO Response (Paper Nos. 31 and 34 ), at 15 and 16, respectively]

"for purposes of this IPR, Patent Owner will apply the Board's construction."

[IPR Nos. 2014-00936 and 00938 - PO Response (Paper Nos. 31 and 14), at 17 and 18-19 respectively; Ducharme Dec., (Ex. 2021), at ¶ 70; PO Motion to Exclude, (Paper Nos. 53 and 54), at 6]

### Petitioners' Proposed Construction

"transitioning from one color to another"

**varying,** *modif.* — *Syn.* diverse, differing, diverging; see **changing, different** 1.

EX. 1061, 1058

—*intr.* **1.** To undergo or show change: *a varying society.* **2.** To be different; deviate or depart. Used with *from.* **3.** To undergo successive or alternate changes in attributes or qualities. —See Synonyms at **change.** [Middle English *varien,* from Old French *varier,* from Latin *variāre,* from *varius,* speckled, changeable. See wā-[1] in Appendix.*] —**var'i·er** *n.*

EX. 1062, 1059

**var·y** (vâr'ē), *v.*, **var·ied, var·y·ing.** —*v.t.* **1.** to change or alter, as in form, appearance, character, or substance: *to vary one's methods.* **2.** to cause to be different from something else: *The orchestra varied last night's program with one new selection.* **3.** to avoid or relieve from uniformity or monotony; diversify: *to vary one's diet.* **4.** *Music.* to alter (a melody or theme) by modification or embellishments without changing its identity. —*v.i.* **5.** to show diversity; be different: *The age at which children are ready to read varies.* **6.** to undergo change in appearance, form, substance, character, etc.: *The landscape begins to vary as one drives south.* **7.** to change periodically or in succession; differ or alternate: *Demand for certain products varies with the season.* **8.** to diverge; depart; deviate (usually fol. by *from*): *to vary from the norm.* **9.** *Math.* to be subject to change. **10.** *Biol.* to exhibit variation. [1300–50; ME *varien* < L *variāre,* equiv. to *vari(us)* (see VARIOUS) + *-āre* inf. suffix] —**var'i·er,** *n.* —**var'y·ing·ly,** *adv.*
—**Syn. 1.** modify, mutate.

EX. 1063, 1060

[IPR 2014-00936 and 00938 - Ducharme Dec., (Ex. 2021), at ¶ 106; Pet. Reply Brief (Paper Nos. 48 and 50), at 9-10; Shackle II (Exs. 1050 and 1047), at ¶ 43-45]

# Observations

## Patent Owner's Observations

### Shackle Testimony ('477)

- Wu's Figure 3 (Power T's obvious)

  Testimony is relevant because it rebuts Petitioner's arguments that "Dr. Shackle previously explained in detail how Wu's light sensitive switch functioned based [on] Wu's disclosure." Citing Ex. 1002, ¶¶ 124-127 [PO. Obs., (Paper Nos. 54), at 1-2]

- Wu's disclosure
  - Testimony is relevant because it rebuts Petitioner's argument that the prior art reference Wu, on its face, discloses "how that 'light sensitive switch' operated."
  - Testimony rebuts Petitioner's argument that Wu teaches a light sensitive switch that "switches the light in Wu [on] at a particular time." [PO. Obs., (Paper Nos. 54), at 2-3]

### Shackle Testimony ('827)

- Flame testimony

  Testimony is relevant because it rebuts Petitioner's argument that "while the perception of the flame may vary somewhat if different LED colors are used, the waveforms will still be reproduced by the microprocessor" (Reply, page 23, lines 15-16) and "a POSA would have known to use the [multicolor] LEDs of Lau (Ex. 1011) in Chliwnyj," since doing so makes it look unlike a flame. [PO. Obs., (Paper No. 55), at 1]

## Petitioners' Response

### Shackle Testimony ('477)

- Wu's Figure 3 (Power T's obvious)

  In the petitions and Shackle Decls., sufficient detail re: the operation of Wu was provided and additional disclosure from the specification. Testimony does not rebut Wu's disclosure of a light sensitive switch.

  [Pet. Resp. to PO. Obs., (Paper No. 59), at 1-2]

- Wu's disclosure
  - Petition relied on cited language from Wu's disclosure, ¶ 20, that explicitly states the lights are turned on at a particular time (*i.e.,* night): "[w]hen in a particular time (such as night), the buzzer [module B] and the light emitting element 15 [module C] will automatically activate[]…." Wu (Ex. 1006), at [0020].
  - Both parties' experts agree that Wu discloses a light sensitive switch: "*I do understand Circuit Element A to be a light sensitive switch.").* Duchm. Dep., Ex. 1049 at 119:4-13 (emphasis added). [Pet. Resp. to PO. Obs., (Paper No. 59), at 3-5]

### Shackle Testimony ('827)

- Flame testimony

  Dr. Shackle's opinion was that LEDs of different colors could still produce light that appeared to be a flickering flame.

  [Pet. Resp. to PO. Obs., (Paper No. 55), at 2-10]

# Patent Owner's Motion to Exclude

## Patent Owner's Motion to Exclude

### Exclude Exhibits and Portions of Shackle Declaration

- Belated Shackle Decl. Experience
  [Motion to Exclude (Paper Nos. 53 and 54), at 3-4; Shackle II (Exs. 1050 and 1047), at ¶¶ 35 – 38]
- Belated Linkedin profiles and Shackle Decl.
  [Motion to Exclude (Paper Nos. 53 and 54), at 6-8; Exs. 1051-60 and 1048-57; Shackle II (Exs. 1050 and 1047), at ¶¶ 26, 27]
- Belated "varying," "exposed," "accessible" and Shackle Decl.
  [Motion to Exclude (Paper Nos. 53 and 54), at 6-8; Exs. 1061-63 and 1058-60; Shackle II (Exs. 1050 and 1047), at ¶ 71 and¶ 50]

### Exclude Ducharme Cross Testimony

- Wu teaches a light sensitive switch
  [Motion to Exclude (Paper Nos. 53 and 54), at 6-8; Ducharme Dep. (Ex. 1046), at 119: 4-13]
- Relying solely on single embodiment - flame embodiment
  [Motion to Exclude (Paper Nos. 53 and 54), at 8-10; Ducharme Dep. (Ex. 1046), at 71:20–25, 172:1–25, 173:1–25, 174:1–16]
- User interface testimony ("a switch is a switch")
  [Motion to Exclude (Paper Nos. 53 and 54), at 10-11; Ducharme Dep. (Ex. 1046), at 71:20–25, 172:1–25, 173:1–25, 174:1–16]

## Petitioners' Rebuttal

### Exclude Exhibits and Portions of Shackle Declaration

- Belated testimony and exhibits
  "[a] reply may only respond to arguments raised in the corresponding opposition" 37 C.F.R. § 42.23; Office Patent Trial Practice Guide, 77 Fed. Reg. at 48767. [Pet. Opp., (Paper Nos. 60 and 62), at 2]
- Should be allowed to rebut challenge to expert qualifications
  [Pet. Opp., (Paper Nos. 60 and 62), at 5]
- Should be allowed to rebut new claim construction arguments; PO reargues the construction of "varying colour," "exposed," and "accessible" in its response [Pet. Opp., (Paper Nos. 60 and 62), at 6-8]
- Linkedin in profiles are not hearsay and if so, experts may rely on hearsay [Pet. Opp., (Paper Nos. 60 and 62), at 9-12]

### Exclude Ducharme Cross Testimony

- Wu teaches a light sensitive switch
  Explanation indicated he understood the question. Attempt to exclude harmful testimony. [Pet. Opp., (Paper No. 60 and 62), at 11 and 12-13]
- User interface testimony ("a switch is a switch")
  PO failed to cite all of the relevant testimony to providing an incomplete picture of the questioning. Pet. Counsel laid foundation. [Pet. Opp., (Paper No. 60 and 62), at 13-14 and 12-13]
- Relying solely on single embodiment flame embodiment
  PO attempts to exclude harmful testimony. Pet. Counsel laid foundation. [Pet. Opp., (Paper No. 60 and 62), at 12-13]

# Petitioners' Motion to Exclude

## Petitioner's Motion to Exclude

### Exclude Exhibits & Reliance

- Linkedin profiles

  [Motion to Exclude (Paper Nos. 55 and 56), at 2-3; Exs. 2034, 2042, 2050, 2052, 2054, 2062 and 2042, 2050, 2052, 2054, 2062, respectively]

- Motion to Terminate

  [Motion to Exclude (Paper Nos. 55 and 56), at 3; Motion to Terminate, (Paper Nos. 34 and 37) at 8-9]

### Exclude Shackle Cross Testimony

- "Varying"

  [Motion to Exclude (Paper Nos. 55 and 56), at 4-5; Shackle Dep. (Ex. 2022), at 7:23- 65:5, 68:4-79:24, and 167:16-183:19; PO Response, (Paper 34), at 15-17]

- "Exposed switch"

  [Motion to Exclude (Paper Nos. 55 and 56), at 4-5; Shackle Dep. (Ex. 2022), at 99:1-115:12; PO Response, (Paper 34), at 40-42; Ducharme Dec., (Ex. 2021), at ¶¶ 110-118]

- "Retrospective review"

  [Motion to Exclude (Paper Nos. 55 and 56), at 6-7; Shackle Dep. (Ex. 2023), at 277:19-279:10; PO Response, (Paper Nos. 31 and 34), at 13; Ducharme Dec., (Ex. 2021), at ¶ 35]

## Patent Owner's Rebuttal

### Exclude Exhibits & Reliance

- Linkedin profiles & Motion to Terminate- Moot

  PO reserves its right to appeal the decision of the Board and address the Petitioner's objections and any apparent lack of consideration of such exhibits by the Board in making its decision. [PO. Opp., (Paper Nos. 58 and 59), at 1]

### Exclude Shackle Cross Testimony

- "Varying"

  Objection is late and not preserved. No dispute, both parties adopted Board's construction.

