In the Matter of:

CERTAIN LIGHT-EMITTING DIODE PRODUCTS, FIXTURES, AND COMPONENTS THEREOF

Inv. No. 337-TA-1213

Peter W. Shackle, Ph.D.

Honorable Clark S. Cheney

Administrative Law Judge

Dr. Peter Shackle

- Ph.D. in Physics from Trinity College, Cambridge, UK.
- President and Founder of Photalume
- Director of Power Supply Products, Light Based Technologies
- Chief Technologist at Lightech Electronics North America, Inc.
- V. P. Advanced Technology at Fulham Co., Inc.,
- Director of Engineering, V.P. of Advanced Technology at Universal Lighting Technologies, Inc.
- V.P. Engineering at Robertson Worldwide

RX-0838 (CV)

Level of a Person of Ordinary Skill in the Art

- For both the ’270 and ’449 patents, a person of ordinary skill in the art would have had:
  - At least a bachelor’s degree in materials science, mechanical electrical engineering, or an equivalent field of study; and
  - Three or more years of experience working with LED technology.
    - A more advanced degree reduces the threshold for years of experience in working with LED technology.

The ’270 Patent

’270 Patent – Overview

(12) **United States Patent**
Ruud et al.

(10) **Patent No.: US 9,261,270 B2**
(45) **Date of Patent: *Feb. 16, 2016**

(54) **LED LIGHTING FIXTURE**

(71) Applicant: **Cree, Inc.**, Durham, NC (US)

(72) Inventors: **Alan J. Ruud**, Racine, WI (US); **Kurt S. Wilcox**, Libertyville, IL (US); **Steven R. Walczak**, Kenosha, WI (US); **Wayne Guillien**, Franksville, WI (US)

(73) Assignee: **Cree, Inc.**, Durham, NC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/708,558**

(22) Filed: **May 11, 2015**

Related U.S. Application Data

(63) Continuation of application No. 13/834,525, filed on Mar. 15, 2013, now Pat. No. 9,039,223, which is a continuation of application No. 13/294,459, filed on Nov. 11, 2011, now Pat. No. 8,425,071, which is a

(Continued)

Related U.S. Application Data

continuation of application No. 12/629,986, filed on Dec. 3, 2009, now Pat. No. 8,070,306, which is a continuation of application No. 11/860,887, filed on Sep. 25, 2007, now Pat. No. 7,686,469, which is a continuation-in-part of application No. 11/541,908, filed on Sep. 30, 2006, now abandoned.

JX-0004

RDX-0004.005

’270 Patent – Claim Construction

’270 Patent	
Preamble	Limiting
“air/water flow”	“a stream of fluid that contains air, water, or a combination of both”

’270 Patent – Asserted Claims 1-2

Claim 1	A light fixture comprising a chamber, at least one power-circuitry driver within the chamber, at least one LED module outside the chamber, and at least one air gap between the chamber and the at least one LED module, the air gap permitting air/water-flow therethrough.
Claim 2	The light fixture of claim 1 wherein the chamber is defined by a housing.

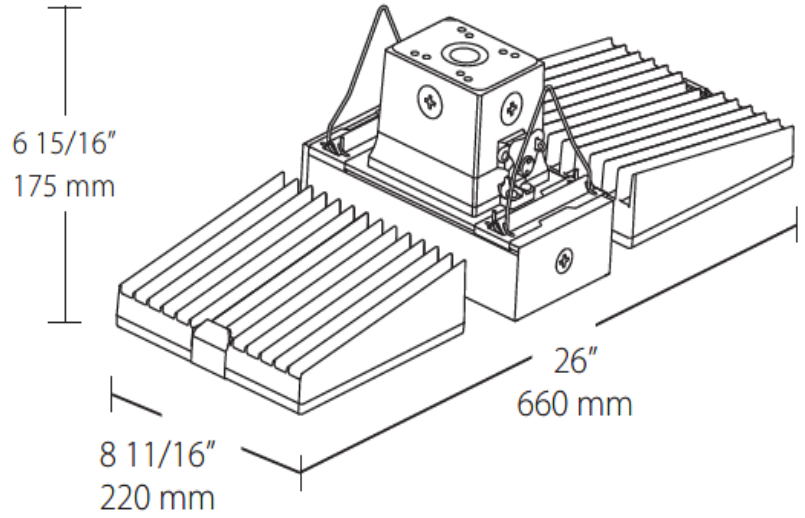
’270 Patent – Summary of Non-Infringement Opinions

Product	Limitation Missing
FALCOR	“at least one air gap between the chamber and the at least one LED module”
Canvas/EZLED	“at least one LED module outside the chamber”
FFLED	“at least one LED module outside the chamber”

The FALCOR Products

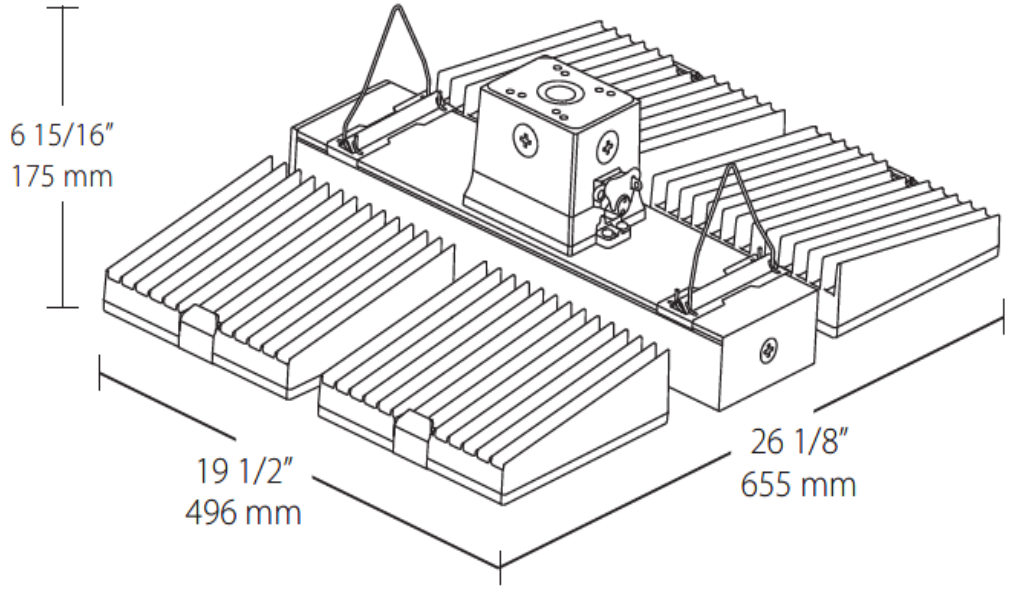
FALCOR 2 HEAD

Weight: 24 lbs.



FALCOR 4 HEAD

Weight: 41 lbs.

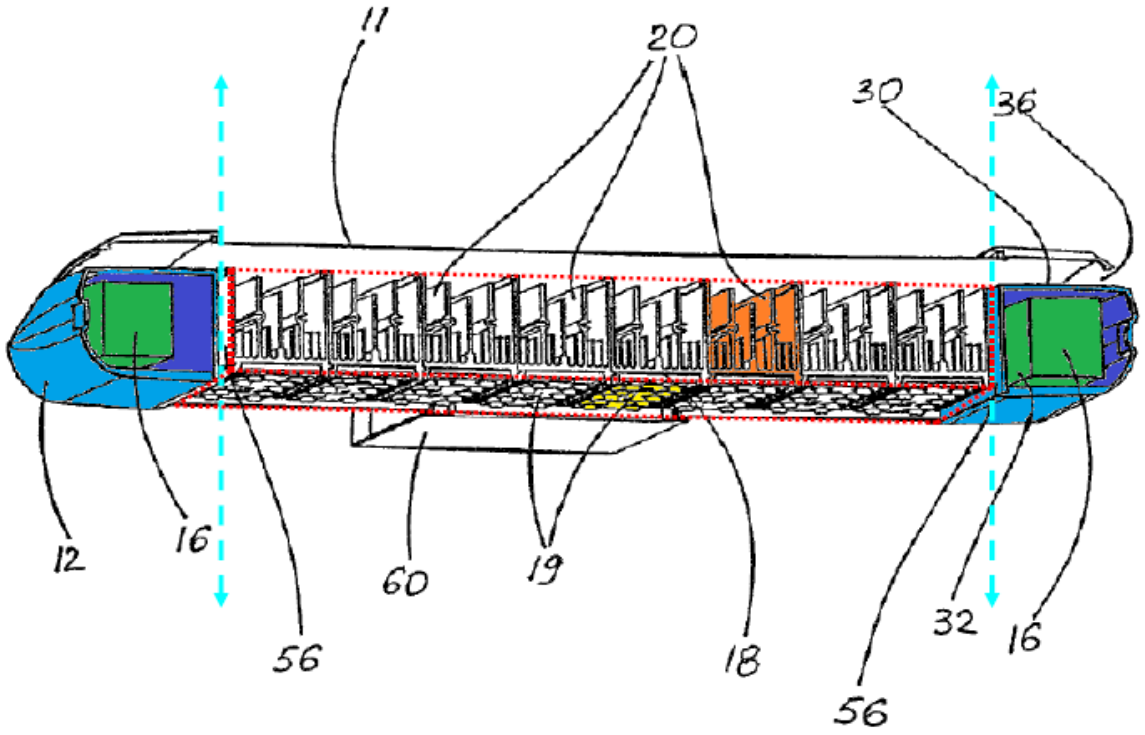


CX-1261

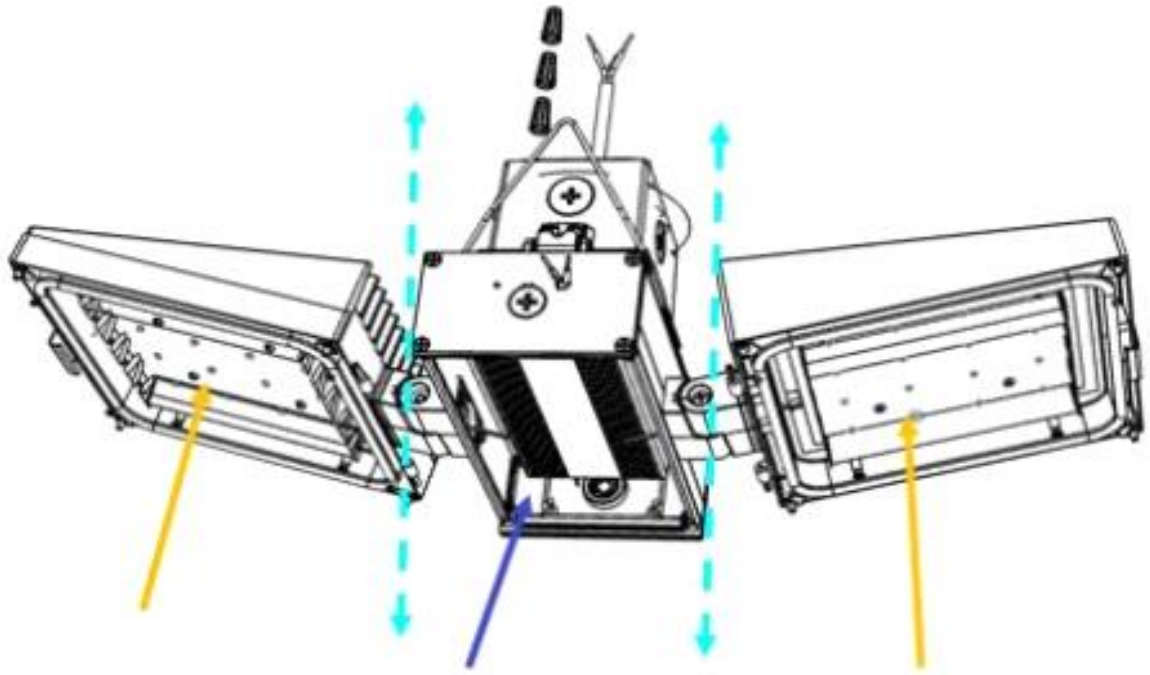
RDX-0004.009

Dr. Katona's FALCOR Infringement Analysis

'270 Patent, Figure 5 (Dr. Katona's Annotations)

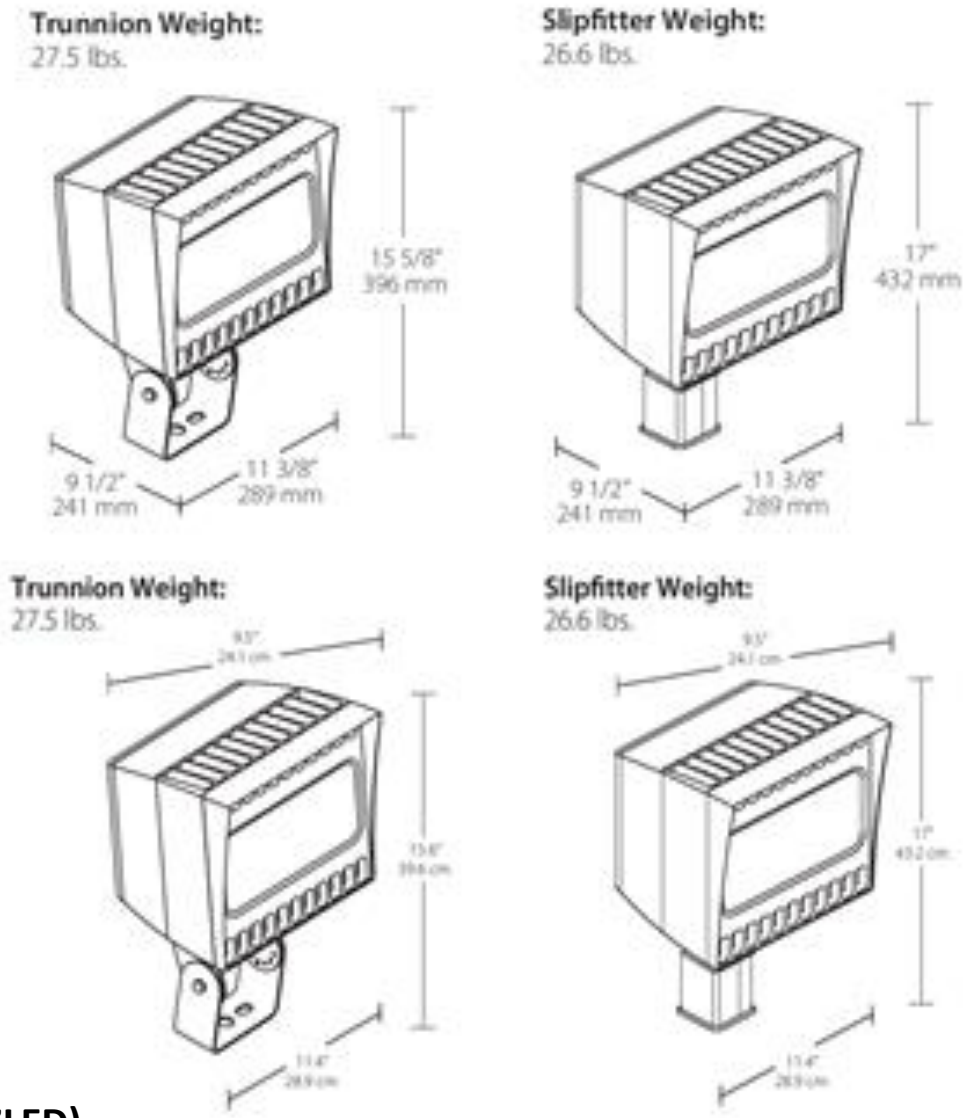


'270 Patent, Figure 5 (Dr. Katona's Annotations)



