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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JESCO LIGHTING GROUP, LLC,
Petitioner,

v.

AGS LIGHTING MANAGEMENT LLC,
Patent Owner.

Case No. IPR2025-01328

Patent No. 11,751,302

**PETITION FOR INTER PARTES REVIEW
OF U.S. PATENT NO. 11,751,302**

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[1a] an array of light emitting diodes (LEDs) having a first length, wherein the array of LEDs comprises:	11
[1b] a first plurality of LEDs configured to produce a first light having a first color temperature, wherein the first plurality of LEDs aligns within a first linear shape;	12
[1c] a second plurality of LEDs configured to produce a second light having a second color temperature different from the first color temperature, wherein the second plurality of LEDs align within a second linear shape;	17
[1d] a driver circuit configured to output a plurality of currents;	19

[1e] a switch assembly configured to couple to the driver circuit, wherein the switch assembly comprises:.....	21
[1f] a first switch configured to cause the driver circuit to output one of the plurality of currents;.....	22
[1g] a second switch configured to cause the one of the plurality of currents to couple to the first plurality of LEDs, the second plurality of LEDs, or both; and.....	25
[1h] wherein the linear LED lighting apparatus is configured to electrically couple to an additional linear LED lighting apparatus having a second length different than the first length by a scale factor, wherein the additional linear LED lighting apparatus is configured to produce a third light having the first color temperature via a third plurality of LEDs or a fourth light having the second color temperature via a fourth plurality of LEDs.	30
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5. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions, wherein each of the plurality of selectable positions is configured to cause the switch assembly to send a respective signal to the driver circuit, wherein the respective signal is configured to cause the driver circuit to output the one of the plurality of currents that corresponds to a current position of the plurality of selectable positions.	33
6. The linear LED lighting apparatus of claim 1, comprising a housing comprising an interior volume configured to hold the driver circuit, the first plurality of LEDs, and the second plurality of LEDs.	34
7. The linear LED lighting apparatus of claim 6, wherein the housing comprises a length greater than or equal to 24 inches.	35

9. The linear LED lighting apparatus of claim 1, comprising at least one electrical connection configured to transmit electricity from the lighting apparatus to at least one other lighting apparatus.	35
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11. The linear LED lighting system of claim 10, wherein the first switch assembly is configured to receive a signal to cause the first driver circuit to output the one of the first plurality of currents.	42
12. The linear LED lighting system of claim 11, wherein the signal is received via a wired connection.	42
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[18o] a third plurality of LEDs associated with a third color temperature, wherein the third plurality of LEDs aligns within a third linear shape, wherein the third color temperature matches the first color temperature, and wherein the third plurality of LEDs is longer than the first plurality of LEDs;.....	50
[18p] a fourth plurality of LEDs associated with a fourth color temperature matching the second color temperature, wherein the fourth plurality of LEDs aligns within a fourth linear shape, and wherein the fourth plurality of LEDs is longer than the second plurality of LEDs; ...	51
[18w] cause half of the second portion of the one of the second plurality of currents to couple to each LED of the third plurality of LEDs and each LED of the fourth plurality of LEDs.	51
19. The linear LED system of claim 18, wherein the first modular lighting apparatus comprises a first connector configured to couple to a second connector part of the second modular lighting apparatus, wherein the first connector and second connector are configured to transmit data between the first modular light apparatus and the second modular lighting apparatus.	52
20. The linear LED system of claim 18, wherein a first ratio of the one of the second plurality of currents to the one of the first plurality of currents matches a second ratio of a first number of LEDs in the first plurality of	

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	a second position configured to cause the switch assembly to couple the one of the plurality of currents to the second plurality of LEDs; and	56
	a third position configured to cause the switch assembly to couple a first portion of the one of the plurality of currents to the first plurality of LEDs and a second portion of the one of the plurality of currents to the second plurality of LEDs.	56
	8. The linear LED lighting apparatus of claim 6, wherein the switch assembly is configured to be positioned in a receptacle of the housing, and wherein the switch assembly is configured to be flush with a surface of the housing when positioned in the receptacle.	57
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	[1pre] A linear light-emitting diode (LED) lighting apparatus, comprising:	59
	[1a] an array of light emitting diodes (LEDs) having a first length, wherein the array of LEDs comprises:	59
	[1b] a first plurality of LEDs configured to produce a first light having a first color temperature, wherein the first plurality of LEDs aligns within a first linear shape;	60

[1c] a second plurality of LEDs configured to produce a second light having a second color temperature different from the first color temperature, wherein the second plurality of LEDs align within a second linear shape;	61
[1d] a driver circuit configured to output a plurality of currents;	62
[1e] a switch assembly configured to couple to the driver circuit, wherein the switch assembly comprises:.....	64
[1f] a first switch configured to cause the driver circuit to output one of the plurality of currents;.....	68
[1g] a second switch configured to cause the one of the plurality of currents to couple to the first plurality of LEDs, the second plurality of LEDs, or both; and.....	69
[1h] wherein the linear LED lighting apparatus is configured to electrically couple to an additional linear LED lighting apparatus having a second length different than the first length by a scale factor, wherein the additional linear LED lighting apparatus is configured to produce a third light having the first color temperature via a third plurality of LEDs or a fourth light having the second color temperature via a fourth plurality of LEDs.	70
2. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions.	73
3. The linear LED lighting apparatus of claim 2, wherein the plurality of selectable positions comprises:.....	73
a first position configured to cause the switch assembly to couple the one of the plurality of currents to the first plurality of LEDs;.....	73
a second position configured to cause the switch assembly to couple the one of the plurality of currents to the second plurality of LEDs; and	73
a third position configured to cause the switch assembly to couple a first portion of the one of the plurality of currents to the first plurality of LEDs and a second portion of the one of the plurality of currents to the second plurality of LEDs.	73
4. The linear LED lighting apparatus of claim 1, wherein the first color temperature corresponds to 3000	

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5. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions, wherein each of the plurality of selectable positions is configured to cause the switch assembly to send a respective signal to the driver circuit, wherein the respective signal is configured to cause the driver circuit to output the one of the plurality of currents that corresponds to a current position of the plurality of selectable positions.	75
6. The linear LED lighting apparatus of claim 1, comprising a housing comprising an interior volume configured to hold the driver circuit, the first plurality of LEDs, and the second plurality of LEDs.	76
7. The linear LED lighting apparatus of claim 6, wherein the housing comprises a length greater than or equal to 24 inches.	78
8. The linear LED lighting apparatus of claim 6, wherein the switch assembly is configured to be positioned in a receptacle of the housing, and wherein the switch assembly is configured to be flush with a surface of the housing when positioned in the receptacle.	78
9. The linear LED lighting apparatus of claim 1, comprising at least one electrical connection configured to transmit electricity from the lighting apparatus to at least one other lighting apparatus.	80
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Claim Elements [10a]-[10g]	80
Claim Elements [10h]-[10n]	81
[10i] a second plurality of light-emitting diodes (LEDs) arranged within a second linear form factor and having a second number of LEDs, each LED of the second plurality of LEDs associated with the first color temperature, wherein the second number is greater than the first number by a scale factor;	83

[10m] couple the one of the second plurality of currents to the second plurality of LEDs, wherein the one of the second plurality of currents is greater than the one of the first plurality of currents by the scale factor; and 84

[10n] a second extender port configured to couple with the first extender port to combine the first modular lighting apparatus and the second modular lighting apparatus to traverse the first linear distance and the second linear distance. 85

11. The linear LED lighting system of claim 10, wherein the first switch assembly is configured to receive a signal to cause the first driver circuit to output the one of the first plurality of currents. 86

12. The linear LED lighting system of claim 11, wherein the signal is received via a wired connection. 86

13. The linear LED lighting system of claim 11, wherein the signal is received via a mechanical switch. 86

14. The linear LED lighting system of claim 11, wherein the signal comprises a wireless signal. 86

16. The linear LED lighting system of claim 10, wherein the first extender port is configured to electrically couple the first modular lighting apparatus to the second modular lighting apparatus. 86

17. The linear LED lighting system of claim 10, wherein each LED of the first plurality of LEDs receives a same amount of current via the one of the first plurality of currents that each LED of the second plurality of LEDs receives via the one of the second plurality of currents. 87

Independent Claim 18 87

[18l] cause half of the first portion of the one of the first plurality of currents to couple to each LED of the first plurality of LEDs and each LED of the second plurality of LEDs; and 89

Independent Claim 18 -Claim elements 18[m]-18[w].....90

[18o] a third plurality of LEDs associated with a third color temperature, wherein the third plurality of LEDs aligns within a third linear shape, wherein the third color temperature matches the first color

temperature, and wherein the third plurality of LEDs is longer than the first plurality of LEDs;.....	92
[18p] a fourth plurality of LEDs associated with a fourth color temperature matching the second color temperature, wherein the fourth plurality of LEDs aligns within a fourth linear shape, and wherein the fourth plurality of LEDs is longer than the second plurality of LEDs; ...	93
[18w] cause half of the second portion of the one of the second plurality of currents to couple to each LED of the third plurality of LEDs and each LED of the fourth plurality of LEDs.	93
19. The linear LED system of claim 18, wherein the first modular lighting apparatus comprises a first connector configured to couple to a second connector part of the second modular lighting apparatus, wherein the first connector and second connector are configured to transmit data between the first modular light apparatus and the second modular lighting apparatus.	94
20. The linear LED system of claim 18, wherein a first ratio of the one of the second plurality of currents to the one of the first plurality of currents matches a second ratio of a first number of LEDs in the first plurality of LEDs to a second number of LEDs in the third plurality of LEDs.	94
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LISTING OF CHALLENGED CLAIMS