  [PO. Opp., (Paper Nos. 58 and 59), at 2]

- "Exposed switch"

  Failed to explain objections, thus waived. Objection to cited testimony is late and not properly preserved.

  [PO. Opp., (Paper Nos. 58 and 59), at 3-7]

- "Retrospective review"

  Objection not properly preserved, if so testimony re: review was impermissible hindsight.

  [PO. Opp., (Paper Nos. 58 and 59), at 8-9]

# GROUND 2 - Claims 10-12, 23-25, and 27-29 Obvious in View of Chliwnyj, Wu, Hung, and Pu

**10**. The device of claim **9** wherein, said switch is a first switch, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**11**. The device of claim **10** wherein, said second switch is on said exposed external surface.

**12**. The lighting device of any one of claim **1** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operated to select said desired fixed colour.

**23**. The lighting device of claim **22** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operable to select said desired fixed colour.

**24**. The device of claim **21** wherein, said circuit includes a sub-circuit, said switch is a first switch said first switch being an on/off switch to deliver electric power from the battery to said sub-circuit, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**25**. The device of claim **24** wherein, said second switch is on said exposed external surface.

**27**. The lighting device of claim **20** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operable to select said desired fixed colour.

**28**. The device of claim **20** wherein, said circuit includes a sub-circuit, said switch is a first switch said first switch being an on/off switch to deliver electric power from the battery to said sub-circuit, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**29**. The device of claim **28** wherein, said second switch is on said exposed external surface.

[IPR 2014-00936 - Ex. 1001 ('477 patent) at 7:65-8:9; 8:61-9:6; 9:14-10:13]

- The Board characterized these claims as reciting limitations regarding the ability to select a particular color using the switch of those claims."

[IPR 2014-00936 – Institution Dec. (Paper 21), at 16]

# GROUND 3 - Claims 3, and 13-16 are Obvious in View of Chliwnyj, Wu, Hung, and Xu

**3**. The device of claim **2** wherein, said switch is on an exposed downwardly facing surface.

**13**. The device of claim **1** wherein, said switch is on an exposed downwardly facing surface.

**14**. The device of claim **13** wherein, said circuit includes three lamps, each of a different colour.

**15**. The device of claim **14** wherein, said lens is a first lens, and said device includes a second lens, said second lens being attached to said base and providing a cavity into which the LEDs direct light, with the light leaving said second lens then passing through said first lens.

**16**. The lighting device of claim **14** wherein, said circuit includes a light sub-circuit connected to the lamps to deliver electric power thereto so that the lamps produce said desired colour, with said switch being an on/off switch to deliver electric power from the batteries to said sub-circuit.

[IPR 2014-00936 (Ex. 1001), ('477 Patent), at 7:43-44; 8:10-23]

# GROUND 4 - Claims 17-19 are Obvious in View of Chliwnyj, Wu, Hung, Pu and Xu

**17**. The device of claim **16** wherein, said switch is a first switch, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**18**. The device of claim **17** wherein, said second switch is on said exposed external surface.

**19**. The lighting device of claim **14** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operated to select said desired fixed colour.

[IPR 2014-00936 - Ex. 1001 ('477 patent) at 9:14-10:13]

# Instituted Claims 24-29 and 35

**24**. A lighting device to produce light of varying colour, said device comprising:
a lens generally enclosing a chamber;
a circuit including:
at least two lamps of different colours to produce a desired colour, the lamps being mounted to direct light into said chamber;
connections for at least one rechargeable battery to power the circuit;
a solar cell mounted on a surface so as to be exposed to light and operatively associated withthe connections to charge the battery;
a light sub-circuit having an integrated circuit for controlling said lamps to produce lighting effects, and a selection switch, said selection switch being connected to said integrated circuit and operable to select a desired lighting effect; and
a volatile memory retained for a period of time and associated with said integrated circuit, said memory causing operation of said circuit to produce said lighting effects.

**25**. The device according to claim **24**, wherein said lighting effect is selected from the group of lighting effects consisting of: a specific colour changing effect, a colour brightness effect, a colour changing frequency effect, a colour changing sequence effect, and a colour light intensity effect.

**26**. The device according to claim **24**, wherein said desired colour includes a varying colour.

**27**. A lighting device to produce light of varying colour, said device including:
a lens;
a circuit having
at least two lamps of different colours to produce a varying colour, said lamps being mounted to direct light through said lens,
connections for at least one rechargeable battery to power said circuit,
a solar cell mounted so as to be exposed to light and operatively associated with said connections to charge said battery, and
a user operated switch operable to control said circuit, with said switch being accessible by a user thereby enabling said user to manipulate said switch to control delivery of power to said lamps; and a spike for positioning said connections above a ground surface.

**28**. The lighting device of claim **27**, wherein said circuit includes a light sub-circuit connected to said lamps to deliver power thereto so that said lamps produce a desired color, with said switch controlling said sub-circuit.

**29**. The lighting device of claim **27**, wherein said circuit includes a light sub-circuit connected to said lamps to deliver power thereto so that said lamps produce light, with said switch being an on/off switch to deliver power from said battery to said sub-circuit.

**35**. A lighting device to produce light of varying color, said device including:
a body including a post;
a lens connected to said body;
a circuit having:
a plurality of lamps of different colors to produce a varying color, said lamps being mounted to direct light through said lens,
connections for at least one rechargeable battery to power said circuit,
a solar cell mounted so as to be exposed to light and operatively associated with said connections to charge said battery, and
at least one user operated switch operable to control said circuit, with said switch being accessible by a user thereby enabling said user to manipulate said switch to control delivery of power to said lamps.

[IPR 2014-00938 - Ex. 1001 ('827 patent) at 11:6-59; 12:40-57]

# ’477 Patent

**1**. A lighting device to produce light of varying colour, said device including:

a body including a spike;

a lens mounted on the body and generally enclosing a chamber having an upper rim surrounding a top opening, and a bottom region;

a cap assembly including securing means to releasably engage the rim so that cap assembly can be selectively removed from the lens; assembly including:

a base

a circuit having at least two lamps of different colours to produce a desired colour including varying colour, the lamp being mounted to direct light into said chamber, connection for at least one rechargeable battery to light and operatively associated with the a surface of the assembly so as to be exposed to light and operatively associated with the connections to charge the battery, and a switch operated to control delivery of electric power from the battery to operate said circuit, the switch being exposed to provide for access thereto a user.

**2**. The light device of claim **1** wherein, said circuit includes a light sensitive switch that renders the circuit operation at low light levels.

# ’477 Patent
# Claims 20 and 21

**20**. A lighting device to produce light of varying colour, said device including:

a body including a spike;

a lens connected to the body;

a circuit having at least two lamps of different colours to produce a desire colour including a varying colour, the lamps being mounted to direct light into said lens, connections for at least one rechargeable battery to power the circuit and a solar cell mounted on a surface of the assembly so as to be exposed to light and operatively associated with the connections to charge the battery, and a user operated switch operable to control delivery of electric power from the battery to operate said circuit, the switch being exposed to provide for access thereto by a user thereby enabling a user to manipulate the switch to control the delivery of electric power from the battery.

**21**. The lighting device of claim **20** wherein, said circuit includes a light sensitive switch that renders the circuit operative at low light levels.

# ’477 Patent

(Ground 2 Exemplary Claims)

**23**. The lighting device of claim **22** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operable to select said desired fixed colour.

**24**. The device of claim **21** wherein, said circuit includes a sub-circuit, said switch is a first switch said first switch being an on/off switch to deliver electric power from the battery to said sub-circuit, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**25**. The device of claim **24** wherein, said second switch is on said exposed external surface.

# ’477 Patent
(Ground 3 Claims)

**13**. The device of claim **1** wherein, said switch is on an exposed downwardly facing surface.

**14**. The device of claim **13** wherein, said circuit includes three lamps, each of a different colour.

**15**. The device of claim **14** wherein, said lens is a first lens, and said device includes a second lens, said second lens being attached to said base and providing a cavity into which the LEDs direct light, with the light leaving said second lens then passing through said first lens.

**16**. The lighting device of claim **14** wherein, said circuit includes a light sub-circuit connected to the lamps to deliver electric power thereto so that the lamps produce said desired colour, with said switch being an on/off switch to deliver electric power from the batteries to said sub-circuit.

# ’477 Patent
(Ground 4 Claims)

**17**. The device of claim **16** wherein, said switch is a first switch, and said sub-circuit includes an integrated circuit and a second switch connected to said integrated circuit, the second switch being operable to select a desired fixed colour and exposed to provide for access thereto by a user.

**18**. The device of claim **17** wherein, said second switch is on said exposed external surface.

**19**. The lighting device of claim **14** wherein, said circuit includes a light sub-circuit having an integrated circuit operable to select a desired fixed colour, with said switch being connected to said integrated circuit and operated to select said desired fixed colour.