RX-0844, Katona Opening Report, p. 17, 37, respectively

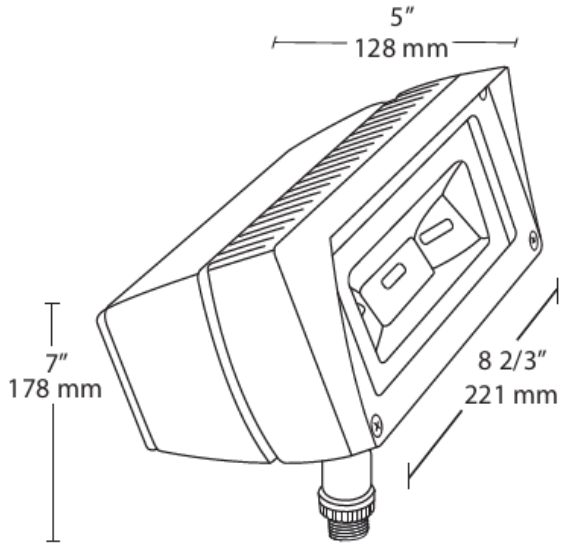
The Canvas/EZLED Products



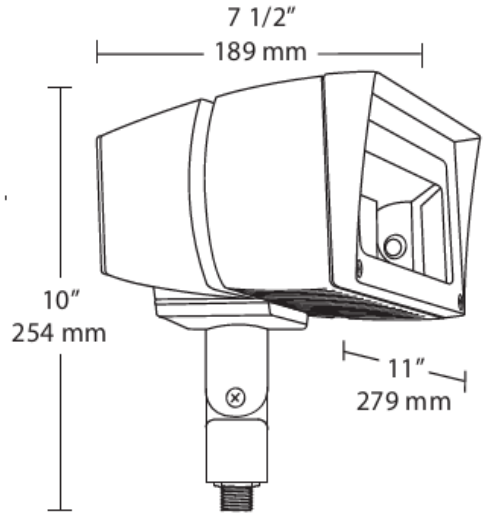
CX-0596 (top, Canvas), CX-0823 (bottom, EZLED)

The FFLED Products

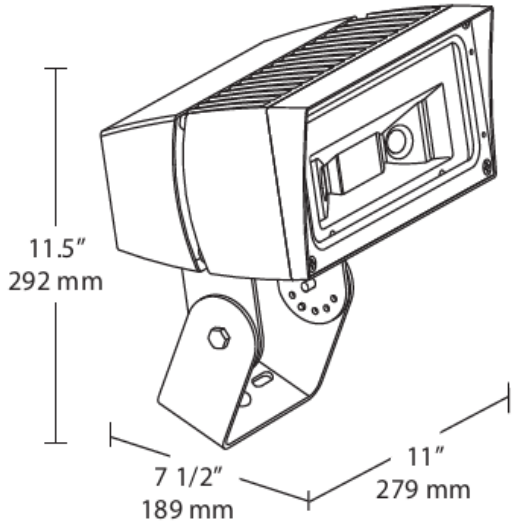
FFLED18
Weight: 4.8 lbs.



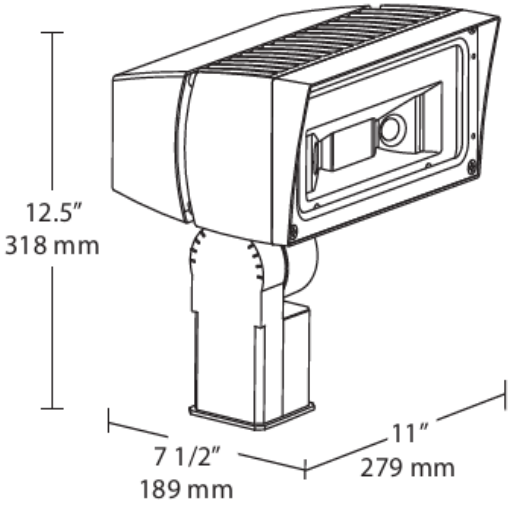
STANDARD SWIVEL ARM
Weight: 12.5 lbs.



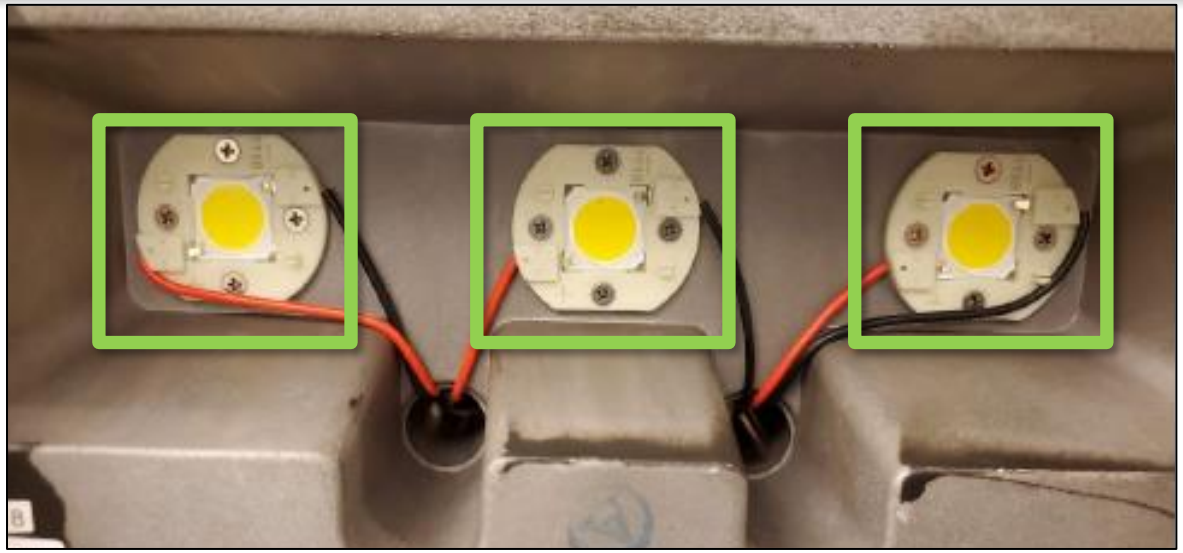
OPTIONAL TRUNNION MOUNT
Weight: 14.2 lbs.



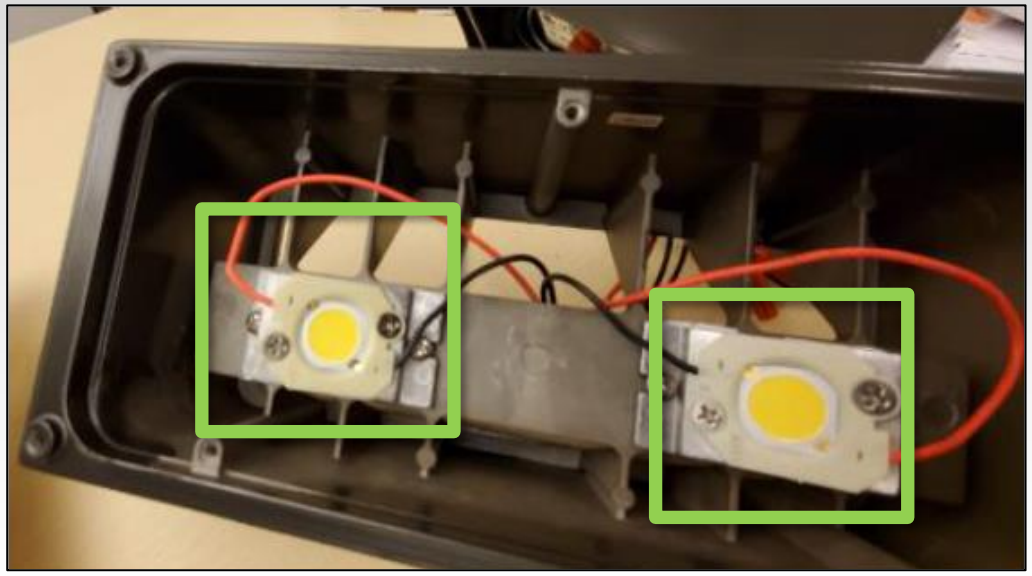
OPTIONAL SLIPFITTER MOUNT
Weight: 14.2 lbs.



COB LEDs



Canvas/EZLED



FFLED

CPX-0003 (top); CPX-0009 (bottom)

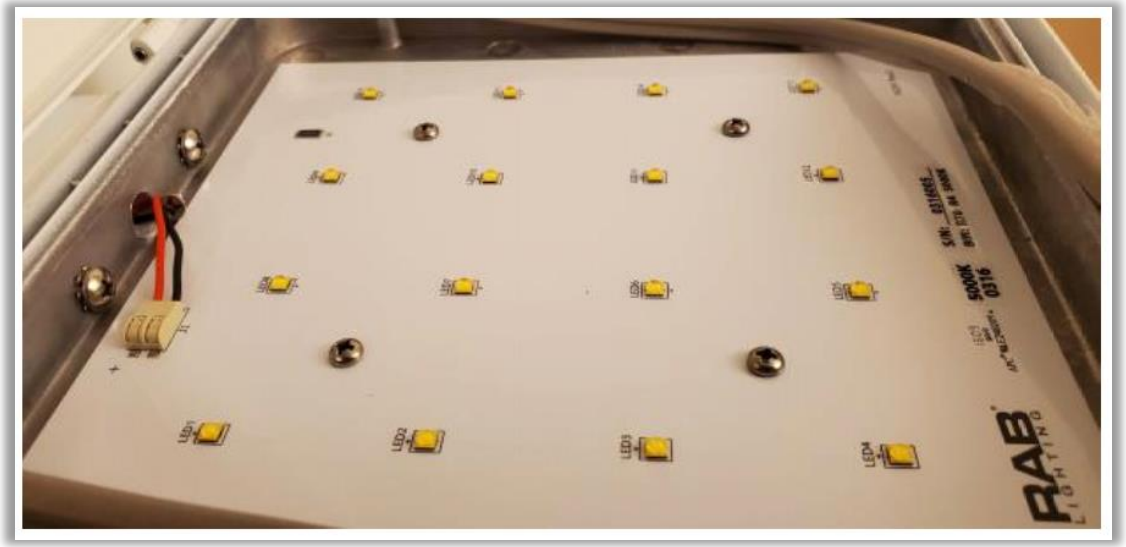
IES Lighting Handbook, 10th Ed. (2011)

An "LED array or module" is defined as:

- "A component part of an LED light source that includes one or more LEDs connected to the load side of an LED power source or LED driver. Electrical, electronic, optical, and mechanical components may also be part of an LED module. The LED module does not contain a power source and is not connected directly to the branch circuit."