[1pre]. A linear light-emitting diode (LED) lighting apparatus, comprising:

[1a] an array of light emitting diodes (LEDs) having a first length, wherein the array of LEDs comprises:

[1b] a first plurality of LEDs configured to produce a first light having a first color temperature, wherein the first plurality of LEDs aligns within a first linear shape;

[1c] a second plurality of LEDs configured to produce a second light having a second color temperature different from the first color temperature, wherein the second plurality of LEDs align within a second linear shape;

[1d] a driver circuit configured to output a plurality of currents;

[1e] a switch assembly configured to couple to the driver circuit, wherein the switch assembly comprises:

[1f] a first switch configured to cause the driver circuit to output one of the plurality of currents;

[1g] a second switch configured to cause the one of the plurality of currents to couple to the first plurality of LEDs, the second plurality of LEDs, or both; and

[1h] wherein the linear LED lighting apparatus is configured to electrically couple to an additional linear LED lighting apparatus having a second length different than the first length by a scale factor, wherein the additional linear LED lighting apparatus is configured to produce a third light having the first color temperature via a third plurality of LEDs or a fourth light having the second color temperature via a fourth plurality of LEDs.

2. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions.

3. The linear LED lighting apparatus of claim 2, wherein the plurality of selectable positions comprises:

a first position configured to cause the switch assembly to couple the one of the plurality of currents to the first plurality of LEDs;

a second position configured to cause the switch assembly to couple the one of the plurality of currents to the second plurality of LEDs; and

a third position configured to cause the switch assembly to couple a first portion of the one of the plurality of currents to the first plurality of LEDs and a second portion of the one of the plurality of currents to the second plurality of LEDs.

4. The linear LED lighting apparatus of claim 1, wherein the first color temperature corresponds to 3000 Kelvin and the second color temperature corresponds to 4000 Kelvin.

5. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions, wherein each of the plurality of selectable positions is configured to cause the switch assembly to send a respective signal to the driver circuit, wherein the respective signal is configured to cause the driver circuit to output the one of the plurality of currents that corresponds to a current position of the plurality of selectable positions.

6. The linear LED lighting apparatus of claim 1, comprising a housing comprising an interior volume configured to hold the driver circuit, the first plurality of LEDs, and the second plurality of LEDs.

7. The linear LED lighting apparatus of claim 6, wherein the housing comprises a length greater than or equal to 24 inches.

8. The linear LED lighting apparatus of claim 6, wherein the switch assembly is configured to be positioned in a receptacle of the housing, and wherein the switch assembly is configured to be flush with a surface of the housing when positioned in the receptacle.

9. The linear LED lighting apparatus of claim 1, comprising at least one electrical connection configured to transmit electricity from the lighting apparatus to at least one other lighting apparatus.

[10pre] A linear light-emitting diode (LED) lighting system, comprising:

[10a] a first modular lighting apparatus traversing a first linear distance, wherein the first modular lighting apparatus comprises:

[10b] a first plurality of light-emitting diodes (LEDs) arranged within a first linear form factor and having a first number of LEDs, each LED of the first plurality of LEDs associated with a first color temperature;

[10c] a first driver circuit configured to output a first plurality of currents;

[10d] a first switch assembly configured to:

[10e] cause the first driver circuit to output one of the first plurality of currents; and

[10f] couple the one of the first plurality of currents to the first plurality of LEDs; and

[10g] a first extender port; and

[10h] a second modular lighting apparatus traversing a second linear distance that is longer than the first linear distance, wherein the second modular lighting apparatus comprises:

[10i] a second plurality of light-emitting diodes (LEDs) arranged within a second linear form factor and having a second number of LEDs, each LED of the second plurality of LEDs associated with the first color temperature, wherein the second number is greater than the first number by a scale factor;

[10j] a second driver circuit configured to output a second plurality of currents;

[10k] a second switch assembly configured to:

[10l] cause the second driver circuit to output one of the second plurality of currents; and

[10m] couple the one of the second plurality of currents to the second plurality of LEDs, wherein the one of the second plurality of currents is greater than the one of the first plurality of currents by the scale factor; and

[10n] a second extender port configured to couple with the first extender port to combine the first modular lighting apparatus and the second modular lighting apparatus to traverse the first linear distance and the second linear distance.

11. The linear LED lighting system of claim 10, wherein the first switch assembly is configured to receive a signal to cause the first driver circuit to output the one of the first plurality of currents.

12. The linear LED lighting system of claim 11, wherein the signal is received via a wired connection.

13. The linear LED lighting system of claim 11, wherein the signal is received via a mechanical switch.

14. The linear LED lighting system of claim 11, wherein the signal comprises a wireless signal.

15. The linear LED lighting system of claim 10, wherein the first driver circuit comprise a current regulator.

16. The linear LED lighting system of claim 10, wherein the first extender port is configured to electrically couple the first modular lighting apparatus to the second modular lighting apparatus.

17. The linear LED lighting system of claim 10, wherein each LED of the first plurality of LEDs receives a same amount of current via the one of the first plurality of currents that each LED of the second plurality of LEDs receives via the one of the second plurality of currents.

[18pre] A linear light-emitting diode (LED) system, comprising:

[18a] a first modular lighting apparatus comprising:

[18b] a first array of light emitting diodes (LEDs) comprising:

[18c] a first plurality of LEDs associated with a first color temperature, wherein the first plurality of LEDs aligns within a first linear shape;

[18d] a second plurality of LEDs associated with a second color temperature different from the first color temperature,

[18e] wherein the second plurality of LEDs aligns within a second linear shape;

[18f] a first driver circuit configured to output a first plurality of currents;

[18g] a first switch assembly configured to couple to the first driver circuit, wherein the first switch assembly comprises:

[18h] a first switch configured to cause the first driver circuit to output one of the first plurality of currents;

[18i] a second switch configured to:

[18j] cause a first portion of the one of the first plurality of currents to couple to each LED of the first plurality of LEDs;

[18k] cause the first portion of the one of the first plurality of currents to couple to each LED of the second plurality of LEDs; or

[18l] cause half of the first portion of the one of the first plurality of currents to couple to each LED of the first plurality of LEDs and each LED of the second plurality of LEDs; and

[18m] a second modular lighting apparatus configured to electrically couple to the first modular lighting apparatus, wherein the second modular lighting apparatus comprises:

[18n] a second array of light emitting diodes (LEDs) comprising:

[18o] a third plurality of LEDs associated with a third color temperature, wherein the third plurality of LEDs aligns within a third linear shape, wherein the third color temperature matches the first color temperature, and wherein the third plurality of LEDs is longer than the first plurality of LEDs;

[18p] a fourth plurality of LEDs associated with a fourth color temperature matching the second color temperature, wherein the fourth plurality of LEDs aligns within a fourth linear shape, and wherein the fourth plurality of LEDs is longer than the second plurality of LEDs;

[18q] a second driver circuit configured to output a second plurality of currents;

[18r] a second switch assembly configured to couple to the second driver circuit, wherein the second switch assembly comprises:

[18s] a third switch configured to cause the second driver circuit to output one of the second plurality of currents; and

[18t] a fourth switch configured to:

[18u] cause a second portion of the one of the second plurality of currents to couple to each LED of the third plurality of LEDs;

[18v] cause the second portion of the one of the second plurality of currents to couple to each LED of the fourth plurality of LEDs; or

[18w] cause half of the second portion of the one of the second plurality of currents to couple to each LED of the third plurality of LEDs and each LED of the fourth plurality of LEDs.

19. The linear LED system of claim 18, wherein the first modular lighting apparatus comprises a first connector configured to couple to a second connector part of the second modular lighting apparatus, wherein the first connector and second connector are configured to transmit data between the first modular light apparatus and the second modular lighting apparatus.

20. The linear LED system of claim 18, wherein a first ratio of the one of the second plurality of currents to the one of the first plurality of currents matches a second ratio of a first number of LEDs in the first plurality of LEDs to a second number of LEDs in the third plurality of LEDs.

Jesco Lighting Group, LLC (“Petitioner”) requests cancellation of claims 1-20 of U.S. Patent No. 11,751,302 (“the ’302 Patent”) (Ex.1001) under 35 U.S.C. § 311 *et seq.* and 37 C.F.R. Part 42. Petitioner’s request is supported by the testimony of Prof. J. Gary Eden (Ex.1002; Ex.1003), and other corroborating exhibits. The challenged claims of the ’302 Patent are obvious over the prior art of record, which discloses the claimed invention of a simple LED fixture with color temperature changing abilities that can be connected serially to other fixtures.

I. INTRODUCTION

The ’302 Patent claims a known LED fixture technology: a linear, modular design using strings of white LEDs of different color temperatures, with an LED driver configured to provide mixed light from the LED strings at a user-selected brightness and color temperature.Ex.1002¶¶¶39-41.