# ’827 Patent
# (Claim 24)

**24**. A lighting device to produce light of varying colour, said device comprising:

a lens generally enclosing a chamber;

a circuit including:

at least two lamps of different colours to produce a desired colour, the lamps being mounted to direct light into said chamber;

connections for at least one rechargeable battery to power the circuit;

a solar cell mounted on a surface so as to be exposed to light and operatively associated withthe connections to charge the battery;

a light sub-circuit having an integrated circuit for controlling said lamps to produce lighting effects, and a selection switch, said selection switch being connected to said integrated circuit and operable to select a desired lighting effect; and

a volatile memory retained for a period of time and associated with said integrated circuit, said memory causing operation of said circuit to produce said lighting effects.

# ’827 Patent
# (Claim 27)

**27**. A lighting device to produce light of varying colour, said device including:

a lens;

a circuit having

at least two lamps of different colours to produce a varying colour, said lamps being mounted to direct light through said lens,

connections for at least one rechargeable battery to power said circuit,

a solar cell mounted so as to be exposed to light and operatively associated with said connections to charge said battery, and

a user operated switch operable to control said circuit, with said switch being accessible by a user thereby enabling said user to manipulate said switch to control delivery of power to said lamps; and a spike for positioning said connections above a ground surface.

# ’827 Patent
# (Claim 35)

**35**. A lighting device to produce light of varying color, said device including:

a body including a post;

a lens connected to said body;

a circuit having:

a plurality of lamps of different colors to produce a varying color, said lamps being mounted to direct light through said lens,

connections for at least one rechargeable battery to power said circuit,

a solar cell mounted so as to be exposed to light and operatively associated with said connections to charge said battery, and

at least one user operated switch operable to control said circuit, with said switch being accessible by a user thereby enabling said user to manipulate said switch to control delivery of power to said lamps.

# ’827 Patent
# (Claim 30)

**30**. The lighting device of claim **27**, wherein any one of said at least two lamps is a single diode that emits light when energized, and wherein said at least two lamps are at least three lamps comprising a diode that emits red light, a diode that emits blue light and a diode that emits green light.

# Wu Figure 3

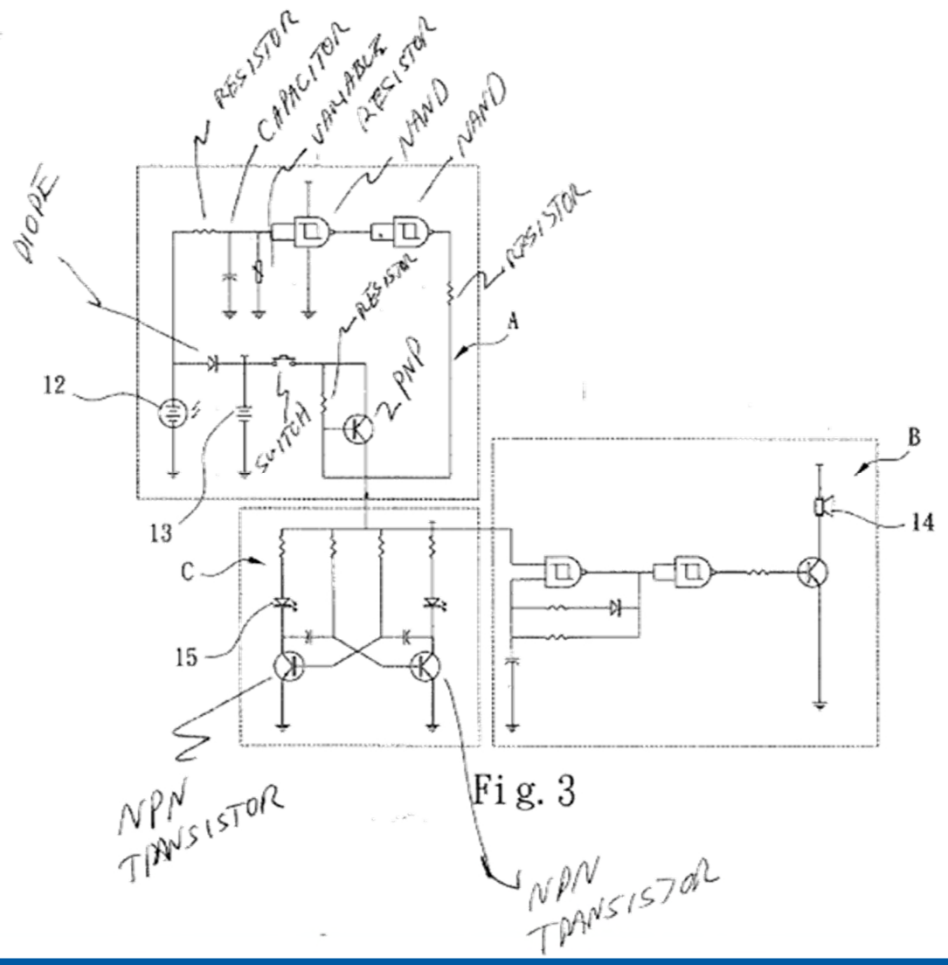
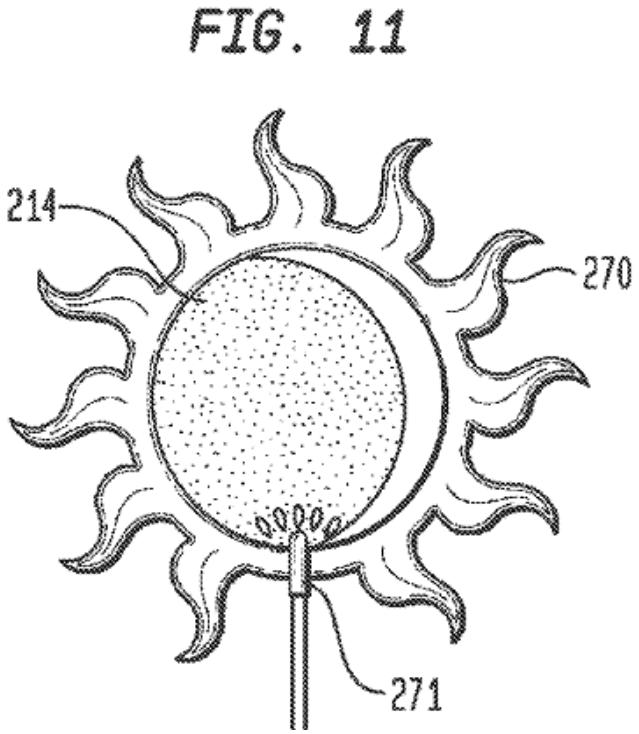



Fig. 3

# IPR2014-00935

## Illuminated wind indicator

# Disputed limitation – claims 1-4 and 49-50

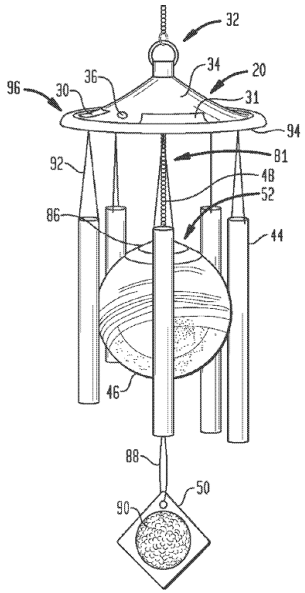



a surround frame attached to said lamp proximate to the intersection of said connecting frame and said riser portion such that some of said light passes through said lens to illuminate at least part of said surround frame from below at least part of said surround frame;

Ex. 1073, p. 23

# Disputed limitations – Chime Claims

Claims 5, 18, 19, 28, "at least one light source situated such that a portion of said pendulum assembly emits light;"




Claims 43 and 45 "at least one light source is disposed below said housing via an electrically transmissive tether and co-located with said striker"

# Case Summary

- Group 1 – Surround Frame
  - Construction of "Surround Frame"
  - Combinability of Norton and Chen
  - Norton Teaches an Activation Circuit
- Group 2 – Chimes
  - Combination of Kube and Ouyang
  - Combination of Kube, Ouyang and Kuelbs
  - Combination of Kube, Ouyang and Chliwnyj

# Construction of "*Surround Frame*"

- Norton under §§ 102/103
  - Grounds 1-4 and 7
  - Claims 1-4 and 49-50

# Disputed limitation

a surround frame attached to said lamp proximate to the intersection of said connecting frame and said riser portion such that some of said light passes through said lens to illuminate at least part of said surround frame from below at least part of said surround frame;