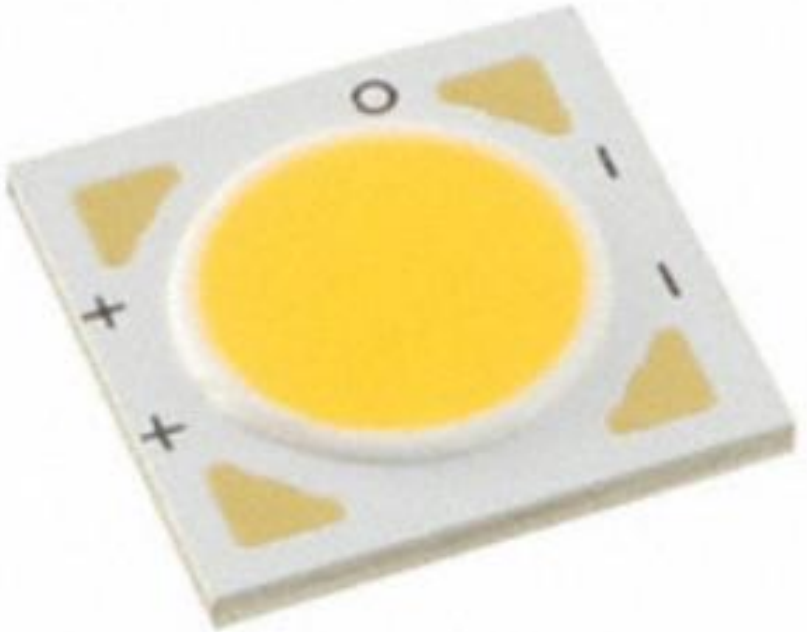
LED Module Versus COB LED

RX-0844, Katona Op., p. 32



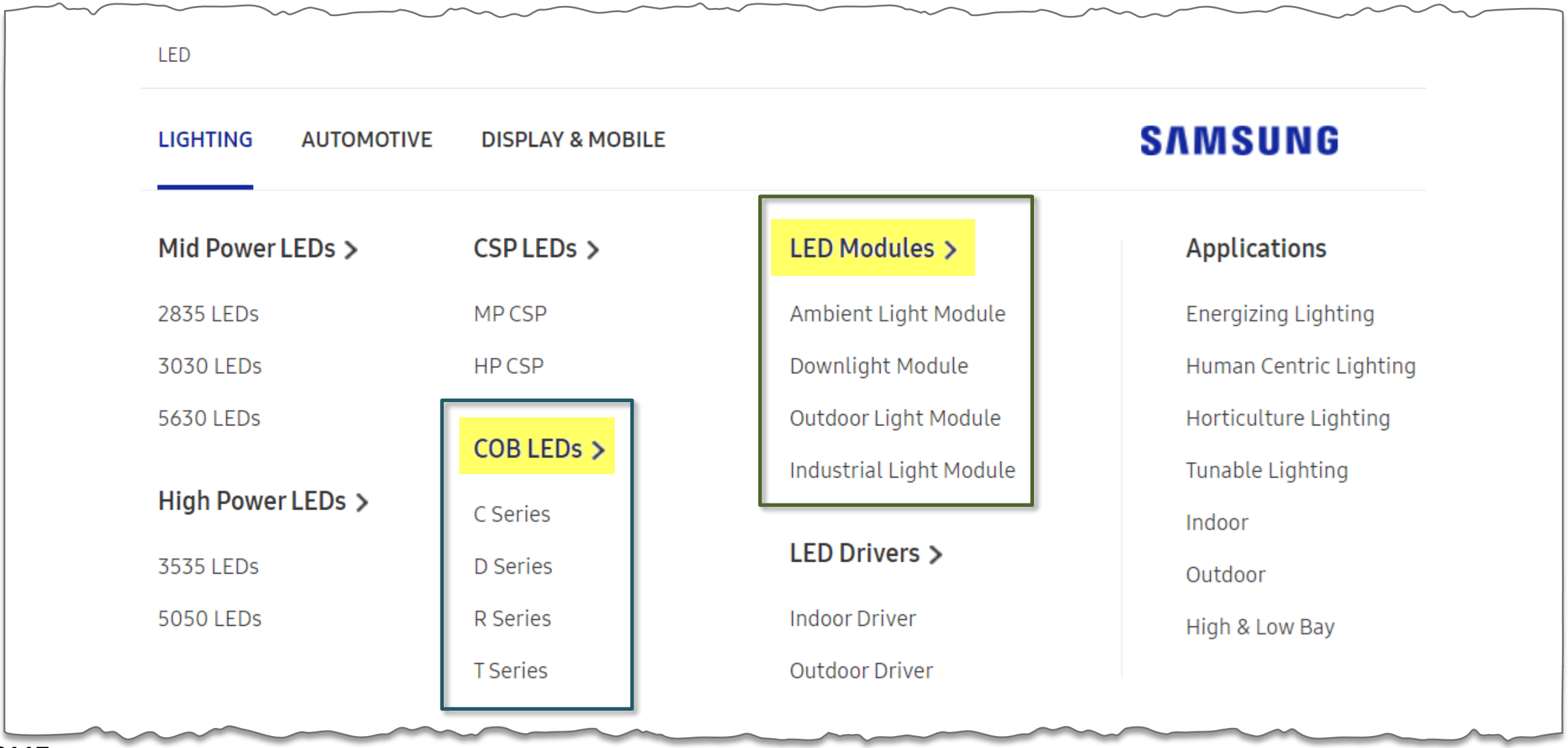
LED Module

RX-0113



COB LED

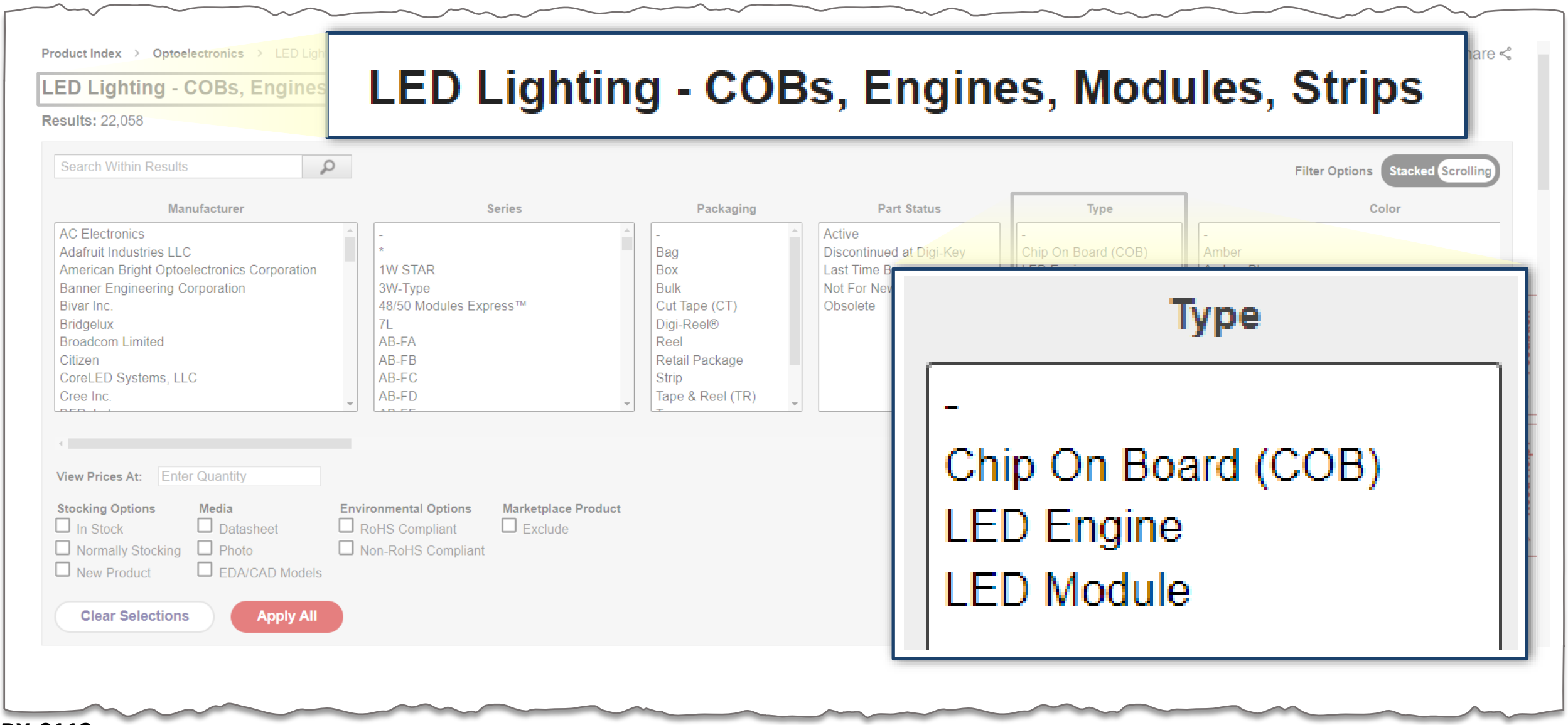
COB LED vs. LED module: Samsung



RX-0117

RDX-0004.016

COB LED vs. LED module: Digi-Key



RX-0112

RDX-0004.017

’270 Patent – Asserted Claims 1-2

Claim 1	A light fixture comprising a chamber, at least one power-circuitry driver within the chamber, at least one LED module outside the chamber, and at least one air gap between the chamber and the at least one LED module, the air gap permitting air/water-flow therethrough.
Claim 2	The light fixture of claim 1 wherein the chamber is defined by a housing.

Ewington – Overview

(19) **United States**

(12) **Patent Application Publication**

Ewington et al.

(10) **Pub. No.: US 2005/0128752 A1**

(43) **Pub. Date: Jun. 16, 2005**

(54) **LIGHTING MODULE**

(76) Inventors: **Christopher Daniel Ewington**, Manchester (GB); **James Albert Powell**, Cheshire (GB)

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MILWAUKEE, WI 53202 (US)

(21) Appl. No.: **10/969,389**

(22) Filed: **Oct. 20, 2004**

(30) **Foreign Application Priority Data**

Apr. 20, 2002 (GB) ..... GB 0209069.4

Publication Classification

(51) **Int. Cl.**[7] **F21V 29/00**

(52) **U.S. Cl.** **362/294**

(57) **ABSTRACT**

A lighting module comprising a light source arranged to emit light and a cooling chamber, which is provided adjacent to the light source. The cooling chamber is open to the atmosphere surrounding the light module but substantially sealed from the light source. The light source may comprise one or more light emitting diodes (LEDs).

RX-0732

RDX-0004.019

Ewington – Figure 1

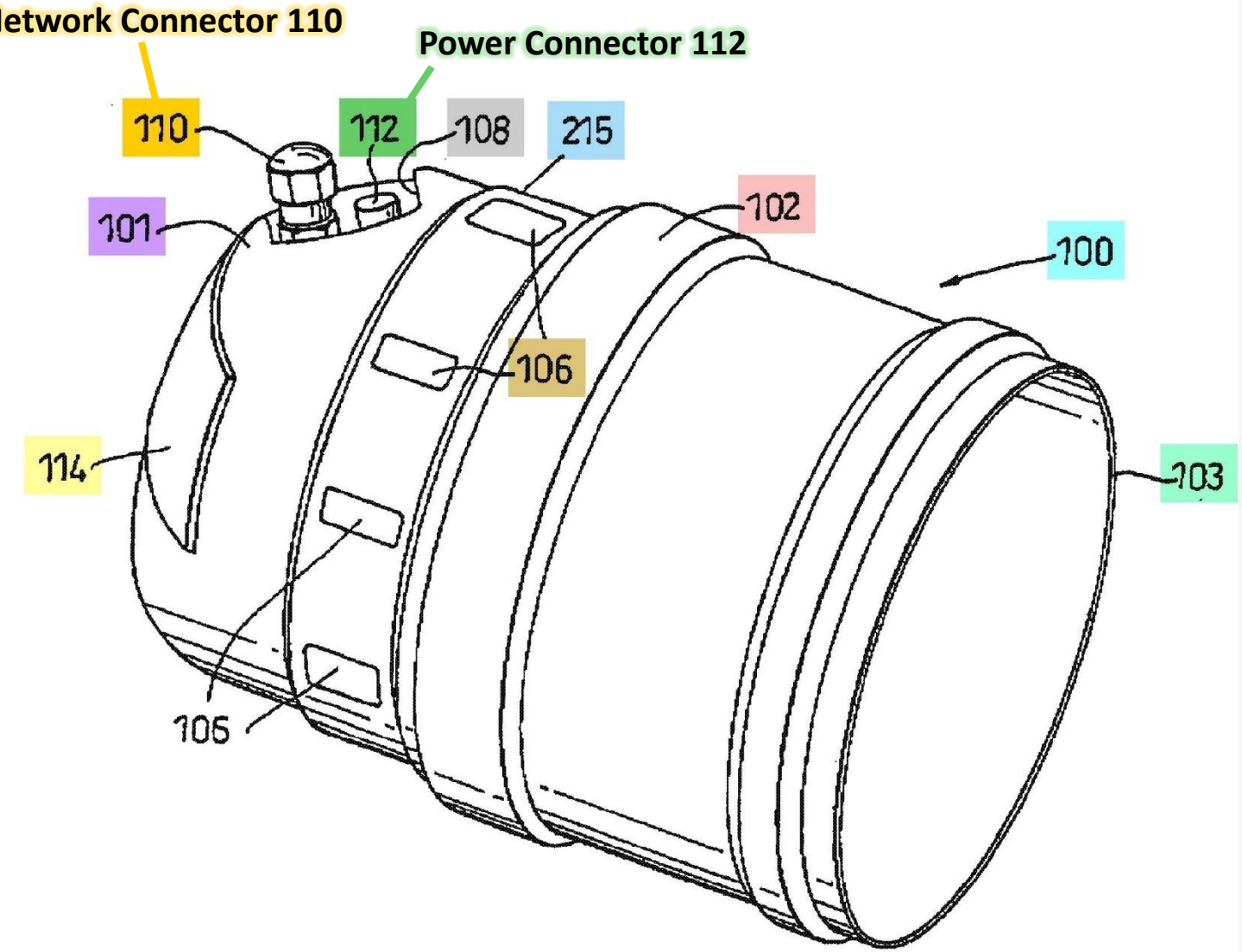


Fig. 1

[0091] **FIG. 1** shows first embodiment of a lighting module **100** suitable for use as a spotlight at, for example, an open-air music concert. The lighting module **100** comprises an approximately cylindrical casing **102** having a first, closed, end **101** and a second, open, end **103** opposite the first. The casing is a spun aluminium, often referred to as a par can, construction providing weight advantages over other folded steel constructions. The casing **102** includes a cooling chamber **215** along a portion of its length roughly midway between the first and second ends. The casing **102** comprises a domed portion in the vicinity of the closed end **102** which continues the roughly cylindrical casing **102**.

[0092] The cooling chamber **215** is defined by an area of the casing **102** with holes **106** equi-spaced about the circumference of the casing **102**. A portion of the dome forming the closed end **101** of the casing **102** is cut away and an insert **108**, providing a plate onto which connectors can be mounted, is placed therein. The insert **108** comprises a plastic support through which a network connector **110** and a power connector **112** pass in order that connections can be made to electronics contained within the casing **102**. The closed end **101** of the casing **102** further comprises a second cut-away portion over which a touch panel **114** is placed such that a user may, by touching the touch panel **114**, control electronics within the casing **102**. The touch panel **114** may be constructed of Mylar, or of some other material for use in a touch-sensitive control device.

RX-0732.0002, 10

RDX-0004.020

Ewington – Figure 2

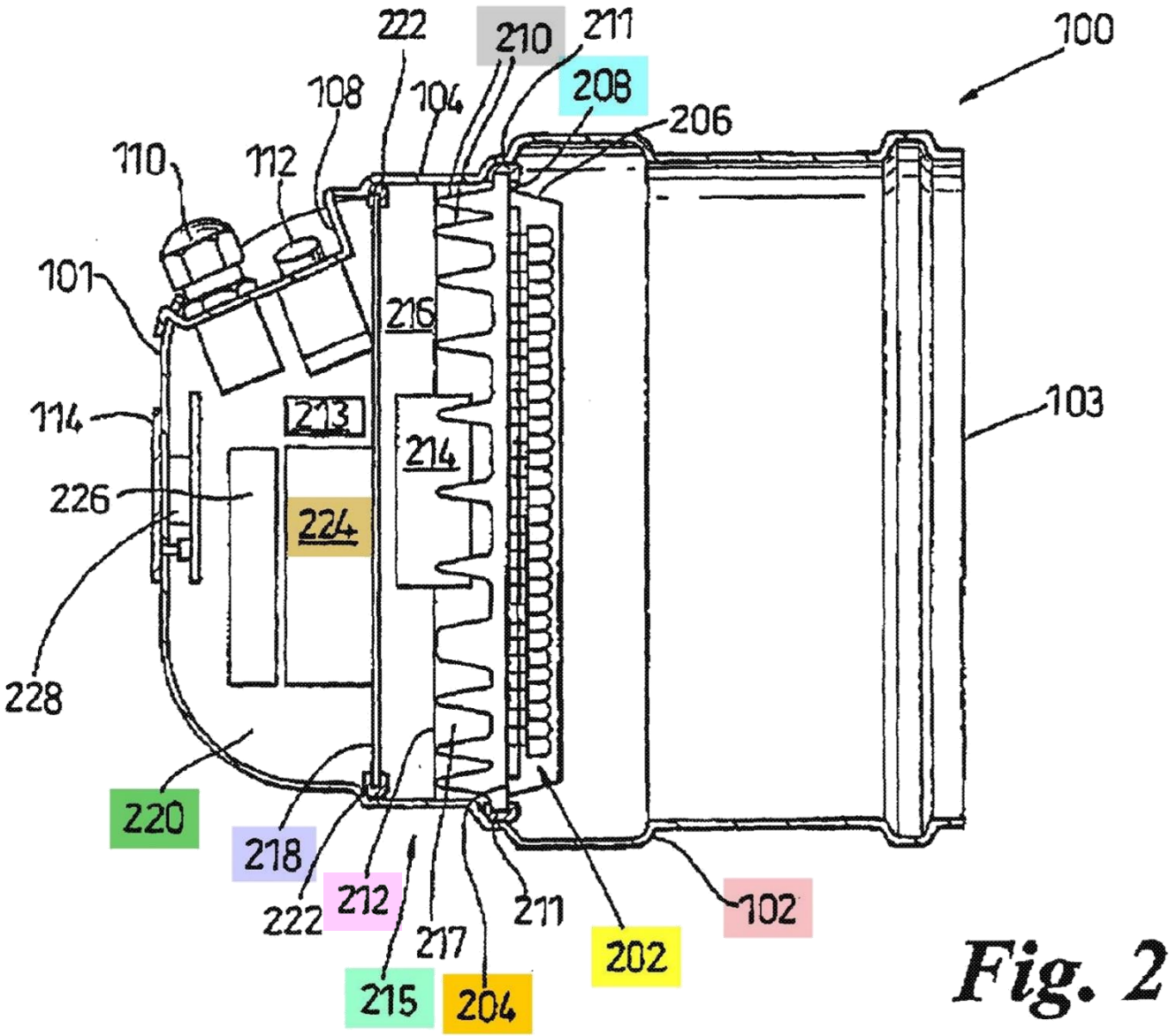


Fig. 2

[0095] Roughly two hundred LED's are provided of each red (i.e. produce red light when a current is applied), blue and green. The light from the LED array **202** passes through an acrylic dust cover **206** which is bonded to the circuit board **204** and also seals the LED array **202** such that moisture cannot contact the array **202** through the open end **103** of the casing **102**. The circuit board **204** is backed on to and in thermal contact with a heat exchanger **208**.

[0098] The cooling chamber **215** is divided in two separated by the baffle plate **212** to produce an inlet region **217**, which contains the fins **210** of the heat exchanger **208**, and an outlet region **216**. The fan **214** is arranged such that air is drawn into the inlet region **217** of the cooling chamber **217**, through the holes **106**, passes through the fan **214**, into the outlet region **216** and is expelled through the holes **106**. Thus, the fins **210** are cooled by air being drawn across them, which in turn removes heat from the circuit board **204** and the LED array **202** mounted on the circuit board **204**.

[0100] The electronics chamber **220** contains a power supply unit **224**, a controller **226**, a thermostat **213** and a user interface unit **228**, all of which run at twenty four volts (as does the fan **214**). Thus, when the lighting module **100** is

[0101] The power supply unit **224** is mounted on the partition plate **218** so that cooling fluid circulating in the cooling chamber **215** cools the plate **218** and consequently helps to cool the power supply unit **224**.

RX-0732.0003, 11

RDX-0004.021

’270 Patent – Claim 1

Claim 1	A light fixture comprising a chamber,
	at least one power-circuitry driver within the chamber,
	at least one LED module outside the chamber, and
	at least one air gap between the chamber and the at least one LED module,
	the air gap permitting air/water-flow therethrough.