Each of Edwards and May render obvious the main features of the independent claims of the ’302 Patent. To the extent that a claim is construed to require something not explicitly disclosed by either Edwards or May, it would have been obvious to make minor modifications to the design of Edwards or May to incorporate conventional features of such devices; for example, as disclosed in Sadwick and Jeswani.

A. U.S. Patent No. 11,751,302

The '302 Patent discloses an “(LED) lighting apparatus” which includes “an array of light emitting diodes (LEDs) that may include a first plurality of LEDs that produces a first light having a first color temperature” and which “aligns within a first linear shape” and a “second plurality of LEDs” which “may produce a second light having a second color temperature different from the first color temperature” and “which aligns within a second linear shape.” Ex.1001-Abstract. The lighting device also includes “a driver circuit that outputs a plurality of currents” and “a switch assembly.” *Id.* The switch assembly may “cause the one of the plurality of currents to couple to the first plurality of LEDs, the second plurality of LEDs, or both.” *Id.*

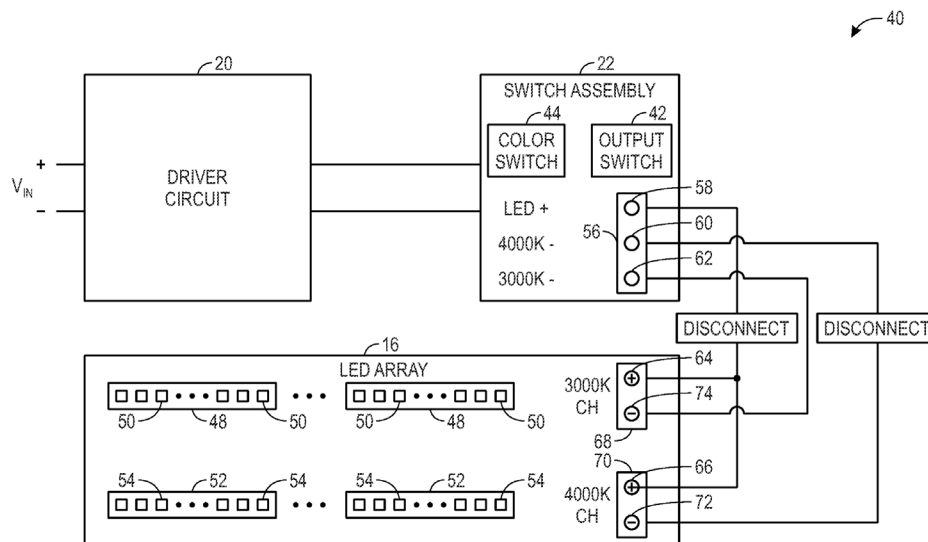


FIG. 2

Ex.1001-FIG.2.

The '302 Patent discloses a simplistic form of color temperature control, only allowing for transition between three different color temperature settings (unlike the prior art discussed herein, which enable wide ranges of color temperatures). Ex.1002¶40.

B. Prosecution History

The Application for the '302 Patent was filed on December 21, 2020, claiming priority to a June 18, 2020 provisional application. Ex.1001-1:8-12. On December 7, 2022, claims 1-9 of the pending application were rejected, and claims 10-20 were allowed. Ex.1004-11-22-2022 Action. On January 25, 2023, the applicants amended claim 1 to incorporate one of the limitations of the allowed claims; in particular, the ability to electrically couple the claimed fixture to an additional LED fixture having similar structural and functional characteristics (a conventional feature known in the art). Ex.1004-1-25-2023 Amendment. Ex.1002¶¶43-44, 79-82.

C. Challenged Claims

The challenged claims of the '302 Patent recite commonly-known combinations of features, namely, a linear light fixture that allows for rudimentary control of color temperature by sending: current to one or more groups of LEDs having different color temperatures. Ex.1002¶45. The claims further recite the ability to connect the fixture to adjoining fixtures. *Id.*

As described below, both Edwards and May disclose the core design and functionality claimed in the '302 Patent. To the extent that these references do not teach any claimed feature, it would be obvious to combine them with Sadwick and Jeswani. Ex.1002¶46.

D. Level of Skill in the Art

1. Qualifications of a POSA

A Person of Ordinary Skill (POSA) would have a B.S. degree in electrical engineering, or an equivalent field, as well as at least 2-4 years of academic or industry experience designing LED light fixtures. A person of ordinary skill in the art with a higher level of education may have fewer years of academic or industry experience, or vice versa. Ex.1002¶48.

2. Technological Background

Light Emitting Diodes (LEDs) are semiconductor devices that convert electrical energy into light. Ex.1002¶53. LEDs emit light as electric current flows through them. Ex.1002¶53. LEDs are placed within packages, which serve multiple functions, including mechanical protection, light extraction, and thermal management. Phosphors are sometimes incorporated into these packages. Ex.1002¶55. Phosphors work by absorbing photons of a specific wavelength and re-emitting them at a different wavelength to create a different color light. Ex.1002¶55. By mixing blue and yellow light, white light is generated. One of the

relevant qualities of LEDs is color temperature. Ex.1002¶¶57-60. Color temperature, measured in Kelvin (K), describes the appearance of the light emitted by an LED. Ex.1002¶58. The control and tuning of color temperature through selective control of LEDs having different color temperatures commonly known long before the filing of the '302 Patent. Ex.1002¶¶60-70.

E. Summary of Asserted References

1. Edwards

U.S. Patent No. 9,995,440 to Edwards issued on June 12, 2018 and is prior art under 35 USC §102(a)(1) (Ex.1001). It discloses “[a]n apparatus for personalized lighting systems, including a power supply” and “a number of solid state lights” Ex.1005-Abstract. Edwards mixes light from sets of white LEDs of different color temperatures to provide light at a selected color temperature. Ex.1025-¶¶92-95.

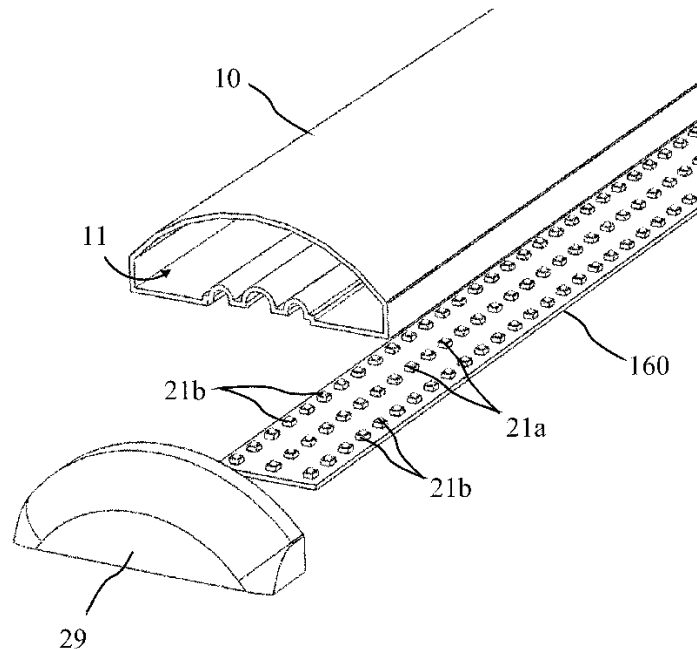


FIG. 1B

Ex.1005-Fig.1B.

In Edwards, “the final light emission is controlled by the color temperature switch 215b” by “shifting a lower proportion/ratio of the power to the LEDs 21b-1 and 21b-2 that corresponds to portions 20b-1 and 20b-1 (warm white light).”

Ex.1005-13:35-41. Ex.1002¶¶92-95.

2. Sadwick

Publication No. 2019/0320515 was published on October 17, 2019 and is prior art under 35 USC §102(a)(1). Sadwick discloses systems including “a solid

state lighting ‘bar’ 30 ... which can be used as a replacement for a fluorescent tube.” Ex.1006¶0044.

Sadwick “powers ... two banks 820, 822” having different color temperatures and that through “rapid switching of current between the two banks 820, 822 and balancing the duty cycle that apportions current between the two banks.” Ex.1006¶00194. Ex.1002¶¶97-100.

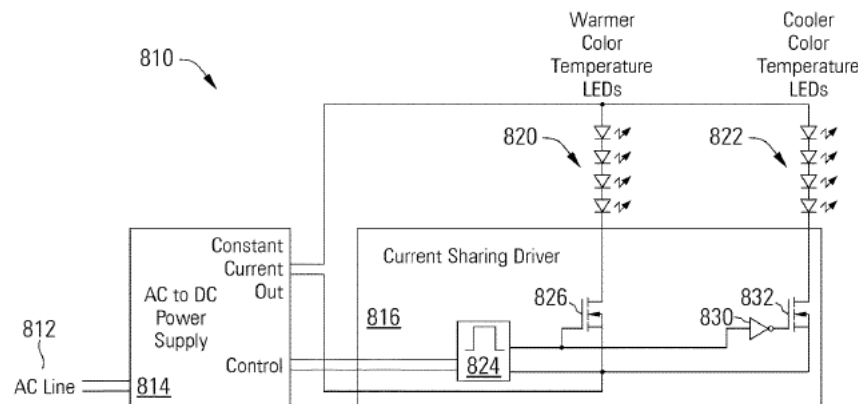


FIG. 35

Ex.1006-Fig.35.