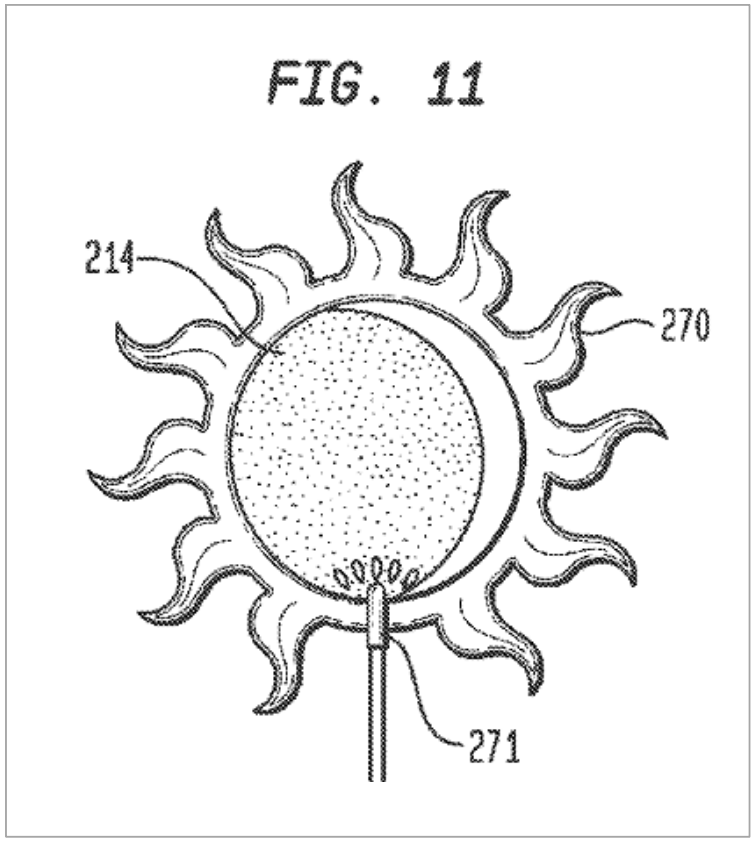
Ex. 1073, p. 23

# Construction Comparison

| Patent Owner's Construction | Petitioner's Construction |
|---|---|
| "open structural peripheral border that encircles the lens while residing primarily in a plane passing through the lens, the degree of completeness being at least 270 degrees (like a doorway surround frame that is complete except for one side), the peripheral border being primarily either linearly one-dimensional or two-dimensional in the plane in which it primarily resides, any degree of thickness in a third dimension being relatively small such that the peripheral border does not substantially conceal or cover the lens outside of plane in which the peripheral border primarily resides" | "frame disposed at least partially around the lens" |

Ex. 1073, p. 23

# '370 patent




"In this embodiment a surround frame 270 encircles the lens portion 214. The surround frame 270 adds a decorative element but also provides some impact protection for the lens portion 214 should the fixture topple over and fall. The frame ***may*** be any decorative shape such as a sun, flower, moon, insect, ***or*** geometric shape. The surround frame ***may*** partially ***or*** fully encircle the lens portion 214 and ***may*** surround the lens portion 214 in two ***or*** three dimensions. When illuminated, light emanating from the lens portion 214 illuminates at least part of the frame 270 providing nighttime illumination of the decoration.

'370 patent, 21:63-22:6 (emphasis added)

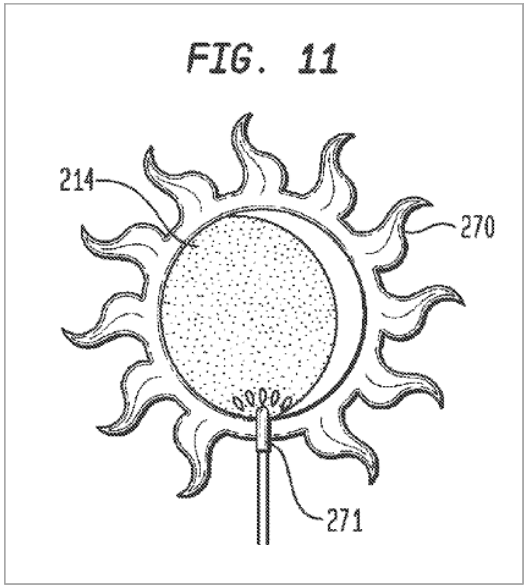
# Board's construction

"According to Patent Owner, the preferred and only embodiment of the 'surround frame' disclosed in the '370 patent is a frame made from metal, and thus, we should so interpret the claims to include this limitation. We decline to read this limitation from the Specification into the claims. … Patent Owner has not directed us to any evidence of a clear disclaimer of claim scope."

Decision on Institution, p. 16.

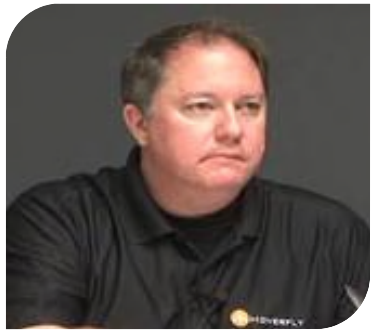
# Patent Owner's construction

An open structural peripheral border that encircles the lens while residing primarily in a plane passing through the lens, the degree of completeness being at least 270 degrees (like a doorway surround frame that is complete except for one side), the peripheral Border being primarily either linearly one-dimensional or two-dimensional in the plane in which it primarily resides, any degree of thickness in a third dimension being **relatively small** such that the peripheral border does not **substantially conceal** or cover the lens outside of plane in which the peripheral border primarily resides.




Response, p. 18; Duchm. Dec., ¶ 94.

# Dr. Ducharme's testimony

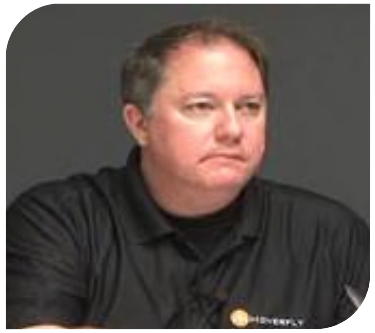


Q. I want to make a solar light having a five-inch diameter Lens 214 and a surround frame 270 that appears on this plane identically as it does here [in the 370 patent] except that it will be thick so as to not constitute a surround frame. How thick would I have to make it to not be a surround frame?

A. It's not simply a matter of the thickness. It can extend in the third dimension that was it can't extend in the third dimension any more than what's considered a relatively small amount so that it doesn't substantially conceal the lens.

Ex. 1061, 28:2–29:23; Ex. 1073, ¶ 52

# Dr. Ducharme's testimony



Q. What is "a relatively small amount"?

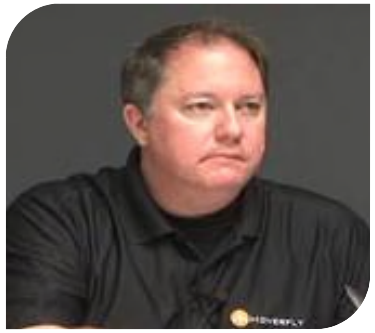
A. A relatively small amount is an amount by which the lens is not substantially obscured by the -- by the surround frame.

Q. Can you give me an objective definition of "substantially obscured"?

A. No.

Ex. 1061, 28:2–29:23; Ex. 1073, ¶ 52

# Dr. Ducharme's testimony

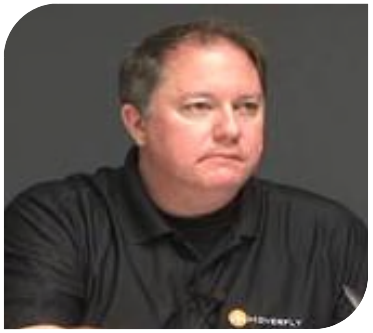


Q. Why not?

A. Because I would be just creating a hypothetical example that -- out of thin air. I don't know. Not that I don't know. I believe that my declaration describes what I believe a surround frame to be exactly and succinctly.

Ex. 1061, 28:2–29:23; Ex. 1073, ¶ 52

# Dr. Ducharme's testimony



Q. Can you give me an objective criteria of what "substantially concealed" means?

A. No.

Q. Is that because different people have different opinions of what "substantially concealed" means?

A. They can have different opinions.

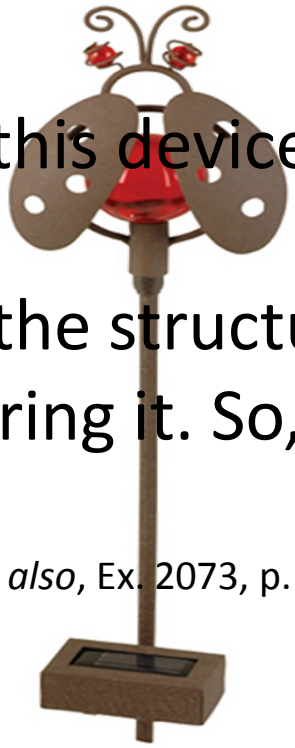
Ex. 1061, 28:2–29:23; Ex. 1073, ¶ 52

# Dr. Ducharme disagrees with the Patent Owner on what constitutes a "*surround frame*"

Q. Does this device include a surround frame?

A. Well, the structure encircling the lens … is obscuring it. So, no.

Ex. 1061, 211:1-6; *see also*, Ex. 2073, p. 16.



Ex. 1059

Ex. 1073, ¶ 48.