Claim 1 Preamble: “A light fixture”

Claim 1	A light fixture comprising a chamber, at least one power-circuitry driver within the chamber, at least one LED module outside the chamber, and at least one air gap between the chamber and the at least one LED module, the air gap permitting air/water-flow therethrough.

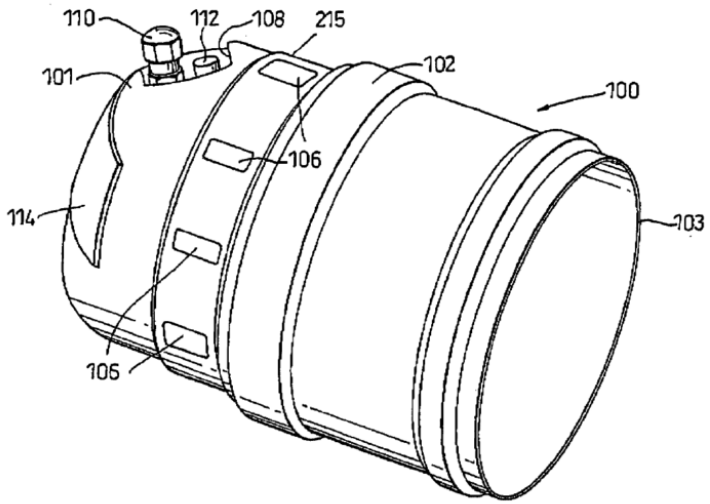


Fig. 1

[0091] **FIG. 1** shows first embodiment of a lighting module **100** suitable for use as a spotlight at, for example, an open-air music concert.

RX-0732.0002, 10

RDX-0004.023

Claim 1(a): "a chamber"

[0100] The electronics chamber **220** contains a power supply unit **224**, a controller **226**, a thermostat **213** and a user interface unit **228**, all of which run at twenty four volts (as does the fan **214**).

[0099] . . . Thus, the lighting module **100** may be thought of as comprising three areas: The water tight area in which the LED array **202** is mounted between the planar surface of the heat exchanger **208** and the dust cover **206**; the cooling chamber **215** which is open to the atmosphere through the holes **106**; and the electronics chamber **220** between the domed portion of the casing and the partition plate **218**.

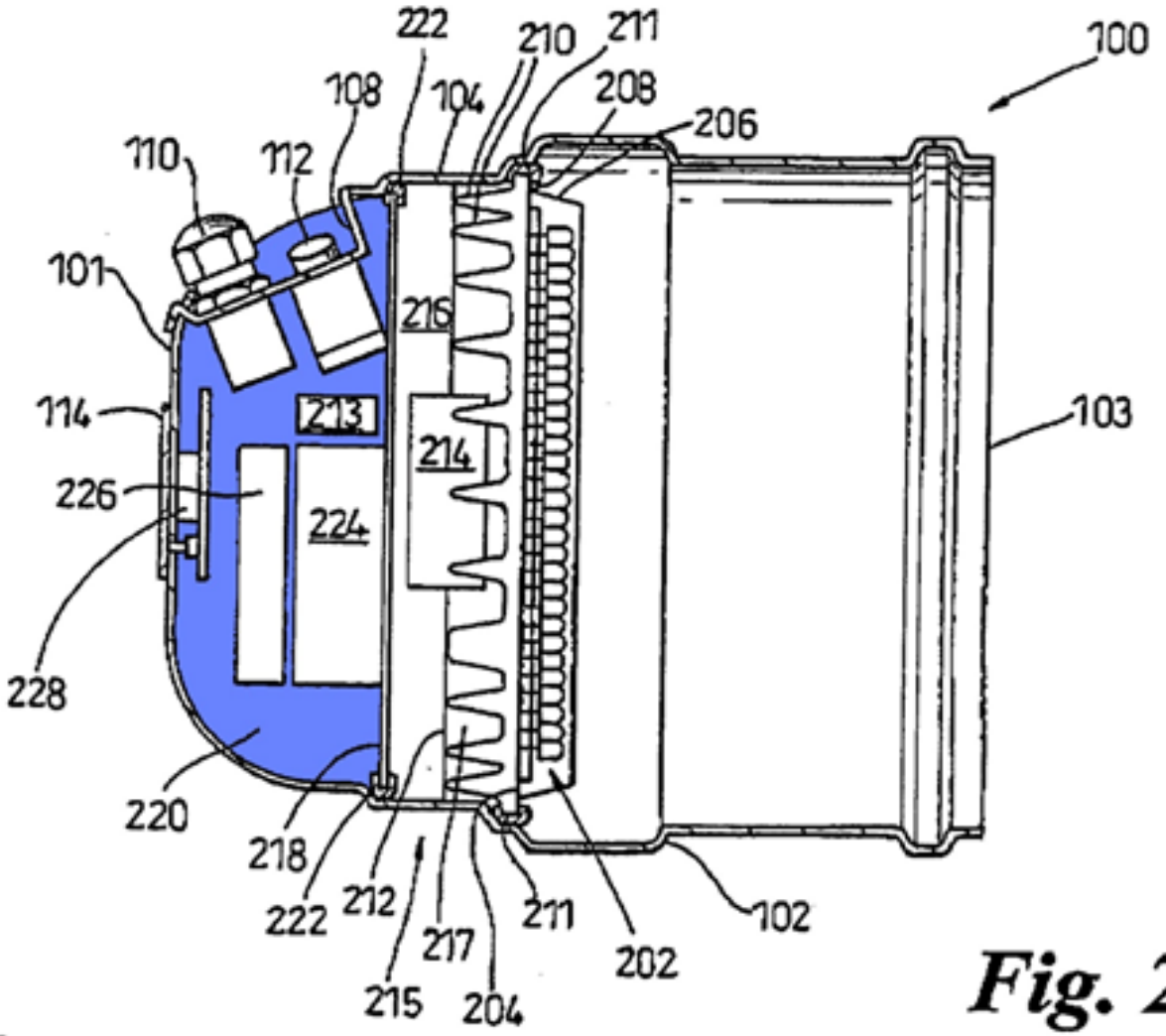


Fig. 2

Key

Electronics Chamber 220

RX-0732.0003, 11

RDX-0004.024

Claim 1(b): “at least one power-circuitry driver within the chamber”

[0100] The electronics chamber **220** contains a power supply unit **224**, a controller **226**, a thermostat **213** and a user interface unit **228**, all of which run at twenty four volts (as does the fan **214**).

* * *

The power supply unit **224** is connected to the power connector **112** and to the controller **226**. An external current source is then connected to the power connector **112**.

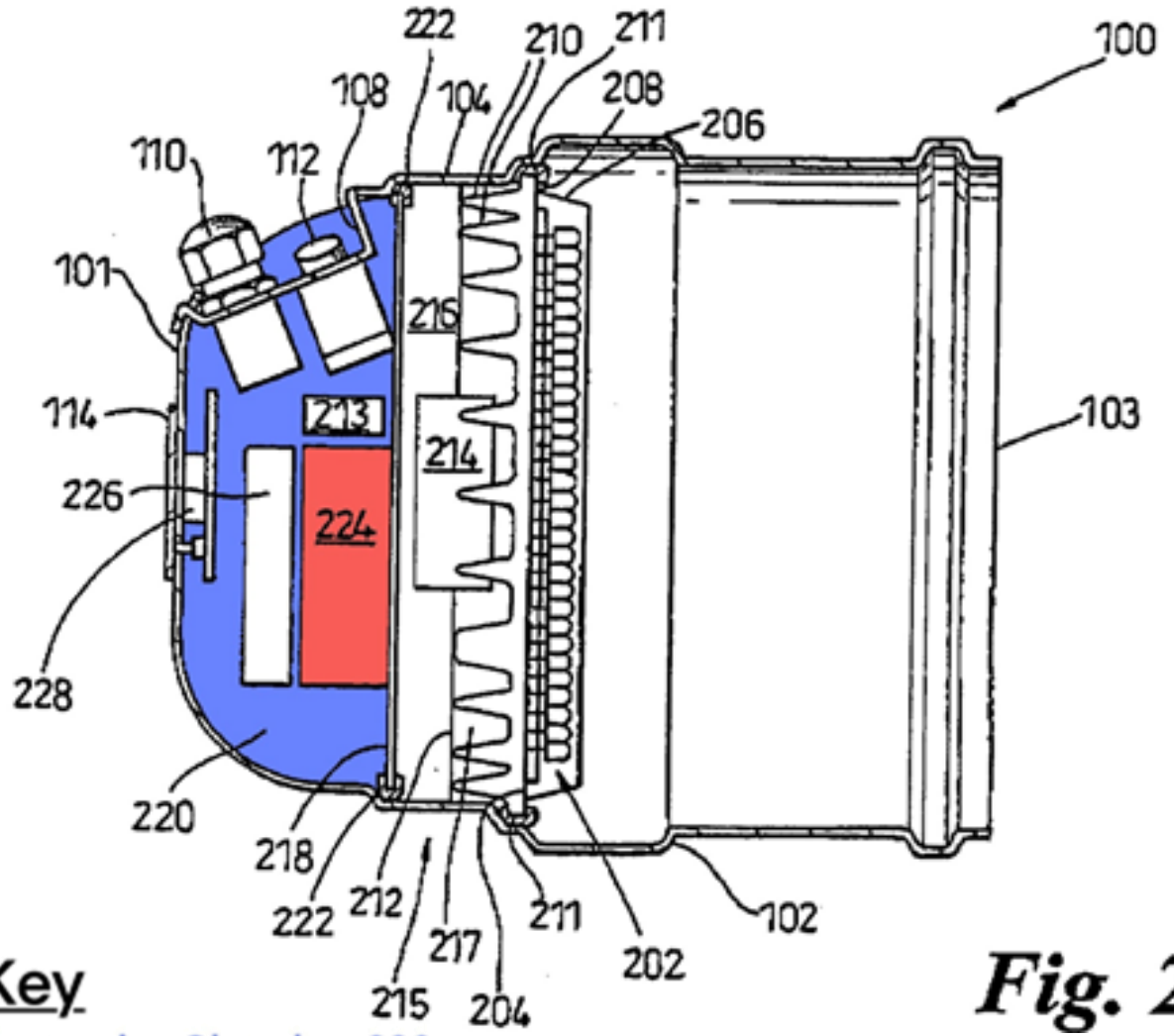


Fig. 2

Claim 1(c): "at least one LED module outside the chamber"

[0094] The lighting module **100** comprises a Light Emitting Diode (LED) array **202** providing a light source and arranged on a circuit board **204** mounted perpendicularly to a longitudinal axis of the lighting module **100** such that in use the light produced by the LED array **202** is directed towards the open end **103** of the casing **102**. . . .

The LED array **202** comprises a plurality of polymer encapsulated LED's and in this example, six hundred and twenty LED's are provided.

[0095] . . .
The rubber seal **211** isolates the circuit board **204** and the LED array **202** from the cooling chamber **215**

[0099] . . . Thus, the lighting module **100** may be thought of as comprising three areas: The water tight area in which the LED array **202** is mounted between the planar surface of the heat exchanger **208** and the dust cover **206**;

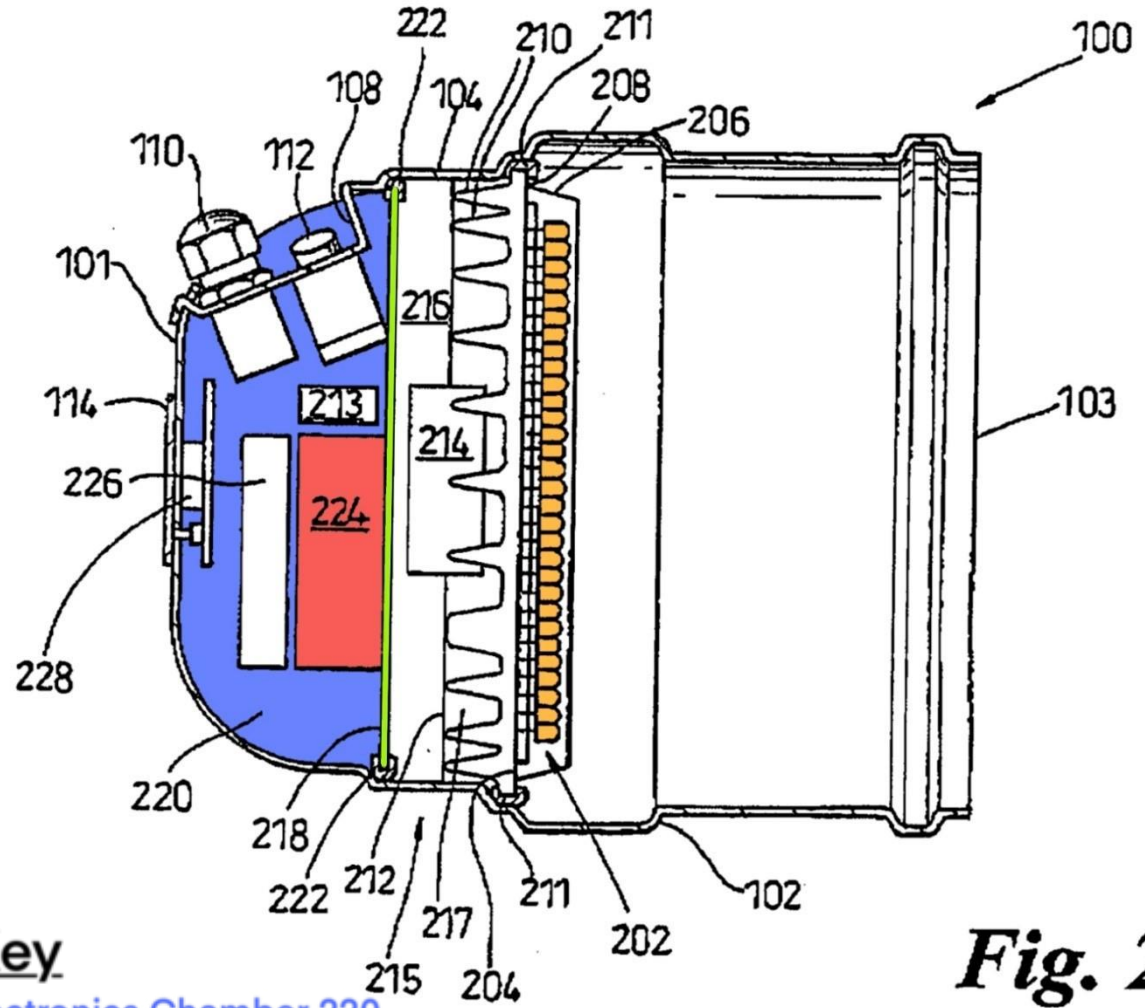


Fig. 2

RX-0732.0003, 10, 11

RDX-0004.026

Claim 1(d): "at least one air gap between the chamber and the at least one LED module"