3. Jeswani

U.S. Patent No. 10,683,969 to Jeswani was filed on May 17, 2020 and issued on June 16, 2020 and is prior art under 35 USC§§102(a)(1),102(a)(2). It discloses a lamp “that can have at least one interface on the lamp body for a selectable lumens and selectable correlated color temperature (CCT).” Ex.1007-Abstract. Ex.1007-8:219-25. Ex. 1002¶101.

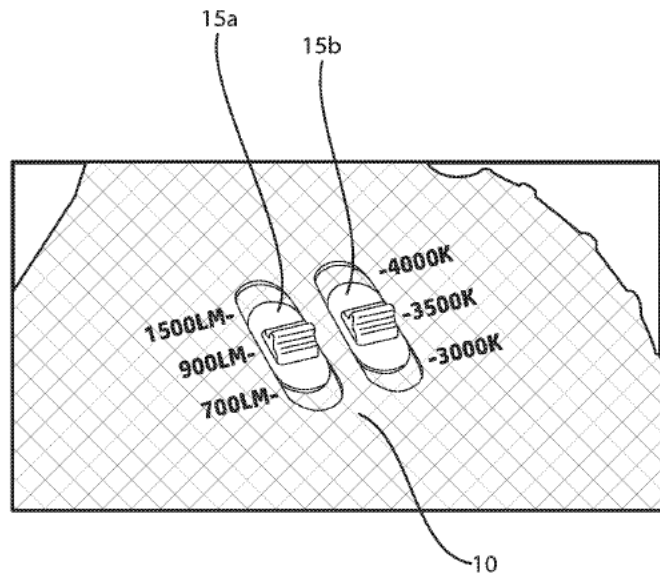
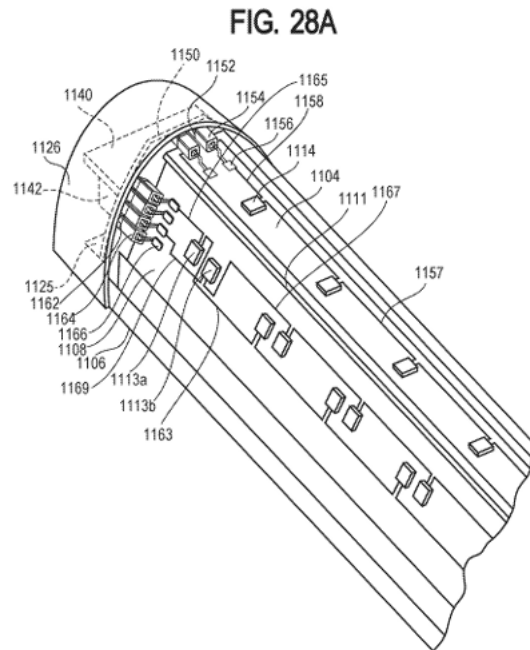


FIG. 1B

Ex.1007-Fig.1B.

4. May

Publication No. US 2019/0041009 published on February 7, 2019 and is thus prior art under 35 USC§102(a)(1). May discloses an LED “lighting system” which comprises “elongated linear lamps.” Ex.1008-Abstract. May discloses “a series of LED emitter pairs located at regularly spaced intervals in a row along the length of the board” and that “consist of a first string of LED emitters with a color temperature in a first range, and a second string of LED emitters with a color temperature in a second range.” Ex.1008¶10231. Ex.1002¶102.



Ex.1008-Fig.28A.

II. IDENTIFICATION OF CHALLENGE (37 C.F.R. § 42.104(b))

Petitioner requests cancellation of claims 1-20 of the '302 Patent under 35 U.S.C. §§ 311, 103. The grounds are as follows.

Ground	Claims	Description
1	1, 2, 4, 5, 6, 7, 9-20	Obvious over Edwards in view of Sadwick
2	2, 3, 8	Obvious over Edwards in view of Sadwick and further in view of Jeswani
3	1-14, 16-20	Obvious over May in view of Jeswani
4	15	Obvious over May in view of Jeswani and further in view of Sadwick

III. CLAIM CONSTRUCTION

The claims should be understood by their ordinary and customary meaning as understood by a POSA at the time of the invention considering the language of the claims, the specification, and the prosecution history of record. 37 C.F.R. §42.100. No construction is necessary to institute this petition. (*See also* Ex.1002¶¶49-50.). The '302 Patent states that “terms such as ‘linear’, ‘equal’, ‘parallel’, ‘half’ and ‘same’ should not be interpreted in a rigid or purely mathematical manner” and accordingly that ordinary and customary understanding of those terms should be applied in interpreting the claims. Ex.1001-12:62-64. Ex.1002¶50.

IV. GROUND 1- CLAIMS 1, 2, 4-7 AND 9-20 ARE OBVIOUS OVER EDWARDS IN VIEW OF SADWICK

Independent Claim 1:

[1pre] A linear light-emitting diode (LED) lighting apparatus, comprising:

Edwards discloses a “surface mountable wraparound linear lighting arrangement 260” with a “substrate 160 having... LEDs 21.” Ex.1005-5:36-37. *See also* Ex.1005-abstract, elements 1[a]-1[h], *infra*.

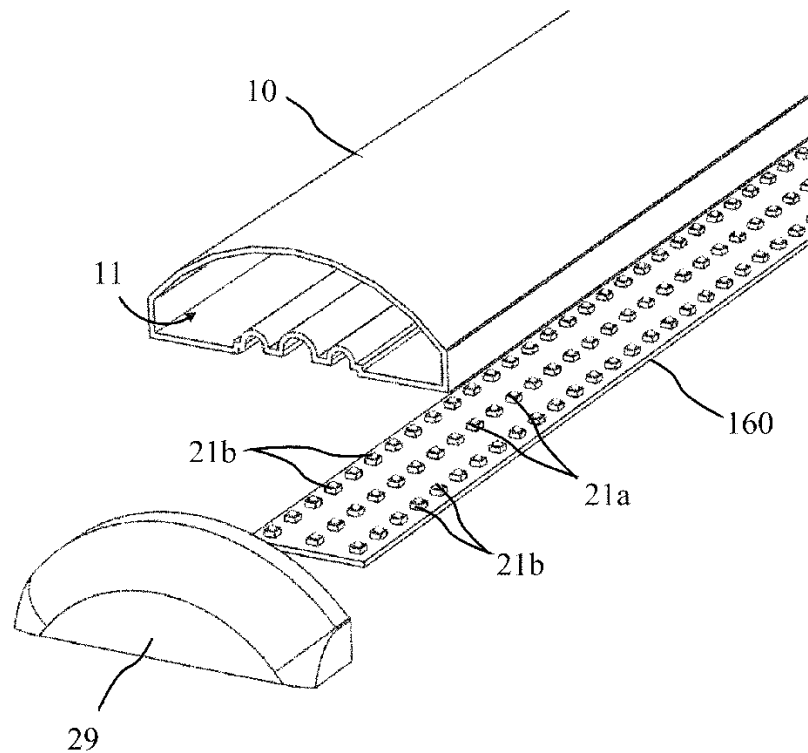


FIG. 1B

Ex.1005-Fig.1B.Ex. 1002¶¶106-107.

[1a] an array of light emitting diodes (LEDs) having a first length, wherein the array of LEDs comprises:

Edwards discloses an LED lighting apparatus that includes an array having a first length. *See* 1[pre]. “The surface mountable lighting arrangement 260 includes a hollow integrated wavelength conversion component and a substrate 160 having multiple arrays of LEDs 21.” Ex.1005-5:34-37. Ex. 1002¶¶108-109.