# Petitioner's construction (Norton under §§ 102 & 103)

"A frame disposed at least partially around the lens"

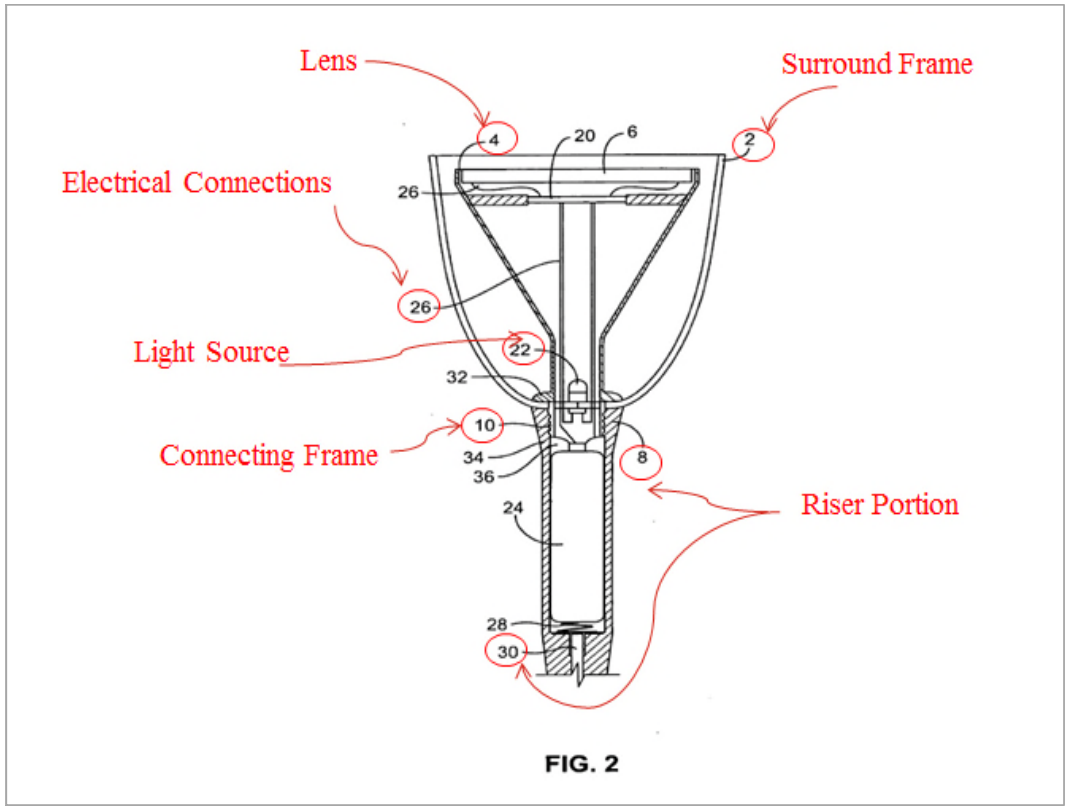
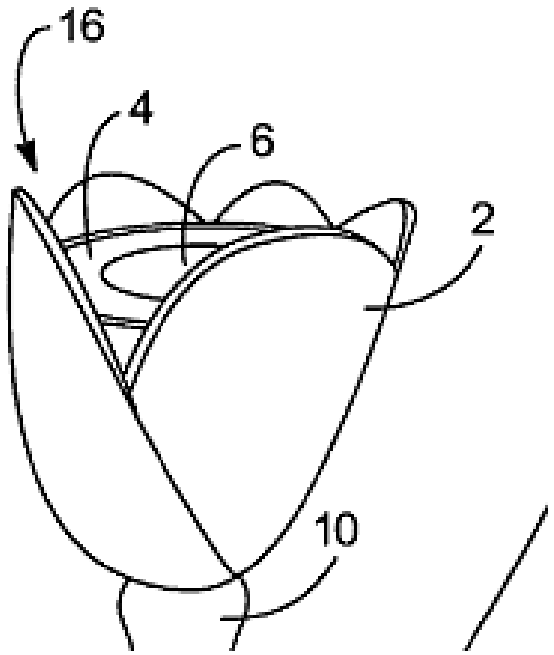


FIG. 2




Norton, Ex. 1011, FIGs. 1 and 2

# Petitioner's construction

"A frame disposed at least partially around the lens"

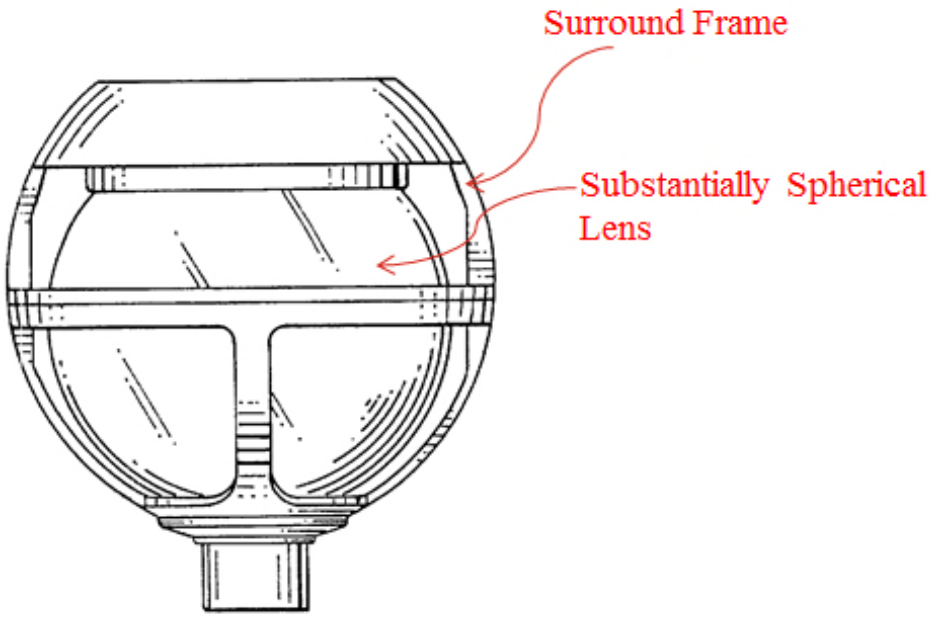



FIG. 2

Chen, Ex. 1018, FIG. 2

Q. Is this external element in Chen a frame that surrounds the internal globe?
…
A. Yes.
Ex. 1062; 34:16-19.

Ex. 1073, ¶¶ 52 and 55-56; Reply, pp. 13-15.

# Petitioner's construction (Norton under §§ 102 & 103)

"The frame may be any decorative shape such as a sun [or] flower… and may surround the lens portion 214 in two or three dimensions."

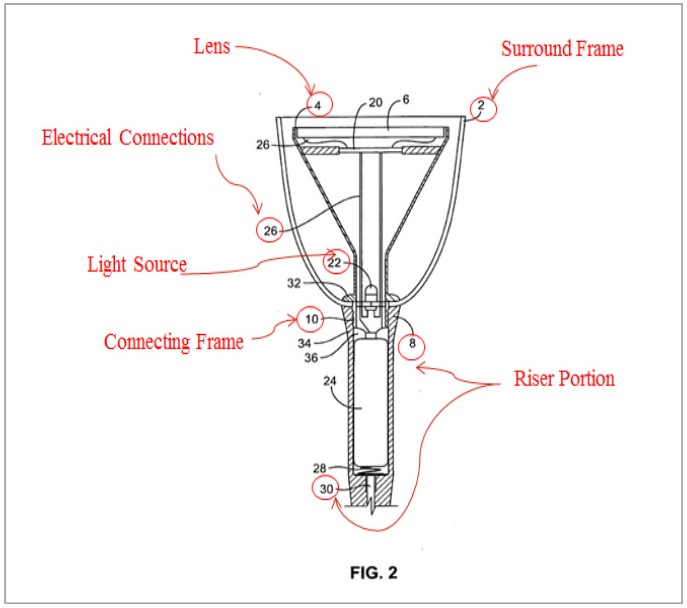
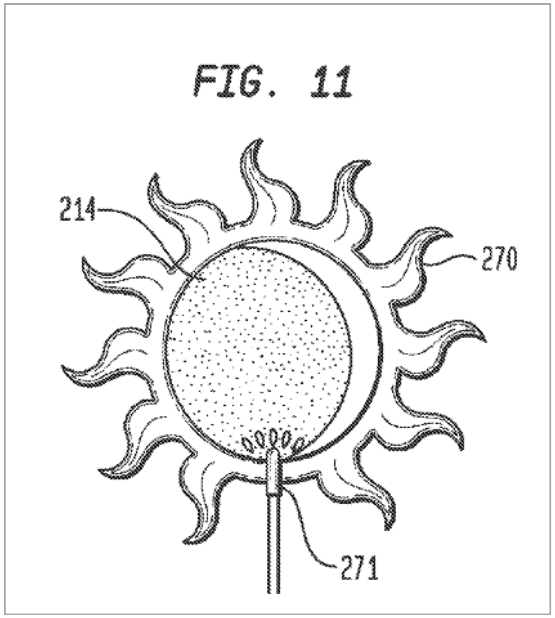


FIG. 2




'370 patent, 21:63-22:6 and Norton, Ex. 1011, FIG. 1

# Construction Comparison

| Claim 1 | With Patent Owner's Construction | Petitioner's Construction |
|---|---|---|
| a surround frame attached to said lamp proximate to the intersection of said connecting frame and said riser portion such that some of said light passes through said lens to illuminate at least part of said surround frame from below at least part of said surround frame; | A[n] "open structural peripheral border that encircles the lens while residing primarily in a plane passing through the lens, the degree of completeness being at least 270 degrees (like a doorway surround frame that is complete except for one side), the peripheral border being primarily either linearly one-dimensional or two-dimensional in the plane in which it primarily resides, any degree of thickness in a third dimension being relatively small such that the peripheral border does not substantially conceal or cover the lens outside of plane in which the peripheral border primarily resides" attached to said lamp proximate to the intersection of said connecting frame and said riser portion such that some of said light passes through said lens to illuminate at least part of said "open structural peripheral border that encircles the lens while residing primarily in a plane passing through the lens, the degree of completeness being at least 270 degrees (like a doorway surround frame that is complete except for one side), the peripheral border being primarily either linearly one-dimensional or two-dimensional in the plane in which it primarily resides, any degree of thickness in a third dimension being relatively small such that the peripheral border does not substantially conceal or cover the lens outside of plane in which the peripheral border primarily resides" from below at least part of said "open structural peripheral border that encircles the lens while residing primarily in a plane passing through the lens, the degree of completeness being at least 270 degrees (like a doorway surround frame that is complete except for one side), the peripheral border being primarily either linearly one-dimensional or two-dimensional in the plane in which it primarily resides, any degree of thickness in a third dimension being relatively small such that the peripheral border does not substantially conceal or cover the lens outside of plane in which the peripheral border primarily resides"; | a "frame disposed at least partially around the lens" attached to said lamp proximate to the intersection of said connecting frame and said riser portion such that some of said light passes through said lens to illuminate at least part of said "frame disposed at least partially around the lens" from below at least part of said "frame disposed at least partially around the lens"; |