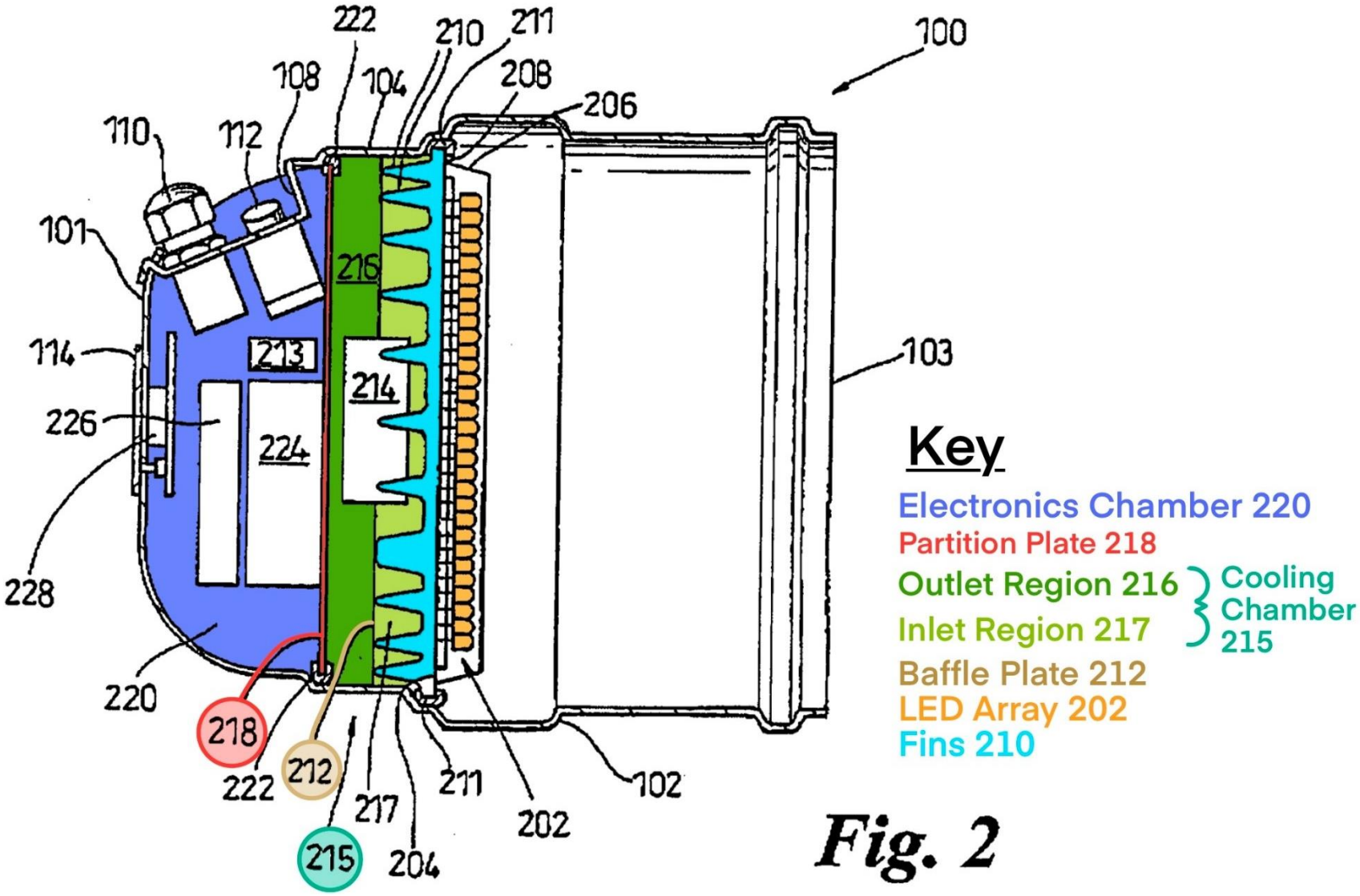


Fig. 2

RX-0732.0002, 3

RDX-0004.027

Claim 1(e): “the air gap permitting air/water-flow therethrough.”

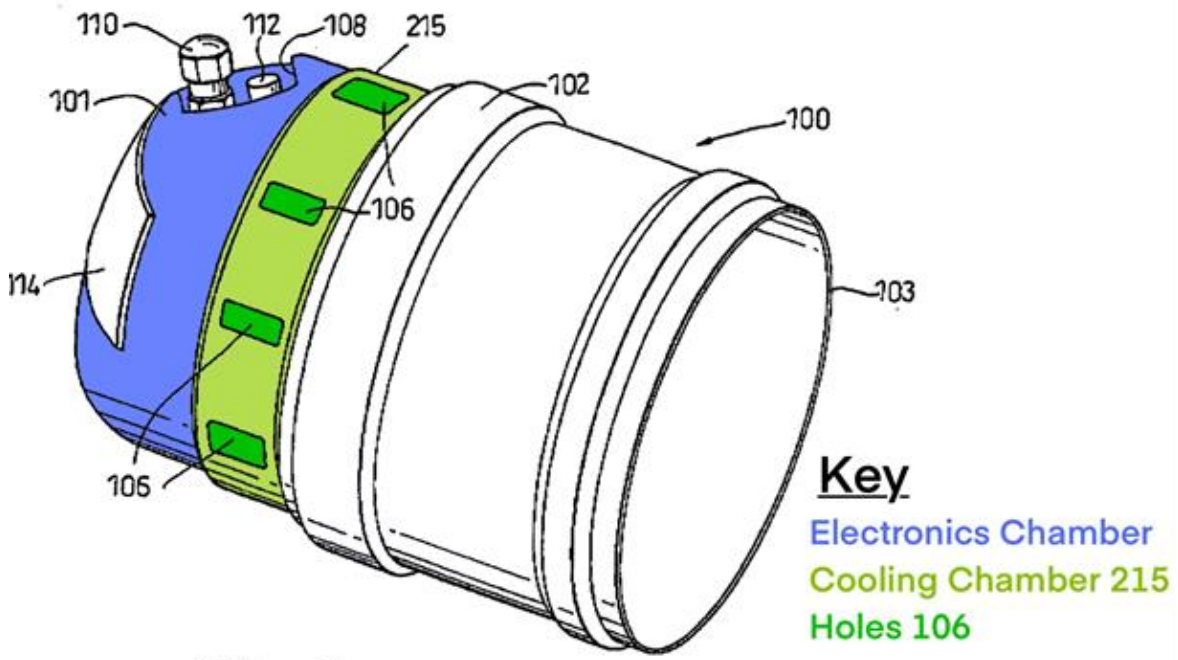


Fig. 1

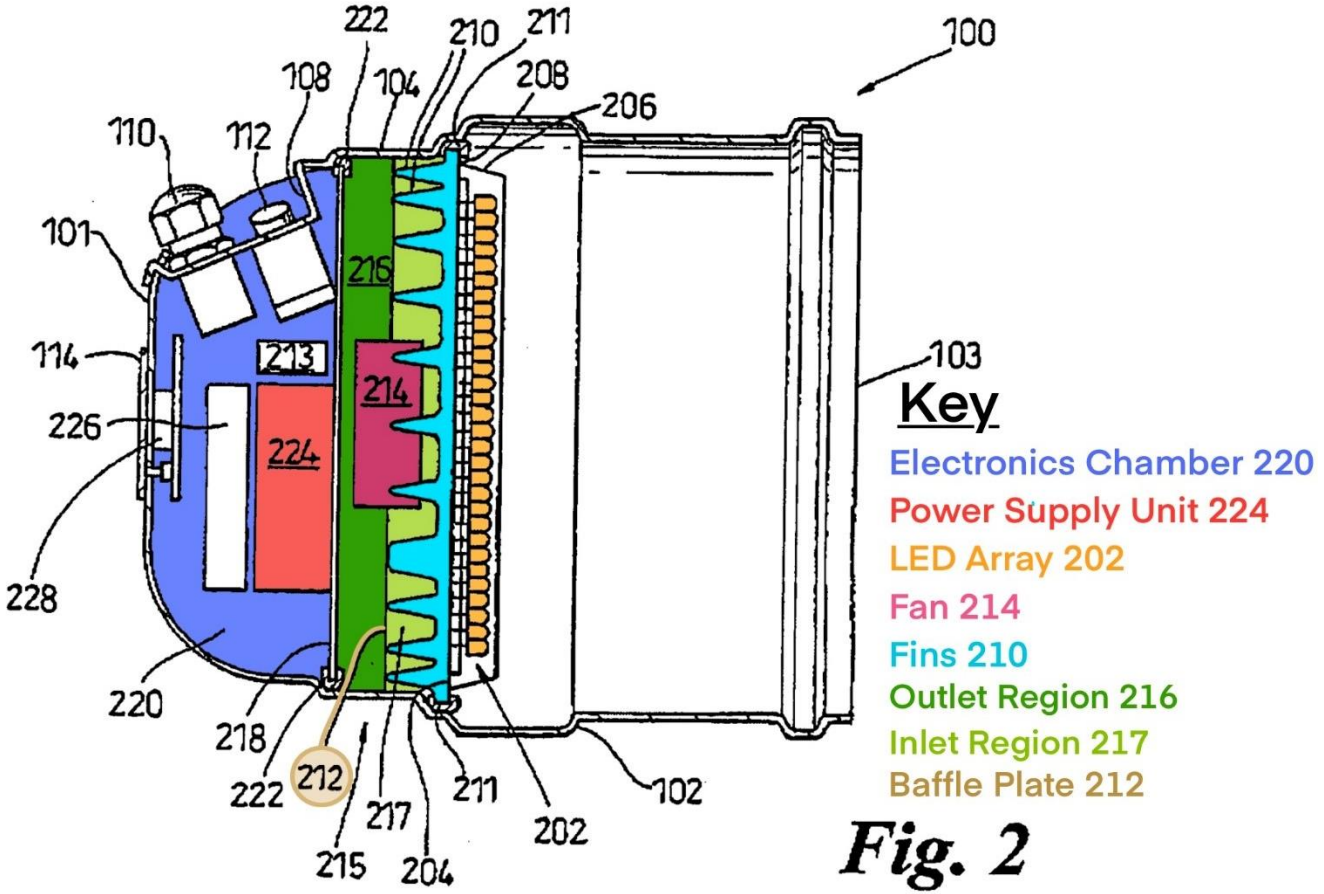


Fig. 2

RX-0732.0002, 3

RDX-0004.028

Claim 2

Claim 2	The light fixture of claim 1 wherein the chamber is defined by a housing.

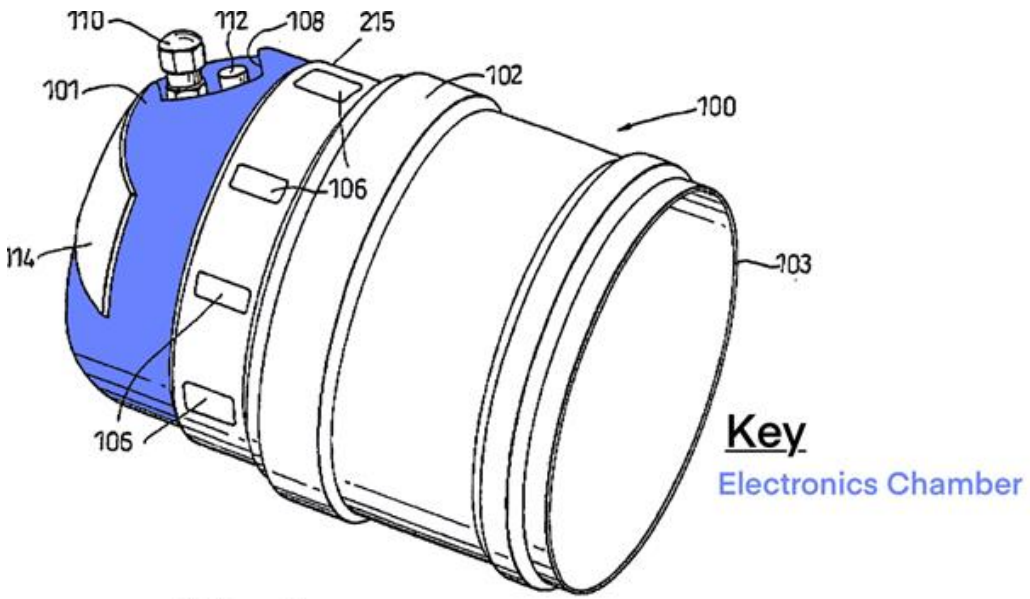


Fig. 1

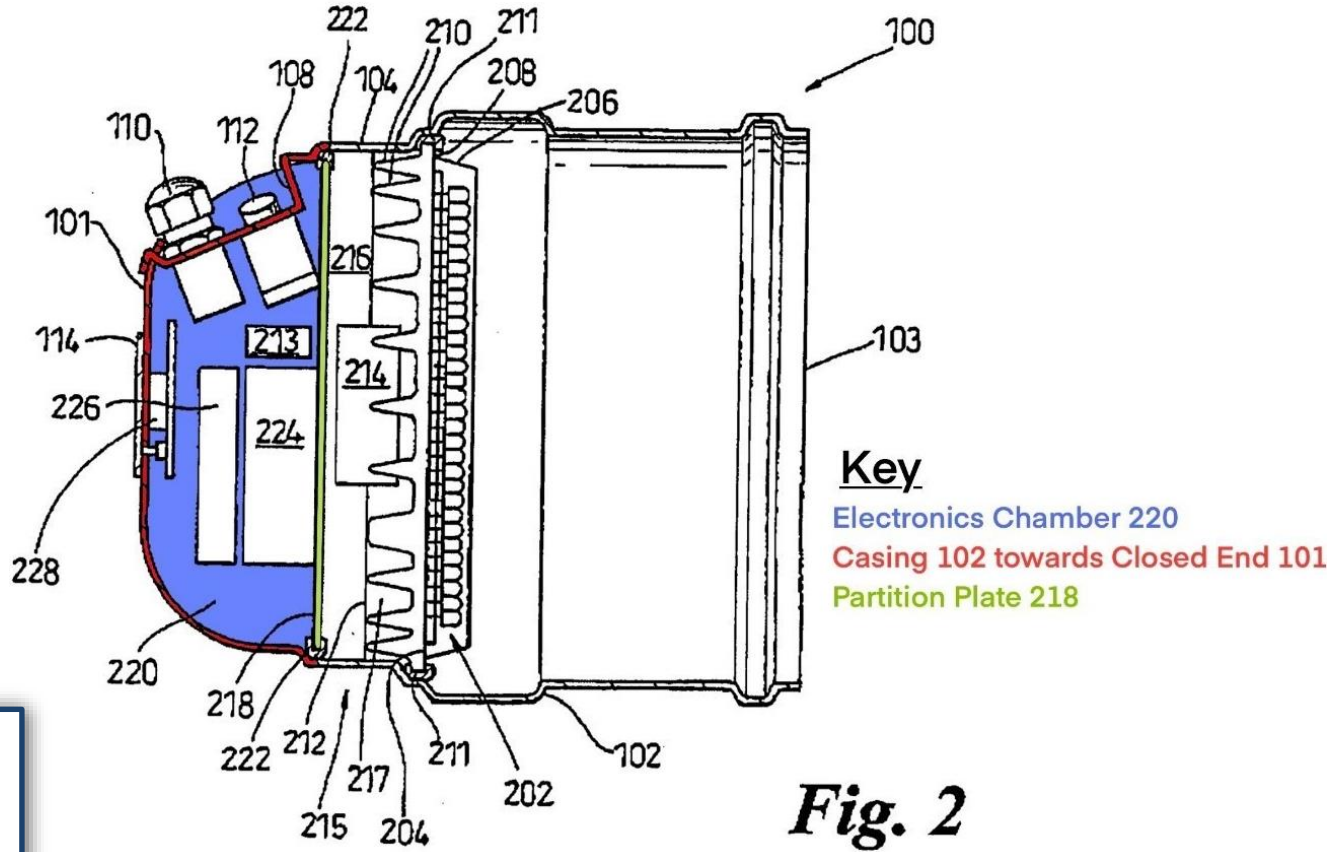


Fig. 2

[0099] Electronics to control the lighting module **100** are contained within an electronic chamber **220** which are separated from the cooling chamber **215** by a partition plate **218** and the dome shaped portion of the casing **102** towards the closed end **101** thereof.

RX-0732.0002, 3, 11

The ’449 Patent

’449 Patent – Overview

(12) **United States Patent**
Van De Ven et al.