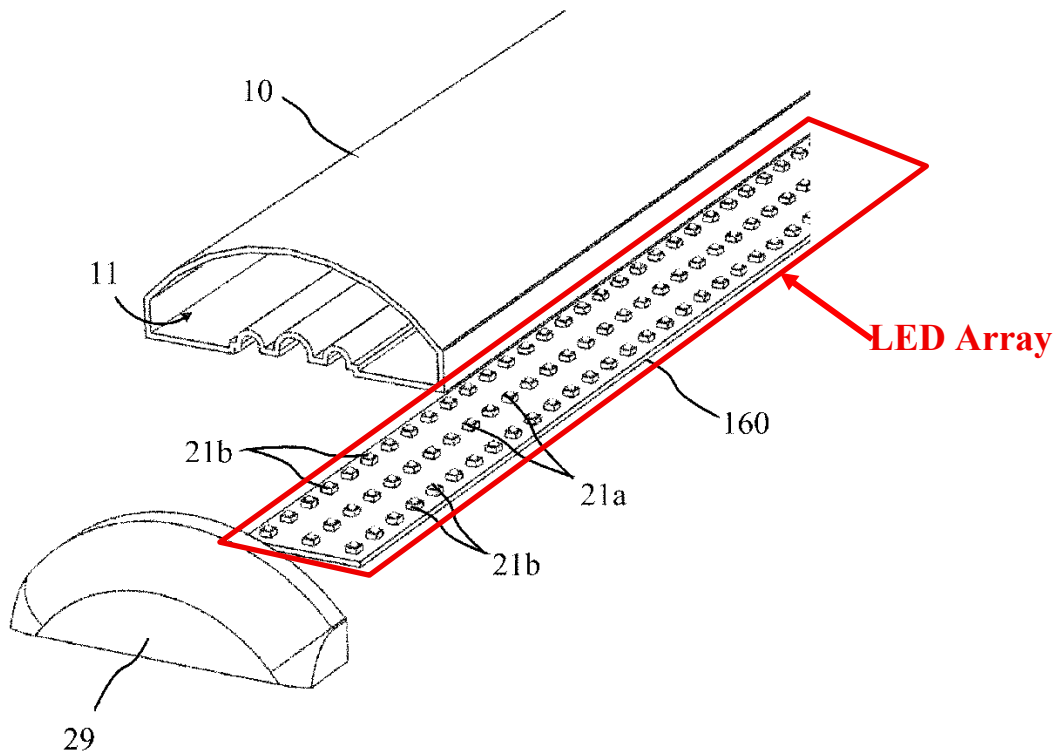


FIG. 1B

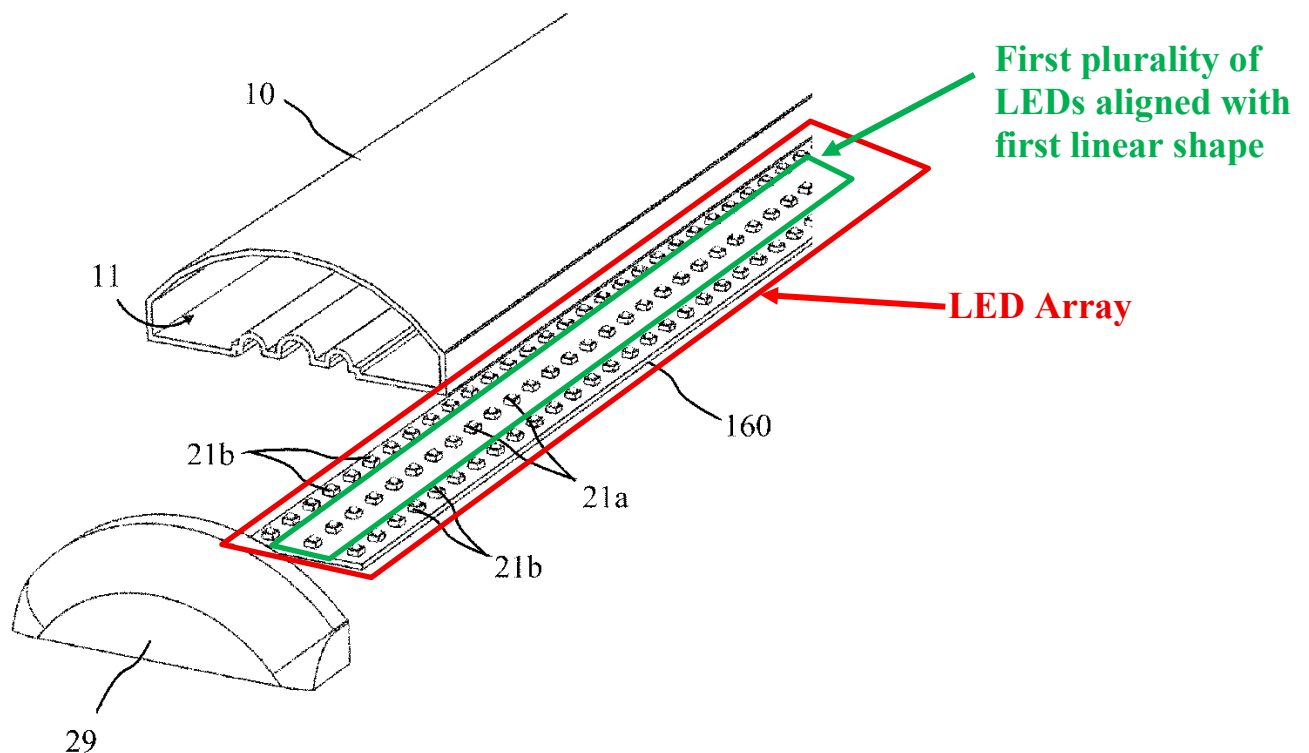
Ex.1005-Fig.1B-Annotated.

[1b] a first plurality of LEDs configured to produce a first light having a first color temperature, wherein the first plurality of LEDs aligns within a first linear shape;

Edwards discloses two sets of LEDs that each produce light having a different color temperature aligned in linear shapes. They do so by both: (a) emitting light through a wavelength conversion component that has segments for each set of LEDs comprised of different phosphors; and (b) emitting light of

specific colors through the LEDs themselves. This claim is also rendered obvious by Edwards in view of Sadwick.

Edwards discloses a first set of LEDs 21a and a second set of LEDs 21b each arranged in a linear shape and each set producing light having a different color temperature.

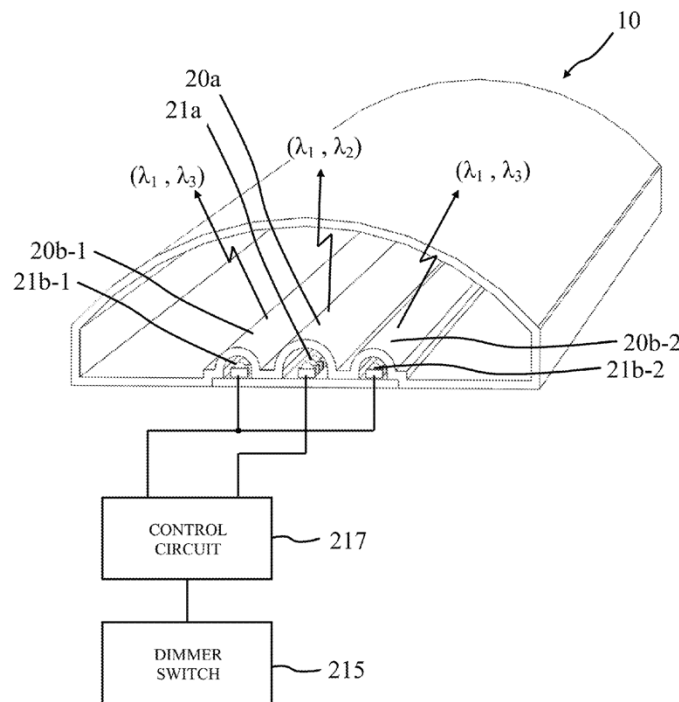


Ex.1005-Fig.1B-Annotated.

Each of the LEDs 21a produces light having a first color temperature when it emits light through a corresponding segment of the wavelength conversion component:

The wavelength conversion portions 20a, 20b-1, 20b-2 are positioned remotely to the plurality of arrays of blue light emitting LEDs (blue LEDs) 21b-1, 21a, and 21b-2. a first portion 20a [is] composed of a first photo-luminescent material and one or more second portions 20b-1, 20b-2 [are] composed of a second photo-luminescent material.

Ex.1002¶117; Ex.1005-10:49-55. Ex. 1002¶¶110-113.



Ex.1005-Fig.3A. Edwards further describes:

The wavelength conversion component is operable to absorb a proportion of the blue light λ_1 generated by the LEDs and convert it to light of a different wavelength by a process of photoluminescence

(e.g., first portion converts light to λ_2 and the one or more second portions converts light to λ_3).... Thus, light of wavelength λ_2 is generated by the first region (portion 20 a) and light of wavelength λ_3 is generated by the one or more second regions (portions 20 b-1, 20 b-2). The CCT of the emission product from the device is a combination of the CCT of the light generated by the LED (λ_1), the CCT of the light (α_2) generated by the first region, and the CCT of the light (α_3) generated by the second region.

Ex.1005-11:6-23.

Thus, the first and second sets of LEDs respectively produce light of a first and second color temperature. Ex.1002¶110-118, 120-124 citing Ex.1005-4:51-60, 6:25-29, 11:6-23.

The “first plurality of LEDs” limitation is met by the LEDs 21a either by themselves or in combination with corresponding portions of the wavelength conversion component 20a through which each LED provides light.

Ex.1002¶¶119-124. Similarly, the second plurality of LEDs is alternatively met by the LEDs 21b by themselves or in combination with the corresponding portions of the wavelength conversion component 20b through which each LED provides light. Ex.1002¶¶119-124.

Additionally, Edwards discloses that the sets of LEDs themselves may emit different colors, with one group being red, and another group being blue, and would thus produce light having different color temperatures from the dies.

Ex.1002¶125 citing Ex.1005-6:25-30. The red and blue LEDs would necessarily

respectively be arranged in lines 21a and 21b so as to enable Edwards's goal of providing different color temperatures. Ex.1002¶125.

To the extent Patent Owner alleges that the claims require layering the wavelength converting phosphors directly on the LED dies, it would have been obvious to adopt such a conventional LED package format, as disclosed in Sadwick. Sadwick discloses “phosphor coated” white LEDs used in the same manner as the Edwards LEDs. Ex.1006¶0263, Ex.1002¶129. Fig. 35 of Sadwick shows “two banks 820, 822” comprising, e.g., “a string 820 of 2200 degree Kelvin warm white LEDs and a string 822 of 6500 degree Kelvin cool white LEDs.” Ex.1006¶0194. Like Edwards, Sadwick teaches controlling color temperature by selectively controlling current to these LEDs. Ex.1006¶00194. Ex.1002¶128-130.