Ex. 1073, p. 23

# It Would Have Been Obvious to Combine Norton and Chen

Ground 4

Claims 4 and 49-50

# Claim limitation

Claims 4 and 50:

said lens is substantially spherical …

Ex. 1073, p. 23

# Patent Owner's argues no reason to combine because Norton is limited to a "frosted" surround frame

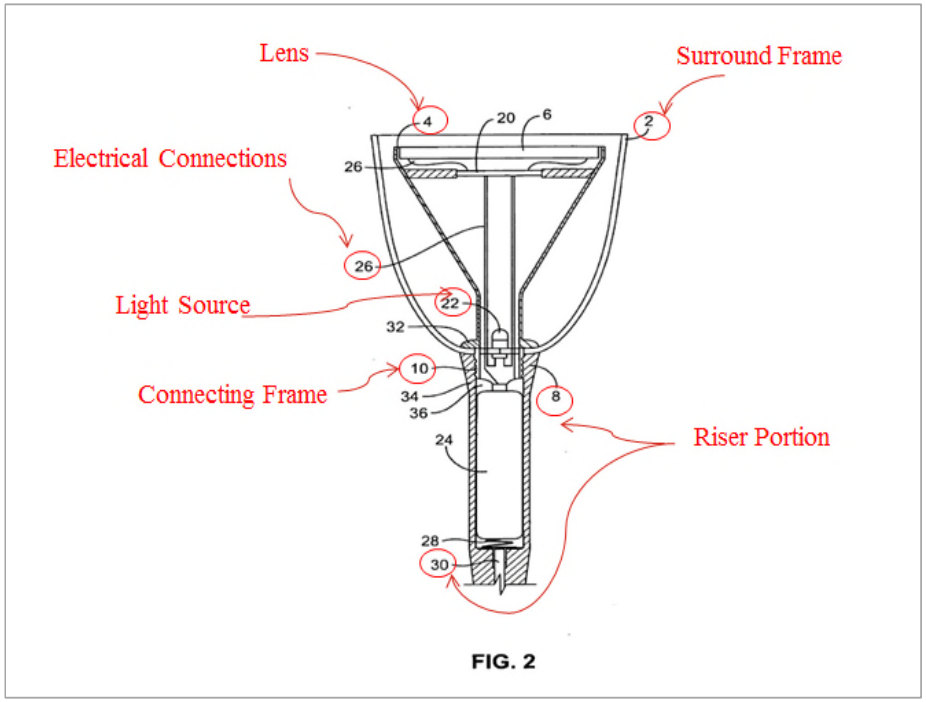


FIG. 2

Norton, Ex. 1011, FIG. 2

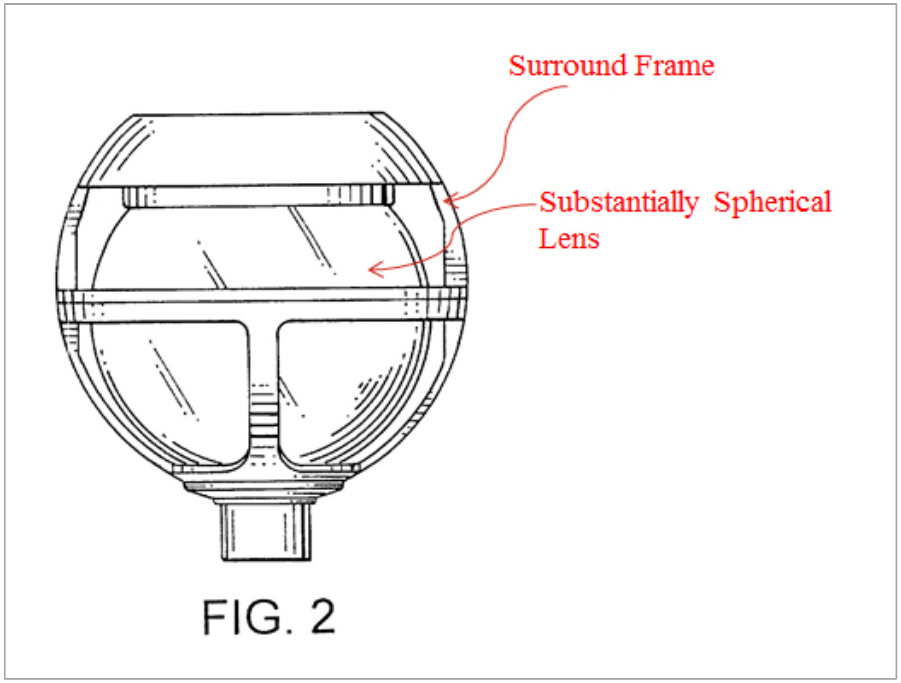


FIG. 2

Chen, Ex. 1018, FIG. 2

# Norton's surround frame is "translucent," not simply "frosted"

- "The external decorative housing element 2 may be comprised of a substantially rigid translucent material"
- "solar energy may traverse the external decorative housing element 2"
- "such a translucent material enables the external decorative housing element 2 to be illuminated"
- "According to certain embodiments …, the external decorative element 2 comprises frosted translucent plastic"
- In addition, the external decorative housing element 2 may comprise one or several apertures for decorative and/or utilitarian purposes. For example, several pinhole openings may be provided over the surface area of the external decorative element 2 to disperse light emitted by the luminous body in an aesthetically pleasing manner.

Ex. 1011, ¶ 30.

# Norton's surround frame is "translucent," not simply "frosted"

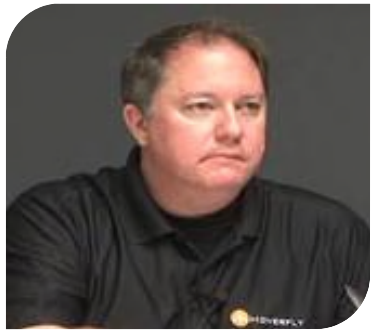
- "a substantially translucent dual housing unit comprising an external decorative element"

Ex. 1011, claim 1.

- "a translucent ornamental housing removably coupled to at least one of said mount portion and said internal luminescent protective housing, wherein said translucent ornamental housing substantially surrounds said internal luminescent protective housing"

Ex. 1011, claim 20.

# The parties agree that "translucent" is broad



Q. Would a material like glass be at the end of most translucency being closest to air in the range you described?

A. It's relative. Glass is a material. … Glass could be used to form a border.

Q. … on the opposite end of the spectrum, you would have metal that would be opaque?

A. Yes. ….

Ex. 1061, 150:16-151:3; Reply, p. 14.

# Substituting Norton's lens for Chen's would have been a simple design choice

- Substituting frames or lenses for holidays or events was well known

- Claims 4 and 50 do not specify a material for the surround frame.

Reply, p. 15 (citing Norton, Ex. 1011, ¶ 9 and claim 7)

# Norton Teaches an "*Activation Circuit*"

Grounds 1-5 and 7

Claims 1-7, 9, 10, 14, 17-20, 23, and 48-50

# Norton teaches an "*activation circuit to provide power to said at least one light source*"

| '382 provisional, Ex. 1010, 5:4-19 | Norton, Ex. 1011, ¶ 0039 (emphasis added). |
|---|---|
| "if … sufficient ambient light is available for recharging the batteries 31 using the solar panels 30, a connection is made between the solar panels 30 and the batteries 31 …. If a determination is made that insufficient ambient light is available, a connection is not made between the solar panels 30 and the batteries 31 …." | "The controller board 20 accepts power from the solar cell 6 and battery 24, as well as input from the photoresistor 38. The controller board 20 enables the luminous body 22 **to illuminate the solar lamp** when the photoresistor 38 indicates darkness." |

Petitioner reply, p. 13.