(10) **Patent No.: US 8,777,449 B2**
(45) **Date of Patent: Jul. 15, 2014**

(54) **LIGHTING DEVICES COMPRISING SOLID STATE LIGHT EMITTERS**

(75) Inventors: **Antony Paul Van De Ven**, Hong Kong (CN); **Wai Kwan Chan**, Hong Kong (CN); **Ho Chin Wah**, Hong Kong (CN)

(73) Assignee: **Cree, Inc.**, Durham, NC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 319 days.

(21) Appl. No.: **12/566,861**

(22) Filed: **Sep. 25, 2009**

JX-0003

RDX-0004.031

’449 Patent – Claim Construction

’449 Patent	
“trim element”	“A structure that forms a flange wherein the flange is configured to abut against a mounting surface and defines an outward-facing surface of the lighting device and is configured to be inserted into an opening in the mounting surface.”
“trim element space”	“A volume of space defined by the interior of the trim element and planes orthogonal to the device axis at the upper-most and lower-most points of the trim element.”
“at least a first driver component”	“Any component that is part of the driver and is involved in performing the functions of the driver.”

’449 Patent – Asserted Claim 10

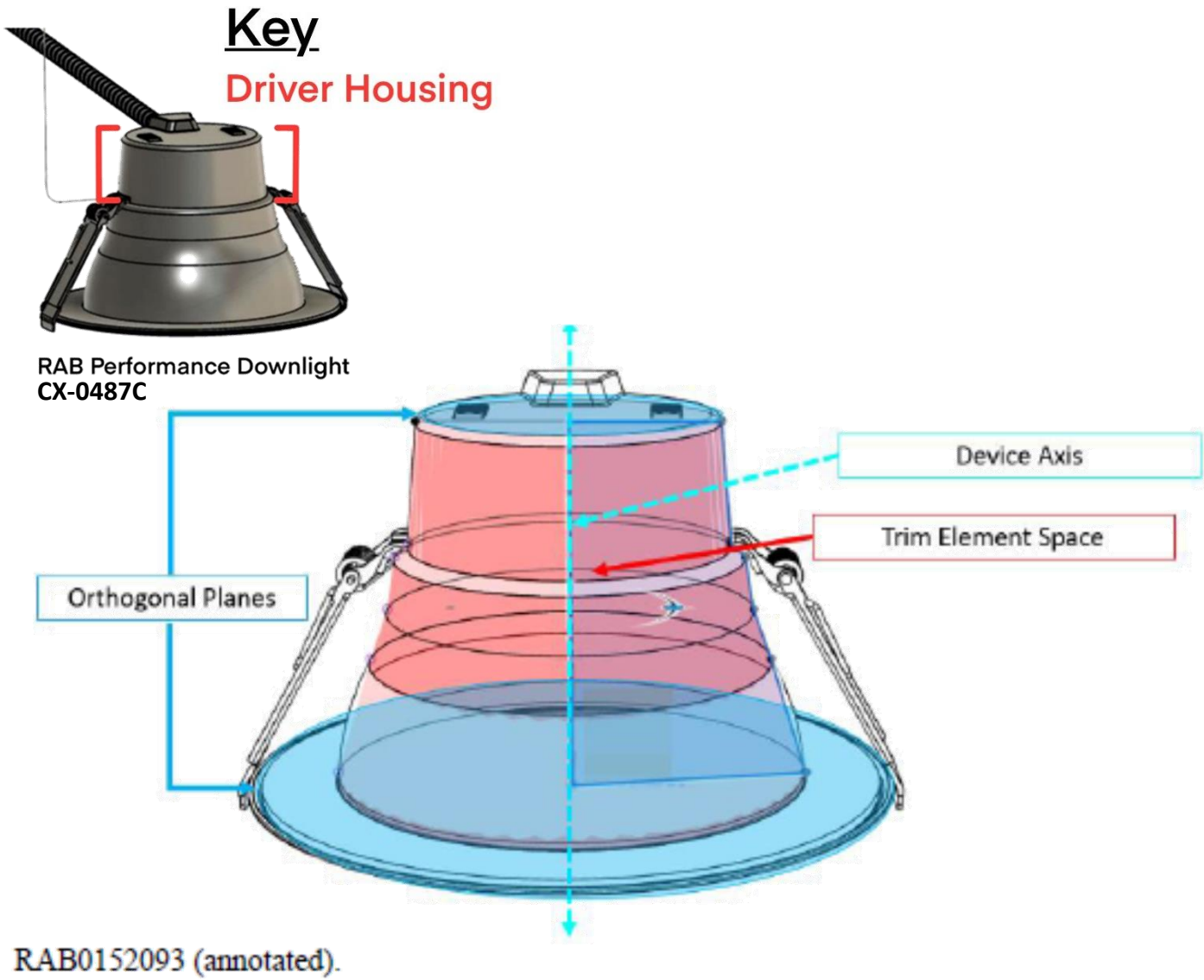
Claim 10	A lighting device, comprising: a trim element; an electrical connector; at least a first driver component; and at least one solid state light emitter, the lighting device weighing less than 750 grams, at least one of the at least one solid state light emitter mounted on the trim element, the trim element defining a trim element space, the first driver component in the trim element space, wherein if not more than about 15 watts is supplied to the electrical connector, the at least one solid state light emitter will illuminate so that the lighting device will emit white light of at least 500 lumens.

’449 Patent – Summary of Non-Infringement and Technical Prong Opinions

Product	Limitation Missing
RAB’s Recessed Retrofit	“the first driver component in the trim element space”
RAB’s Performance Downlight	“the first driver component in the trim element space”
Cree Lighting’s Retrofit Downlight	“the first driver component in the trim element space”

Dr. Katona's Infringement Analysis:

'449 Patent	
"trim element"	"A structure that **forms a flange** wherein the flange is configured to abut against a mounting surface and **defines an outward-facing surface** of the lighting device and is configured to be inserted into an opening in the mounting surface."
"trim element space"	"A volume of space defined by the interior **of the trim element** and planes orthogonal to the device axis at the upper-most and lower-most points **of the trim element**."



RAB0152093 (annotated).

RX-0844C, Katona Op., p. 218

’449 Patent Figure 5

Trim Element 109

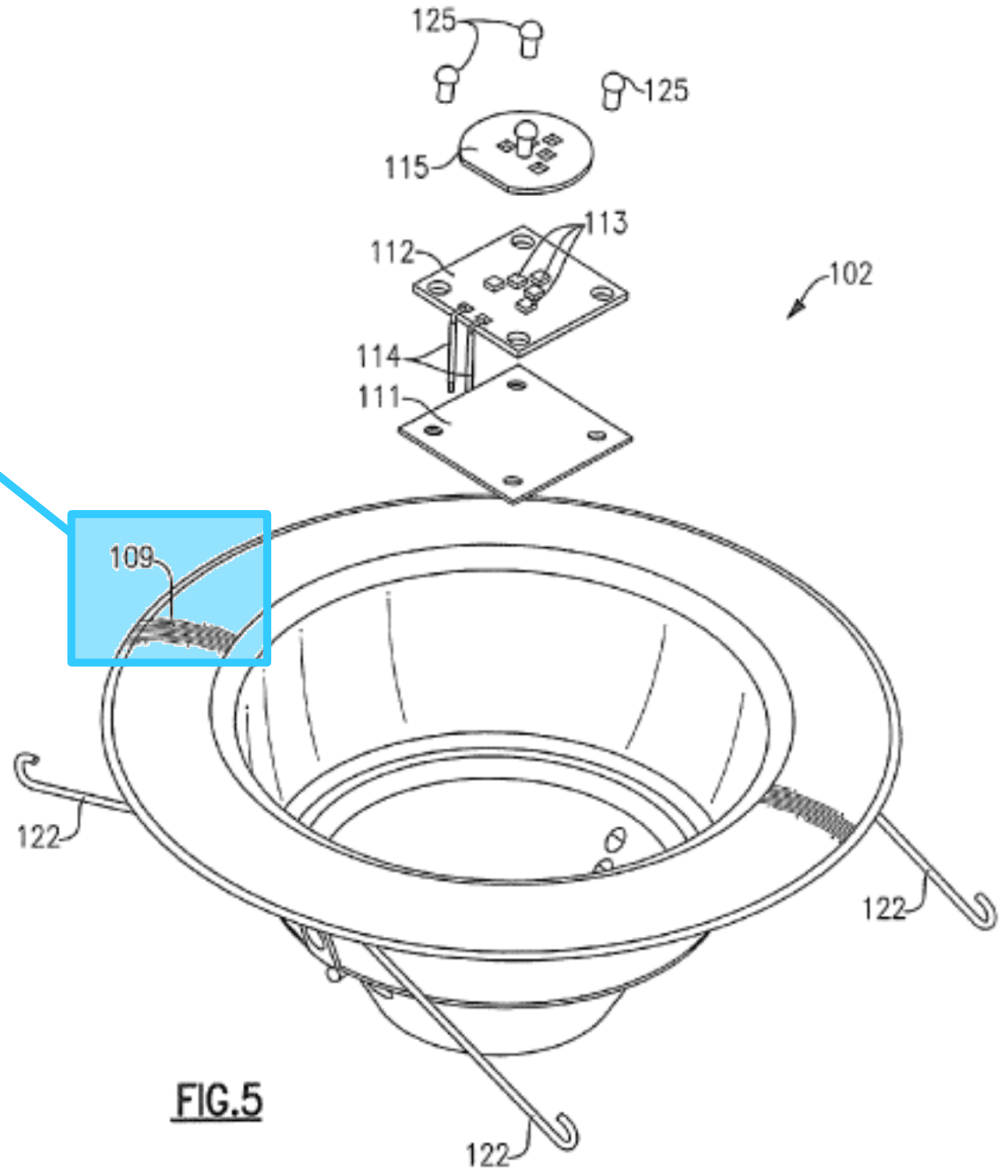


FIG.5

JX-0003.0005, 23

RDX-0004.036

’449 Disclosed Embodiment:

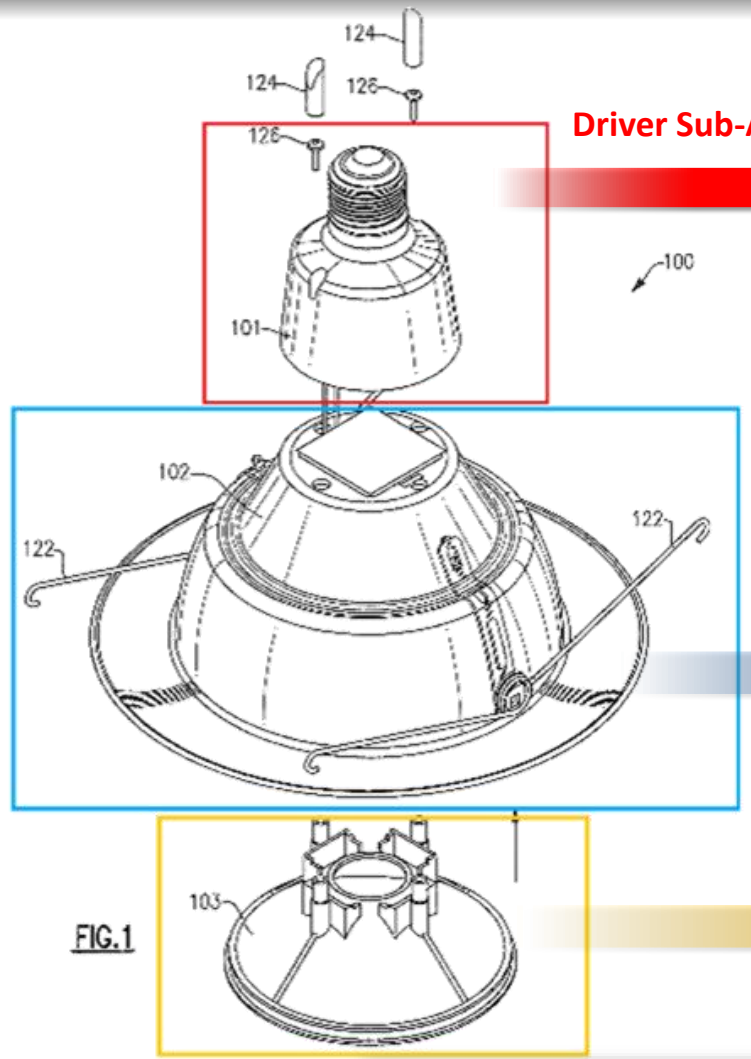


FIG.1

Driver Sub-Assembly

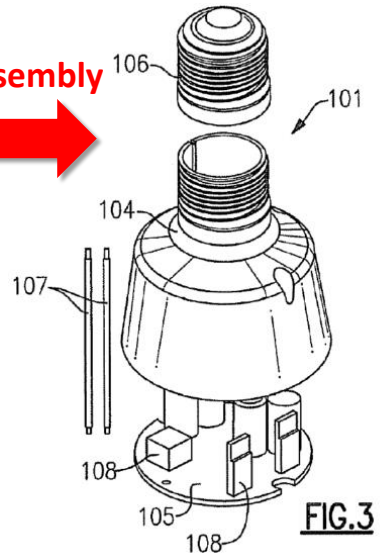


FIG.3

Trim Sub-Assembly

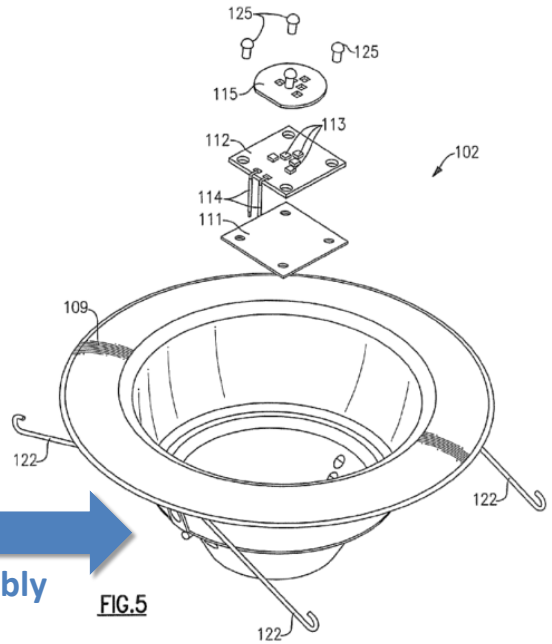


FIG.5

Mixing Chamber Sub-Assembly

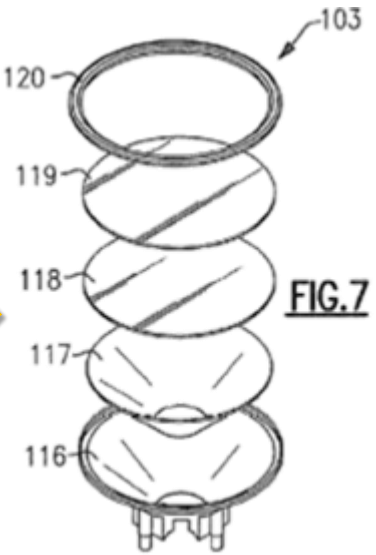


FIG.7

FIG. **1** is an exploded perspective view of a lighting device **100**.