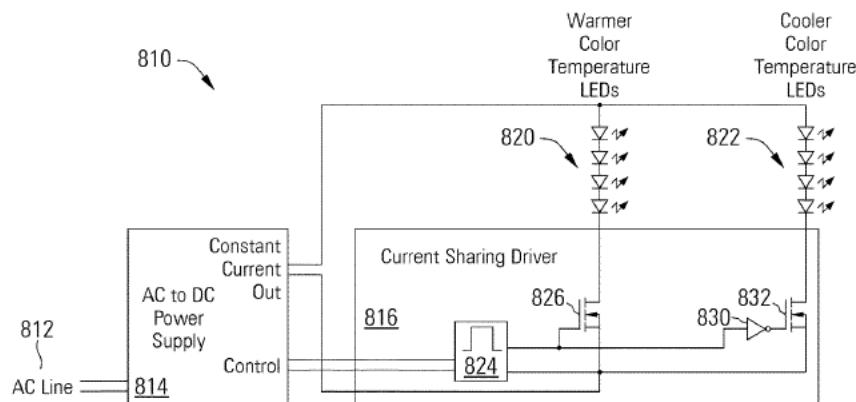


FIG. 35

Ex.1005-Fig.35.

A POSA would have been motivated to use conventional white LED packages as disclosed in Sadwick (with phosphors coated on LED dies) in the system of Edwards. There are substantial advantages to using such conventional white LEDs rather than Edwards's implementation of white LEDs. Manufacturing white LEDs by printing the phosphors directly on the die is much cheaper and easier, especially at commercial scale, than manufacturing a separate wavelength conversion component as in Edwards, as reflected by how conventional such white LEDs are. Ex.1002¶¶130, 132. Moreover, as Sadwick is directed towards the same basic mechanism for controlling color temperature as Edwards, a POSA would have had a reasonable expectation of success swapping Edwards's white LEDs using a wavelength conversion component for Sadwick's conventional white LEDs. Ex.1002¶132.

[1c] a second plurality of LEDs configured to produce a second light having a second color temperature different from the first color temperature, wherein the second plurality of LEDs align within a second linear shape;

As set forth for 1[b], this limitation is rendered obvious by Edwards' disclosure of sets of LEDs that each produce light having different color temperatures. They do so by both: (a) emitting light through a wavelength conversion component that has segments for each set of LEDs comprised of different phosphors; and (b) emitting light of specific colors through the LEDs.

Accordingly, the second group of LEDs either by themselves or in combination of the portions of the wavelength conversion element 20b through which they provide light would meet the “second plurality of LEDs...” limitation. To the extent that this claim element is construed to exclude Edwards’s implementation, it is also rendered obvious by Sadwick as described for 1[b]. Ex.1002¶¶134-138 citing Ex.1005-5:32-48..

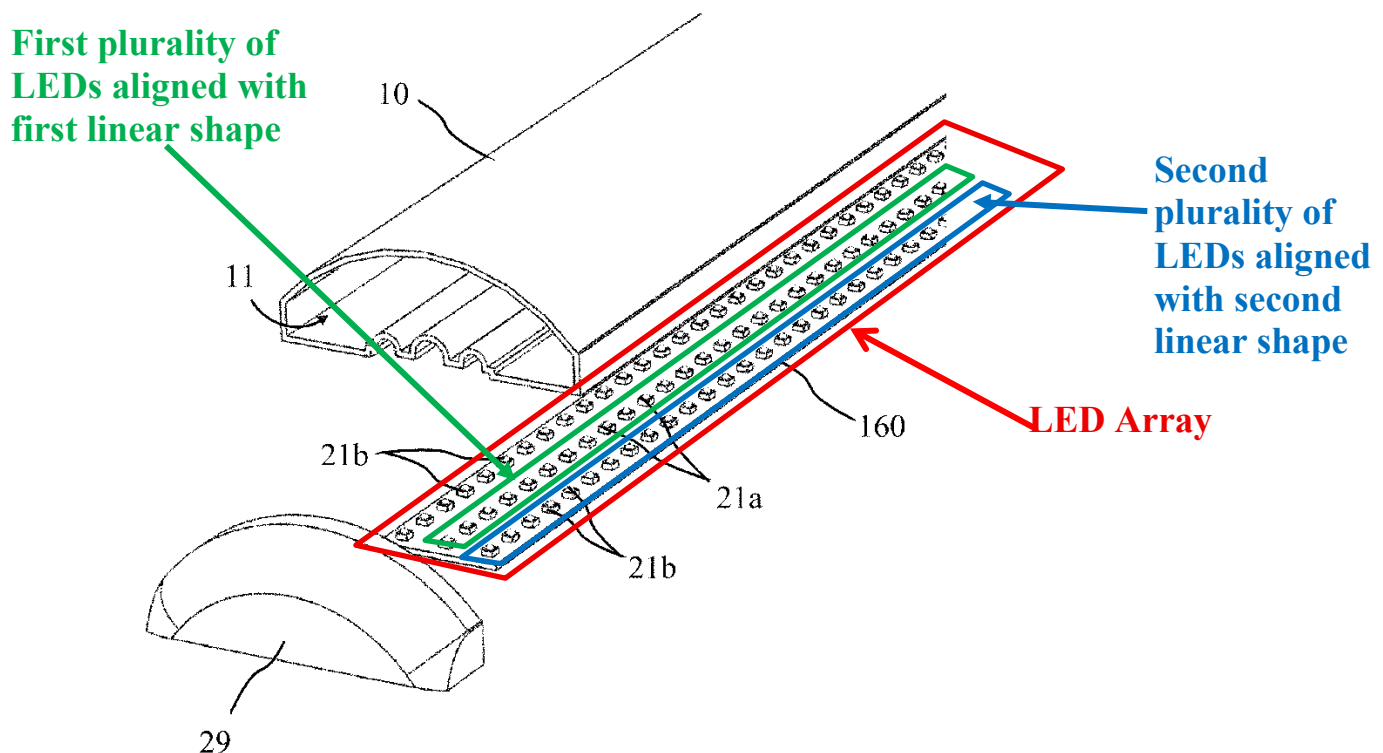


FIG. 1B

Ex.1005-Fig.1B-Annotated. *See also* Ex.1005 at 11:6-23.

[1d] a driver circuit configured to output a plurality of currents;

Edwards discloses the claimed driver circuit outputting a plurality of currents, particularly, a “dimmer switch 215” which “is configured to generate a continuous range of output powers” and “control circuit 217 which is operably connected to the plurality of LEDs, which is configured to translate the generated output power into an on/off arrangement and/or adjustable power arrangement”
Ex.1005-11:41-44; Ex.1002¶¶140-144.

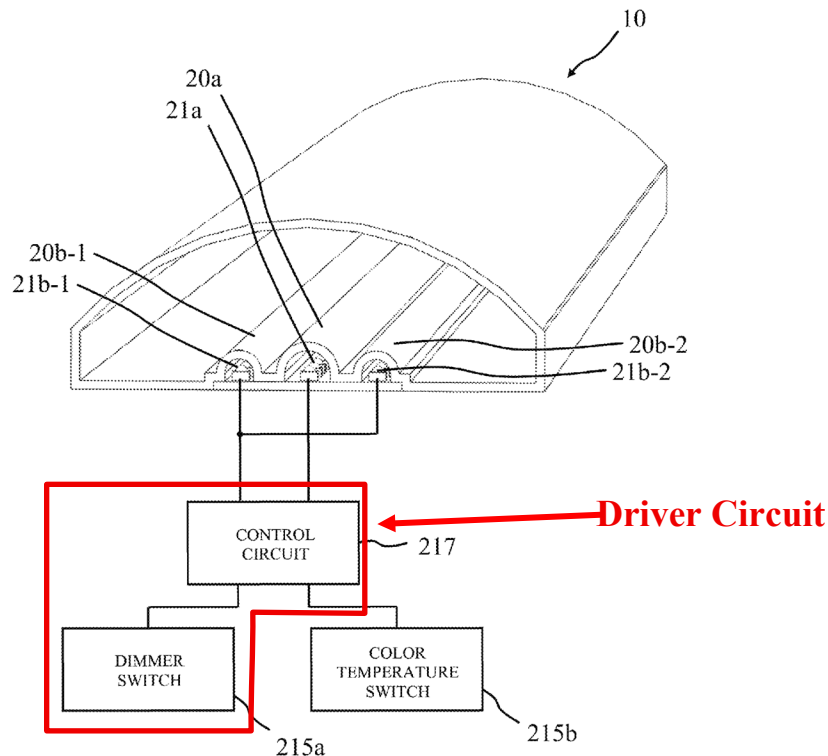
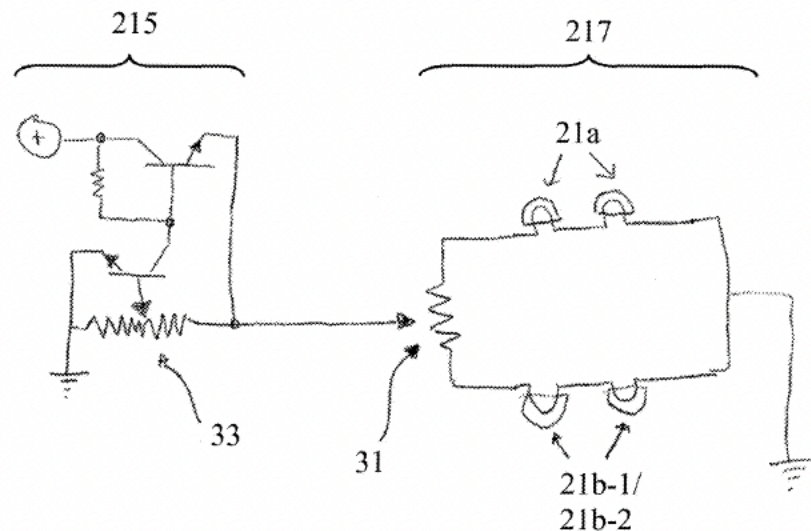