# It Would Have Been Obvious to Combine Kube and Ouyang

- Wind Chimes
  - Grounds 5-7
  - Claims 5, 6, 7, 9, 10, 14, 17, 18, 19, 20, 23, 28, 43, and 45

# Claim limitations at issue

Claims 5, 18, 19, 28, "at least one light source situated such that a portion of said pendulum assembly emits light;"

Claims 43 and 45 "at least one light source is disposed below said housing via an electrically transmissive tether and co-located with said striker"

# Obvious design choice – finite number of identified, predictable solutions, with a reasonable expectation of successfully putting LEDs into wind chimes

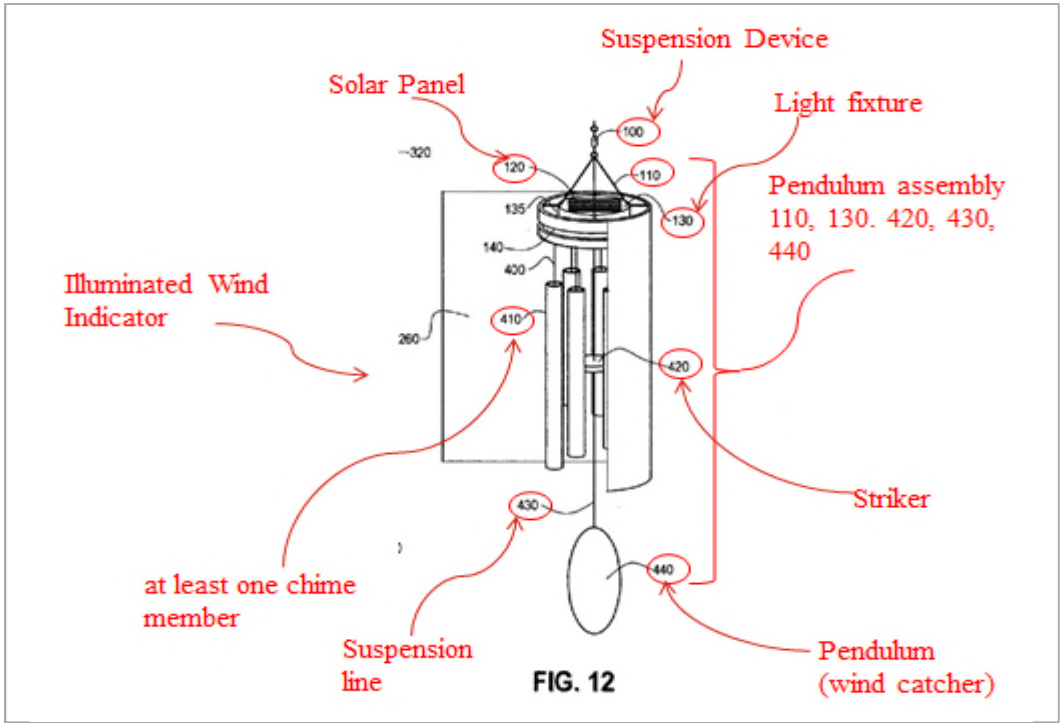


FIG. 12

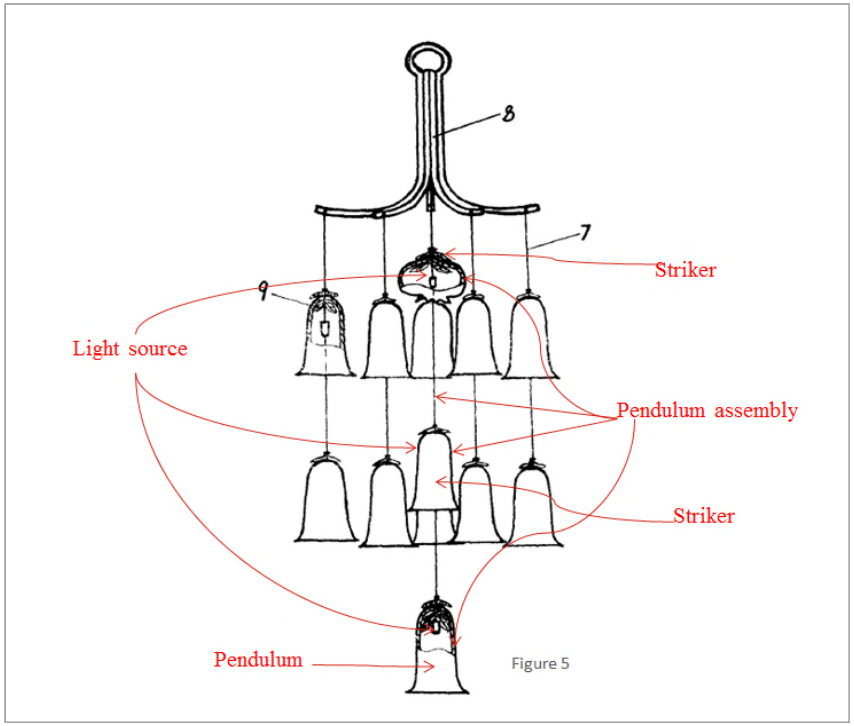


Figure 5

# Obvious design choice – finite number of identified, predictable solutions, with a reasonable expectation of successfully putting LEDs into wind chimes

- "The variations on how the above-described solar light fixtures utilizing wind powered effects can be used is virtually unlimited. Ideally, the basic solar light fixture will be able to be used in a very wide array of effects with a wide array of purposes."

(Kube, Ex. 1012, ¶¶ 33; Ex. 1073, ¶ 60.)

# Obvious design choice – finite number of identified, predictable solutions, with a reasonable expectation of successfully putting LEDs into wind chimes

- "Combining Solar Light Fixtures with Wind Chimes."

- "[a] search on the internet for glass wind chimes will show many examples of these objects that can be combined with a solar light fixture…."

Ex. 1012, ¶¶ 20-21, petition, p. 34.

# Patent Owner's arguments

- Patent Owner does not dispute whether all limitations are in the prior art.

- PO #1 – Kube would be rendered inoperable for its intended purpose of "providing users with a solar powered light fixture configured for securing a windsock or lampshade or wind chimes"

- PO #2 –Relocating lights would have unpredictable results

PO response, pp. 37-38.

# PO#1(a) – Kube neither claims nor requires detachable accessories

[0045] 5. Combine the solar lights with wind chimes, making the wind chimes and or the fixture visible at night and producing additional pleasing effects.

Petition, pp. 34–35; Reply, p. 17; Ex. 1064; Ex. 1073, ¶¶ 60-61.

# PO#1(a) – Kube neither claims nor requires detachable accessories

[0023] Some very nice examples of wind chimes that would be nicely illuminated with solar lights can be seen at the following url:


Petition, pp. 34–35; Reply, p. 17; Ex. 1064; Ex. 1073, ¶¶ 60-61.

# PO#1(b) – Adding LEDs would not affect operability

- Kube teaches metal clip connectors 350.

FIG. 7

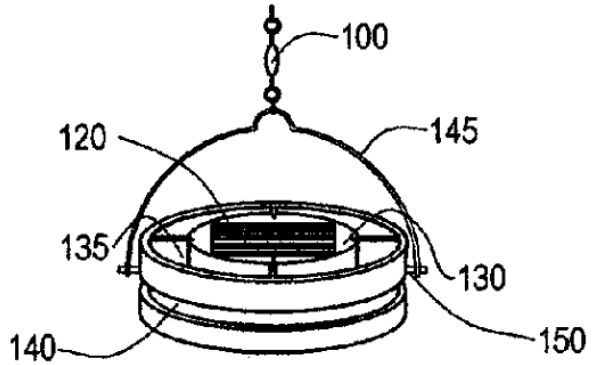
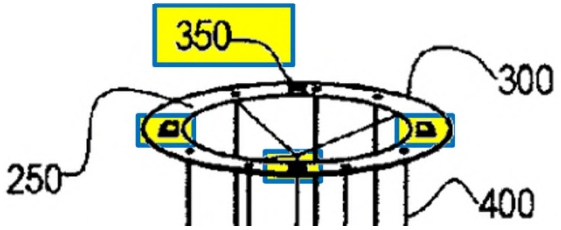



FIG. 11




Reply at 16 and Ducharme Depo., Ex. 1061, 163:20-22

# PO #2 – Combination would be aesthetically unpredictable

- Patent owner provides only conclusory analysis that combining the "illumination effect" and "display effect" leads to unpredictable results.

Ducharme Decl., Ex. 2022, ¶ 189.

# Patent Owner argues that the "display" and "illumination" effects are not combinable

Photograph Illustrating Illumination Effect

Photograph Illustrating Display Effect

Ex. 2022, pp. 97 and 101

# PO #2 – Dr. Ducharme's standard for predictable results

"whether … the proposed combination would have had an expectation of producing an aesthetically pleasing lighting effect. ... (i.e. by diffusion, absorption, specular reflection, diffuse reflection, diffraction, refraction, and attenuation). These effects would not have been **aesthetically predictable** to a person of ordinary skill in the art."

Ducharme Decl., Ex. 2022, ¶ 189.

# Dr. Ducharme cannot define his standard

Q. What does it mean to be aesthetically predictable?

A. I don't know.

Q. If I were to combine two solar lighting elements, how would I assess whether that combination would be aesthetically predictable?

A. Aesthetically predictable? I'm not sure what that phrase means …

Ex. 1062, 34:21-35:7; Petitioner's reply, p. 19

# In redirect, Dr. Ducharme recanted his testimony

Q. And, Al, in your opinion, does predictability depend on whether a product is pleasing?

A. No.

Q. And, Al, … does predictability of the combination … depend on whether the resulting combination is pleasing?

A. No.

Ex. 1062, 20:21-21:5; Ex. 1073, ¶ 75.

# Even Patent Owner's POSA would have found combining Kube and Ouyang to be obvious

Dr. Ducharme agrees the POSA had "the ability to recognize how a pre-designed circuit may operate and the ability to combine such a circuit into a pre-designed solar garden light having a desired lighting effect."

Ducharme Decl., Ex. 2022, ¶ 39; Reply, p. 19.