JX-0003.005, 6, 7, 12

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The Drive and Trim Sub-Assemblies

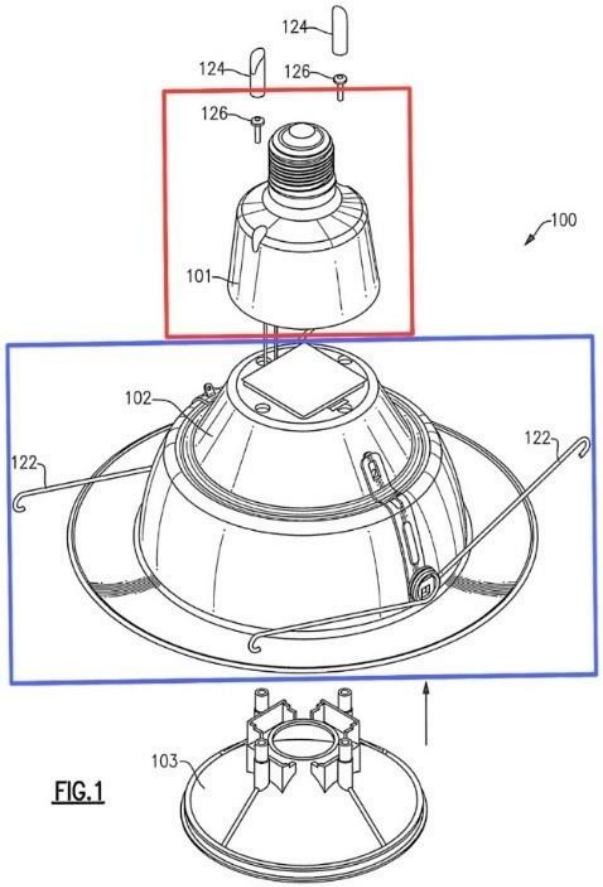

FIG.1

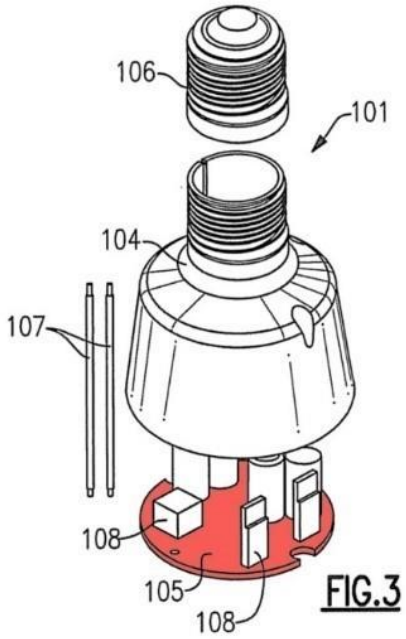

FIG.3

The lighting device **100** (see FIG. **1**) comprises a driver sub-assembly **101**, a trim sub-assembly **102** and a mixing chamber sub-assembly **103**.

The driver sub-assembly **101** (see FIG. **3**) comprises a housing **104**, a driver circuit board **105**, an Edison screw **106** and input wires **107**. A plurality of circuitry components **108** are mounted on the driver circuit board **105**.

The trim sub-assembly **102** (see FIG. **5**) comprises a trim element **109**, electrical insulation **110** (or a Formex sheet or any other suitable electrically insulating element) (see FIG. **6**), a thermally conductive pad **111**, a light emitting diode circuit board **112**, a plurality of light emitting diodes **113** (mounted on the light emitting diode circuit board **112**), light emitting diode board wires **114** and a reflector sheet **115**.

JX-0003.0005, 23

RDX-0004.038

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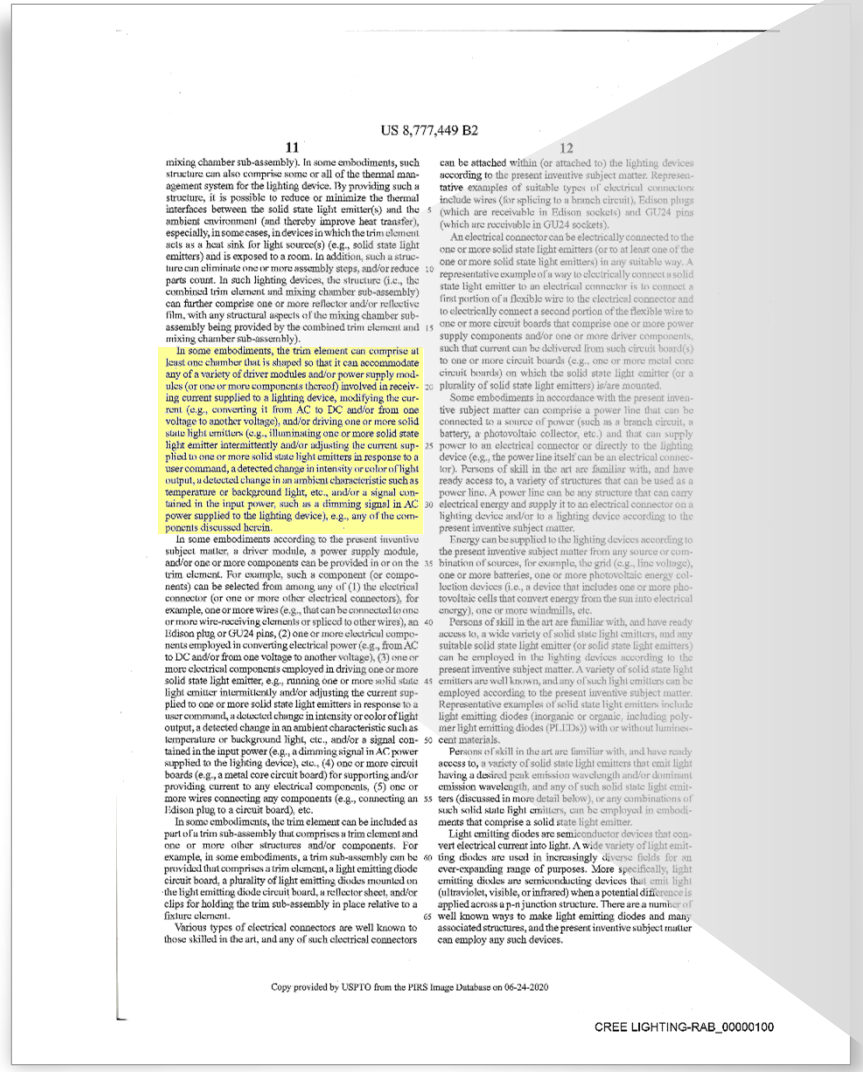


US 8,777,449 B2

11 12

mixing chamber sub-assembly). In some embodiments, such structure can also comprise some or all of the thermal management system for the lighting device. By providing such a structure, it is possible to reduce or minimize the thermal interfaces between the solid state light emitter(s) and the ambient environment (and thereby improve heat transfer), especially, in some cases, in devices in which the trim element acts as a heat sink for light source(s) (e.g., solid state light emitters) and is exposed to a room. In addition, such a structure can eliminate one or more assembly steps, and/or reduce parts count. In such lighting devices, the structure (i.e., the combined trim element and mixing chamber sub-assembly) can further comprise one or more reflector and/or reflective film, with any structural aspects of the mixing chamber sub-assembly being provided by the combined trim element and mixing chamber sub-assembly).

In some embodiments, the trim element can comprise at least one chamber that is shaped so that it can accommodate any of a variety of driver modules and/or power supply modules (or one or more components thereof) involved in receiving current supplied to a lighting device, modifying the current (e.g., converting it from AC to DC and/or from one voltage to another voltage), and/or driving one or more solid state light emitters (e.g., illuminating one or more solid state light emitter intermittently and/or adjusting the current supplied to one or more solid state light emitters in response to a user command, a detected change in intensity or color of light output, a detected change in an ambient characteristic such as temperature or background light, etc., and/or a signal contained in the input power, such as a dimming signal in AC power supplied to the lighting device), e.g., any of the components discussed herein.

In some embodiments according to the present inventive subject matter, a driver module, a power supply module, and/or one or more components can be provided in or on the trim element. For example, such a component (or components) can be selected from among any of (1) the electrical connector (or one or more other electrical connectors), for example, one or more wires (e.g., that can be connected to one or more wire-receiving elements or spliced to other wires), an Edison plug or GU24 pins, (2) one or more electrical components employed in converting electrical power (e.g., from AC to DC and/or from one voltage to another voltage), (3) one or more electrical components employed in driving one or more solid state light emitter, e.g., running one or more solid state light emitter intermittently and/or adjusting the current supplied to one or more solid state light emitters in response to a user command, a detected change in intensity or color of light output, a detected change in an ambient characteristic such as temperature or background light, etc., and/or a signal contained in the input power (e.g., a dimming signal in AC power supplied to the lighting device), etc., (4) one or more circuit boards (e.g., a metal core circuit board) for supporting and/or providing current to any electrical components, (5) one or more wires connecting any components (e.g., connecting an Edison plug to a circuit board), etc.

In some embodiments, the trim element can be included as part of a trim sub-assembly that comprises a trim element and one or more other structures and/or components. For example, in some embodiments, a trim sub-assembly can be provided that comprises a trim element, a light emitting diode circuit board, a plurality of light emitting diodes mounted on the light emitting diode circuit board, a reflector sheet, and/or clips for holding the trim sub-assembly in place relative to a fixture element.

Various types of electrical connectors are well known to those skilled in the art, and any of such electrical connectors can be attached within (or attached to) the lighting devices according to the present inventive subject matter. Representative examples of suitable types of electrical connectors include wires (for splicing to a branch circuit), Edison plugs (which are receivable in Edison sockets) and GU24 pins (which are receivable in GU24 sockets).

An electrical connector can be electrically connected to the one or more solid state light emitters (or to at least one of the one or more solid state light emitters) in any suitable way. A representative example of a way to electrically connect a solid state light emitter to an electrical connector is to connect a first portion of a flexible wire to the electrical connector and to electrically connect a second portion of the flexible wire to one or more circuit boards that comprise one or more power supply components and/or one or more driver components, such that current can be delivered from such circuit board(s) to one or more circuit boards (e.g., one or more metal core circuit boards) on which the solid state light emitter (or a plurality of solid state light emitters) is/are mounted.

Some embodiments in accordance with the present inventive subject matter can comprise a power line that can be connected to a source of power (such as a branch circuit, a battery, a photovoltaic collector, etc.) and that can supply power to an electrical connector or directly to the lighting device (e.g., the power line itself can be an electrical connector). Persons of skill in the art are familiar with, and have ready access to, a variety of structures that can be used as a power line. A power line can be any structure that can carry electrical energy and supply it to an electrical connector on a lighting device and/or to a lighting device according to the present inventive subject matter.

Energy can be supplied to the lighting devices according to the present inventive subject matter from any source or combination of sources, for example, the grid (e.g., line voltage), one or more batteries, one or more photovoltaic energy collection devices (i.e., a device that includes one or more photovoltaic cells that convert energy from the sun into electrical energy), one or more windmills, etc.

Persons of skill in the art are familiar with, and have ready access to, a wide variety of solid state light emitters, and any suitable solid state light emitter (or solid state light emitters) can be employed in the lighting devices according to the present inventive subject matter. A variety of solid state light emitters are well known, and any of such light emitters can be employed according to the present inventive subject matter. Representative examples of solid state light emitters include light emitting diodes (inorganic or organic, including polymer light emitting diodes (PLEDs)) with or without luminescent materials.

Persons of skill in the art are familiar with, and have ready access to, a variety of solid state light emitters that emit light having a desired peak emission wavelength and/or dominant emission wavelength, and any of such solid state light emitters (discussed in more detail below), or any combinations of such solid state light emitters, can be employed in embodiments that comprise a solid state light emitter.

Light emitting diodes are semiconductor devices that convert electrical current into light. A wide variety of light emitting diodes are used in increasingly diverse fields for an ever-expanding range of purposes. More specifically, light emitting diodes are semiconducting devices that emit light (ultraviolet, visible, or infrared) when a potential difference is applied across a p-n junction structure. There are a number of well known ways to make light emitting diodes and many associated structures, and the present inventive subject matter can employ any such devices.

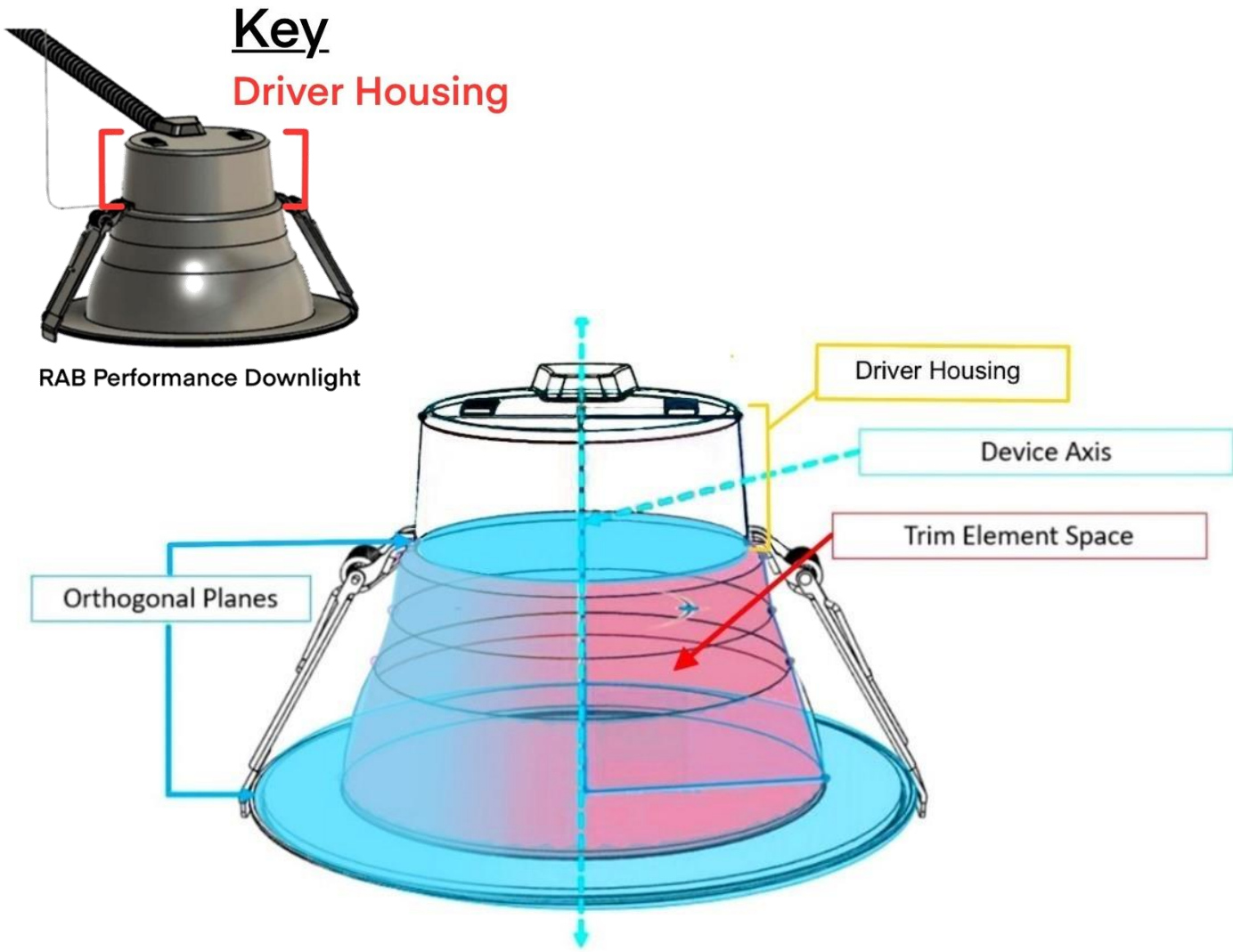
In some embodiments, the trim element can comprise at least one chamber that is shaped so that it can accommodate any of a variety of driver modules and/or power supply modules (or one or more components thereof) involved in receiving current supplied to a lighting device, modifying the current (e.g., converting it from AC to DC and/or from one voltage to another voltage), and/or driving one or more solid state light emitters (e.g., illuminating one or more solid state light emitter intermittently and/or adjusting the current supplied to one or more solid state light emitters in response to a user command, a detected change in intensity or color of light output, a detected change in an ambient characteristic such as temperature or background light, etc., and/or a signal contained in the input power, such as a dimming signal in AC power supplied to the lighting device), e.g., any of the components discussed herein.