FIG. 3B

Ex. 1005-Fig.3B

Fig. 5 shows a driver circuit, comprised of dimmer switch 215 and control circuit 217, that output a plurality of currents based on the position of the resistor 33. As explained by Dr. Eden current is varied when the dimmer is used for “controlling the relative amount of power” and adjusts the “variable resistor 33” to change the resistance and thus, current.Ex.1002¶¶86, 140-144. Ex.1005-14:1-5. Alternatively, the driver circuit may comprise the control circuit 217 by itself.Ex.1002¶¶141, 145.



Ex.1005-Fig.5. Accordingly Edwards meets this limitation.

Alternatively, Sadwick also discloses the claimed driver circuit. Ex.1002¶¶148-151. For example, Sadwick discloses a “current driver” and/or a “variable constant current driver” for driving its LEDs and a current control circuit

configured to control brightness. Ex.1006¶¶53,57. In its Figure 35 embodiment, Sadwick notes that an “AC to DC power supply 814 converts an AC input 812” produce” current that can be “dimmable for example but not limited to 0 to 10 V dimming (*i.e.*, the constant current is adjustable and dimmable based on the dimming input).” Ex.1006¶0194. Ex.1002¶¶148-152.

A POSA would be motivated to modify the design of Edwards with the current control of Sadwick with a reasonable expectation of success. The current control devices of Sadwick would allow for more granular control of current levels and allow for Edwards to implement additional control mechanisms for controlling brightness. Ex.1002¶¶153-154. Including the current control features of Sadwick in Edwards would be a combination of known features to obtain a predictable result. Because the circuits of Edwards and Sadwick use standard and known components, a POSA could easily implement the current control circuit of Sadwick in Edwards with a reasonable expectation of success. Ex.1002¶¶153-154.

[1e] a switch assembly configured to couple to the driver circuit, wherein the switch assembly comprises:

Edwards discloses the claimed switch assembly – the “dimmer switch 215a” and “color temperature switch 215b” act as a switch assembly that is coupled to the control circuit 217. Ex.1005-11:29-35. Edwards discloses that these “independent controls can be applied to separately control both the dimming level of the lighting

device as well as its color temperature.” Ex.1005-13:24-35. Ex.1002¶¶155-156.

The controls 215a and 215b are a switch assembly that is part of the lighting apparatus. Ex. 1002¶156 citing EX.1005-4:38-41. Ex.1002¶¶155-156.

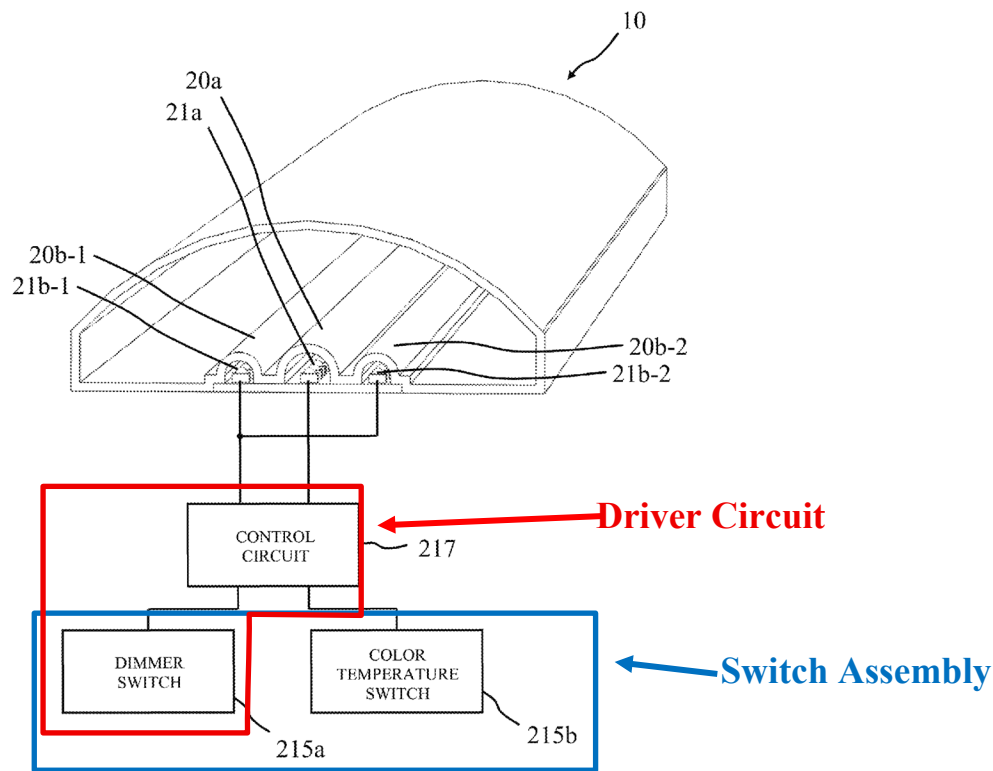


FIG. 3B

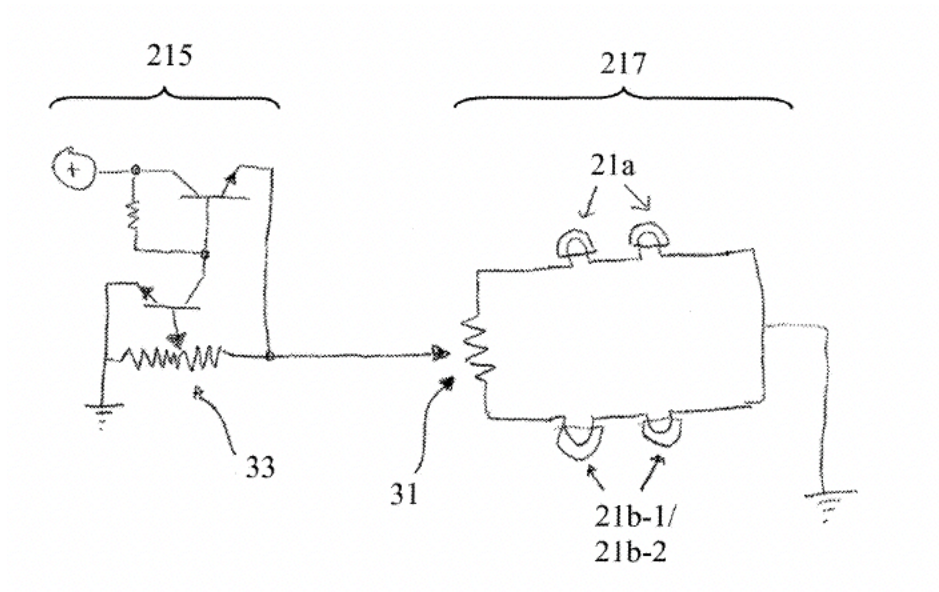
Ex.1005-Fig.3B-Annotated

[1f] a first switch configured to cause the driver circuit to output one of the plurality of currents;