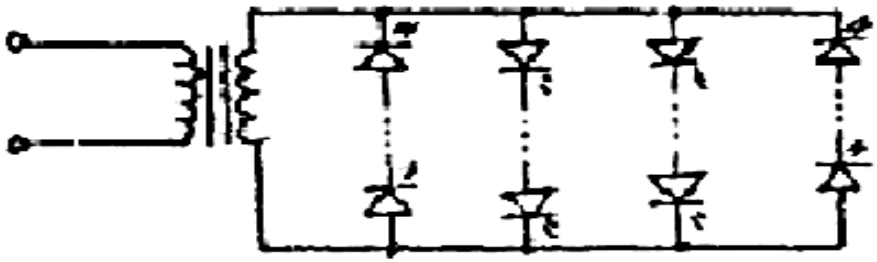


Figure 6

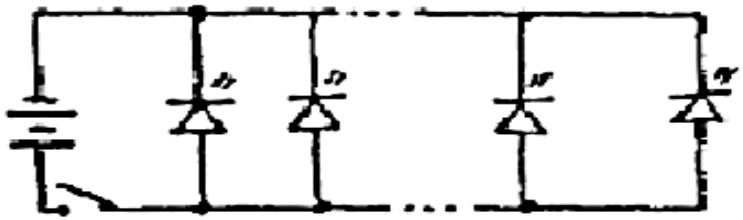
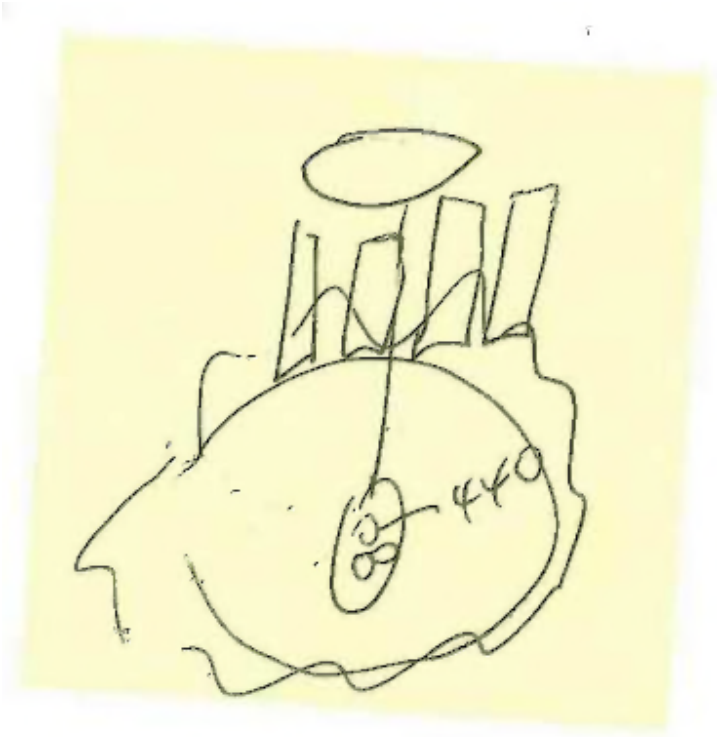


Figure 7

# Even Patent Owner's POSA would have found combining Kube and Ouyang to be obvious



Ex. 1061, 182:6-189:7; Ex. 1057, p. 3.

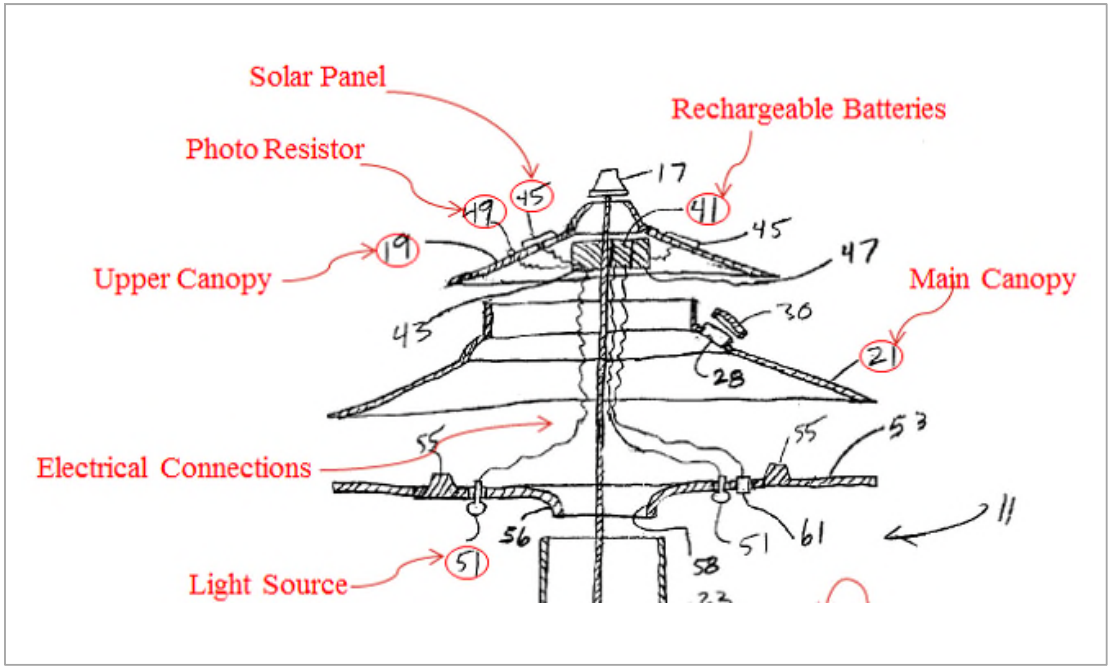
# It Would Have Been Obvious to Combine Kube, Ouyang and Kuelbs

Ground 6

Claims 28, 43, and 45

# Kuelbs taught explicitly "*… power and control circuitry…*," as recited by claim 28

Kuelbs contemplates a wide variety of electrical connection configurations by including in the alignment disk 53 "*conduits* or clips for aligning and/or holding and protecting any electrical wiring that is necessary for any electrical components that are operable on bird feeder 11."




Petition, p. 51; Reply, pp. 20-22

# It Would Have Been Obvious to Combine Kube, Ouyang and Chliwnyj

Ground 7

Claim 14

# Kube in combination with Ouyang and Chliwnyj teaches a "*pendulum assembly that varies in color*"

Ouyang teaches, "the LED emits soft decorative light with alternating colors" (Ex. 1014, p. 3.)

Chliwnyj teaches, "LEDs may also enhance the flame motion due to color changes." (Ex. 1020, 5:18–25)

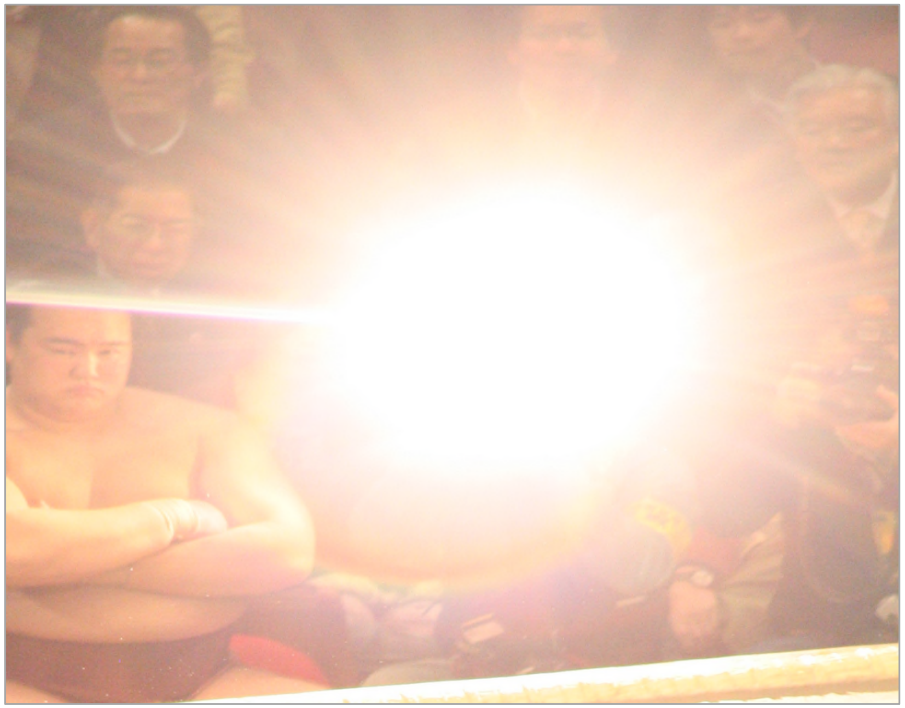
Petition, p. 59.

# Glare / Motion to Exclude

Grounds 5-7

Claims 5, 6, 7, 9, 10, 14, 17, 18, 19, 20, 23, 28, 43, and 45

# Patent Owner implies combining lighting effects would cause unpredictable glare



Ex. 2083

Ex. 2022, p. 101 (paper 51, observations 7-8)

# The "unified glare rating formula" is irrelevant

Q. … increasing the brightness makes the glare worse, doesn't it?

A. Increasing the brightness always makes the glare worse, but …, I'm pointing out this is an inappropriate example, the thing is 100,000 times brighter than the context that we're considering.

* *

Q. We can't have the Sumo wrestlers 10 feet away from it?

A. We're talking about a chime that maybe puts out 1 lumen. And in this case that flash is probably putting out at least 100,000 lumens.

* * *

Q. …you have glare that is also increasing as that amount of light increases. Under some circumstances, the glare would make it more difficult to discern the chimes, under some circumstances, correct?

A. To discern the chimes at all, you're talking an enormous amount of light, far more light than is ever practical or conceivable in the context of a wind chime.

(Ex. 2084, 125:1–126:8; response to observations 6-8)

# Conclusion

# Conclusion – Claims are unpatentable

- Construction of "Surround Frame"
- Combinability of Norton and Chen
  - Norton Teaches Translucent Surround Frames
- Norton Teaches an Activation Circuit
- Combination of Kube and Ouyang
- Combination of Kube, Ouyang and Kuelbs
- Combination of Kube, Ouyang and Chliwnyj