JX-0003.0015

RDX-0004.039

Non-Infringement Analysis:

’449 Patent	
“trim element”	“A structure that **forms a flange** wherein the flange is configured to abut against a mounting surface and **defines an outward-facing surface** of the lighting device and is configured to be inserted into an opening in the mounting surface.”
“trim element space”	“A volume of space defined by the interior **of the trim element** and planes orthogonal to the device axis at the upper-most and lower-most points **of the trim element**.”



CX-0487

RDX-0004.040

U.S. Patent No. 7,614,769 ("Sell")

(12) **United States Patent**
Sell

(10) **Patent No.: US 7,614,769 B2**
(45) **Date of Patent: Nov. 10, 2009**

(54) **LED CONVERSION SYSTEM FOR RECESSED LIGHTING**

(76) Inventor: **Timothy L. Sell**, 6993 Brook Trout La., Plymouth, MI (US) 48170

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 209 days.

(21) Appl. No.: **11/986,590**

(22) Filed: **Nov. 23, 2007**

(65) **Prior Publication Data**

US 2009/0135608 A1 May 28, 2009

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Sell – Overview

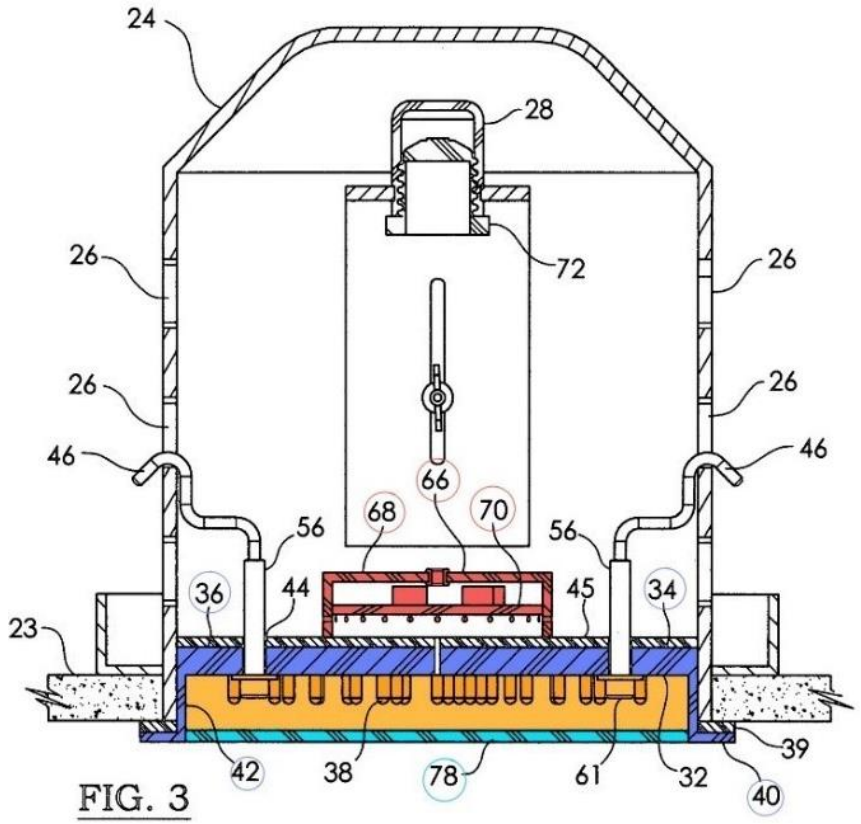

FIG. 3

Key

Trim Element: Shell 34, Flange 40, Sidewall 42, and Top Plate 36

Ocular Plate 78

Trim Element Space

Power Supply 66, Enclosure 68, Circuit Board 70

A power supply **66** is adapted to convert AC current from the electrical source **30** to DC current having the proper voltage to power the LEDs **38**. The power supply **66** includes an enclosure **68** mounted on the shell **34**, although the enclosure **68** can be mounted anywhere inside the can **24**.

The LED conversion system **20** comprises a lamp **32** having a shell **34**. The shell **34** is adapted to fit into the can **24**. The shell **34** has a flat top plate **36** with a plurality of LEDs (light emitting diodes) **38** attached to the shell top plate **36**. The shell **34** has a flange **40** for placement against the outside of the wall panel **23**. A sidewall **42** extends between the flange **40** and the top plate **36**.

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Sell Compared to RAB's Products

Sell (Prior Art)

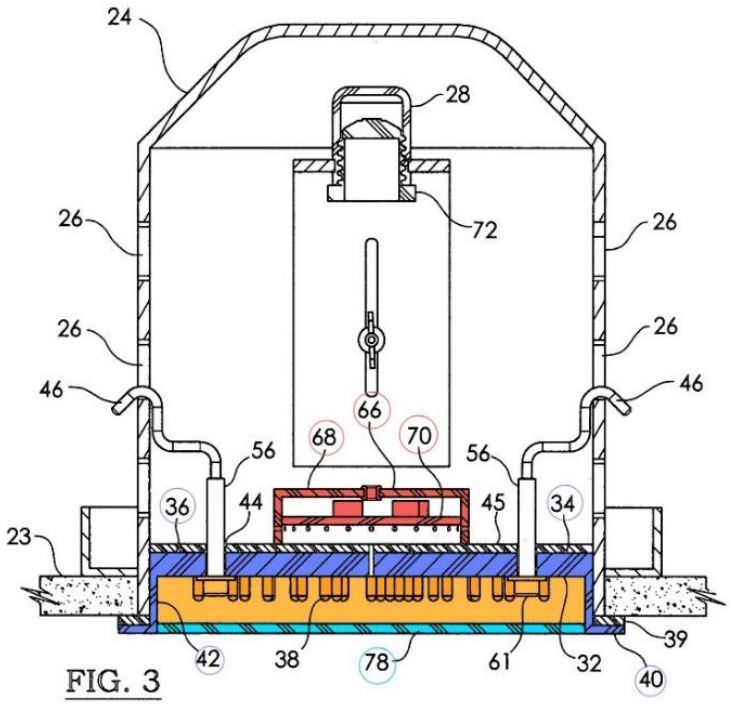


FIG. 3

Key

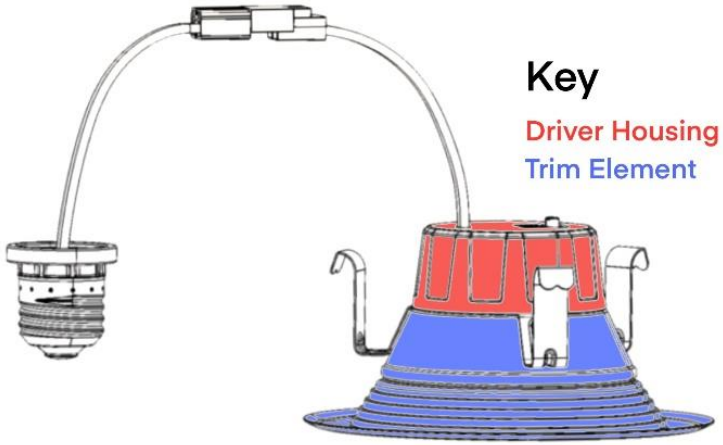
Trim Element: Shell 34, Flange 40, Sidewall 42, and Top Plate 36

Ocular Plate 78

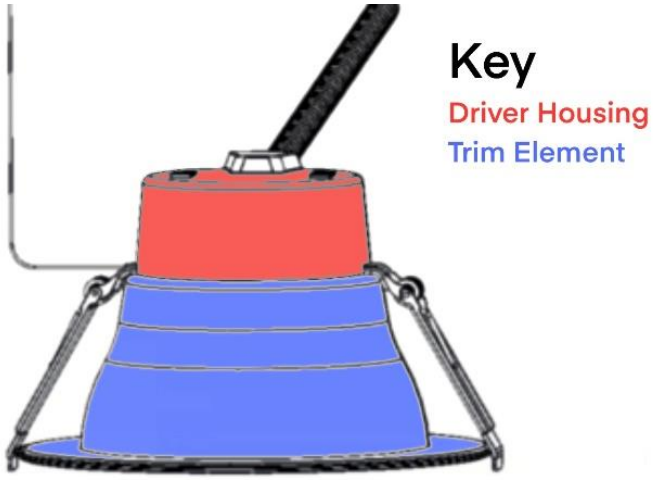
Trim Element Space

Power Supply 66, Enclosure 68, Circuit Board 70

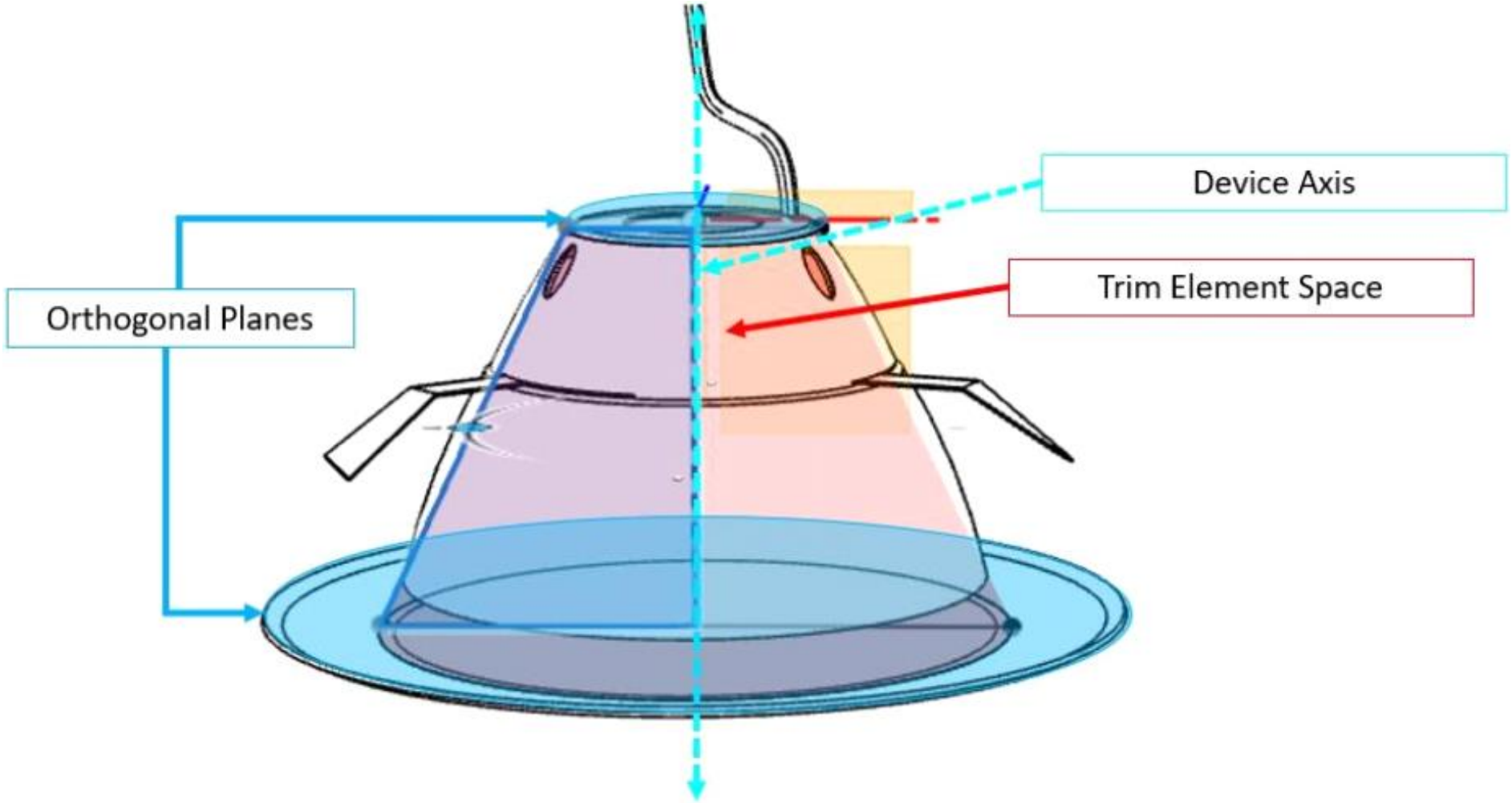
RAB Recessed Retrofit



RAB Performance Downlight



Dr. Katona's Analysis for Cree Lighting's Recessed Retrofit



RX-0844, Katona Op., p. 245

The Weight Limitations

- The Asserted Claims each require the lighting device to weigh "less than 750 grams" (or "less than 500 grams" in claim 8).

- That means the claimed lighting device can have any weight **from 0** to 750 grams or 500 grams.

The Lumen Output Limitations

- The Asserted Claims require the lighting device to emit light with a brightness of “at least 500 lumens.”
- That means there is **no upper limit** on the amount of light emitted by the claimed lighting device.
- In 2009 and as is the case today, the amount of light output from a downlight suppled with 12 or 15 watts **would not have been limitless**.

Lack of Written Description

- "trim element space"
- "the first driver component in the trim element space"

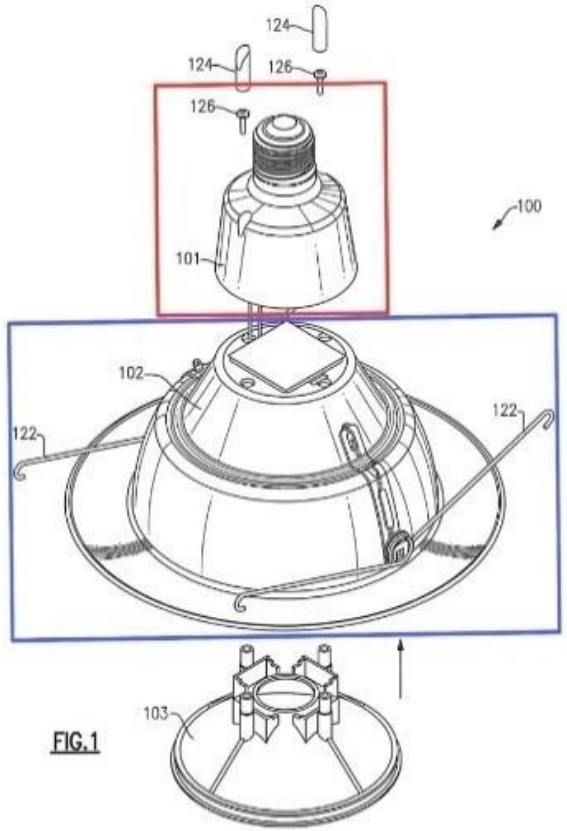


FIG.1

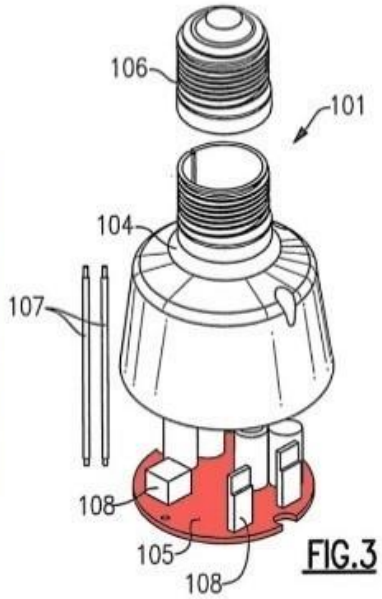


FIG.3

- "In some embodiments, the trim element ***can*** comprise at least one chamber that is shaped so that it can accommodate any of a variety of driver modules and/or power supply modules (or one or more components thereof) . . ." JX-0003, 11:17-32 (emphasis added).
- Figures 1 and 3 show that the "driver subassembly 101" and driver components are located outside of the "trim element space."

JX-0003.0004, 5