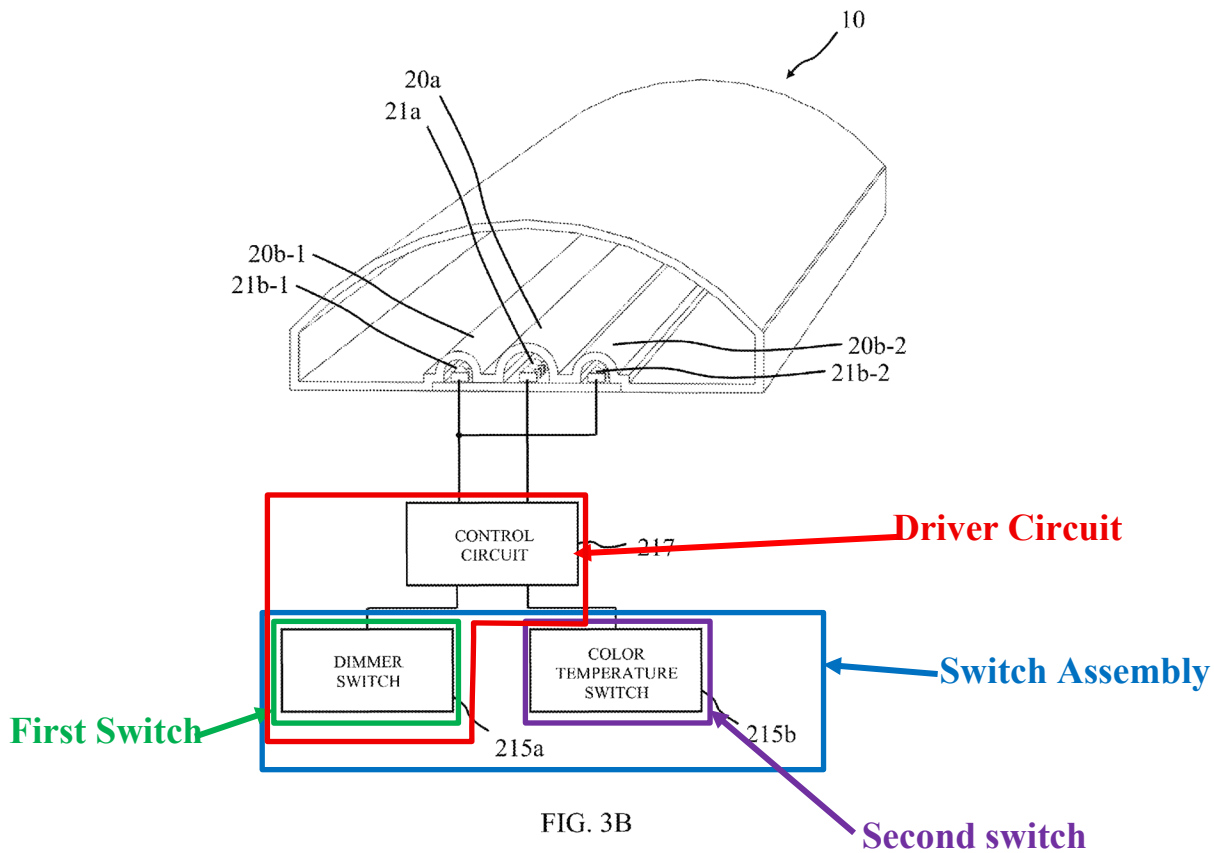
Edwards discloses this limitation, namely that “operation of the dimmer switch 215a” will “change the overall amount of power to be collectively provided to the 30 LEDs 21a, 21b-1, and 21b-2” and that “the overall brightness of the light is controlled by dimmer switch 215a.” Ex.1005-11:29-35. Ex.1002¶158. As

described for element 1[d], the resistor 33 controls current from the driver.

Ex.1002¶159.



Ex.1005-Fig.5.



Ex.1005-Fig.3B-Annotated. To the extent that the “first switch” must be separate from the “driver circuit” the physical switch portion of the dimmer could be the “first switch” and the circuit portions could be part of the driver circuit.

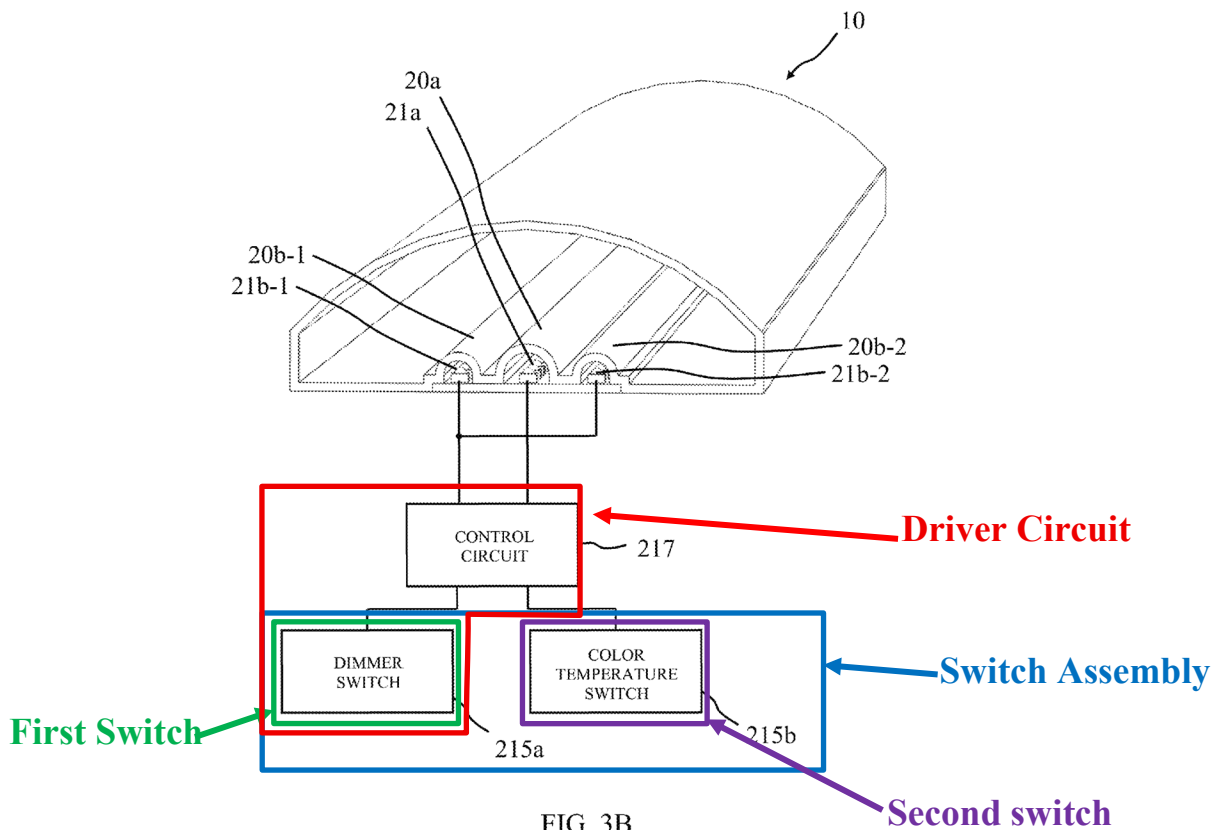
Alternatively, as discussed above with respect to element 1[d], Sadwick also discloses the ability to provide a plurality of currents and it would be obvious to implement that feature in Edwards. Ex.1002¶¶159-160. As set forth for element 1[d] a POSA would be motivated to control the brightness of Edwards in response to the dimmer 215a of Edwards using one or more of the current control

mechanisms of Sadwick and so doing would output a plurality of currents.

Ex.1002¶¶159-160.

[1g] a second switch configured to cause the one of the plurality of currents to couple to the first plurality of LEDs, the second plurality of LEDs, or both; and

Edwards discloses a color temperature switch 215b which is used to select the overall color temperature, which is produced by controlling the current coupled to each set of LEDs. Ex.1002¶¶161-163.

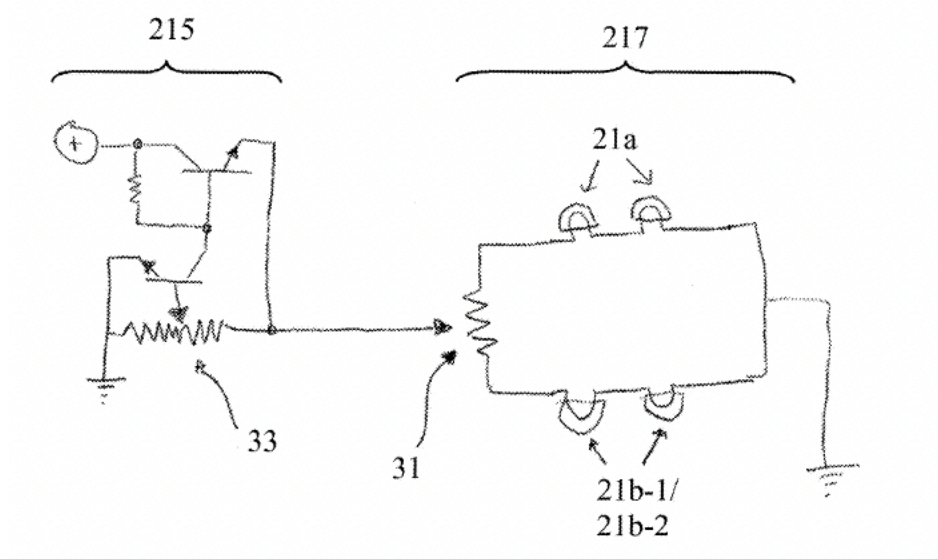


Ex.1005-Fig.3B-Annotated

Edwards discloses that “the color temperature of the final light emission is controlled by the color temperature switch 215b, where a cooler light emission is produced by shifting a higher proportion/ratio of the power to the LEDs 21a that corresponds to portion 20a (cool white light) and shifting a lower proportion/ratio of the power to the LEDs 40 21b-1 and 21b-2 that corresponds to portions 20b-1 and 20b-1 (warm white light).” Ex.1005-13:25-42. Ex.1002¶¶163-164.

Edwards discloses that “the combination of the emission product may be modified, for example, by altering the drive currents of the LED arrays ... the CCT of the emission product may correspond to a cool bluish white color when the entirety of the plurality of LEDs is turned on and shift towards a warm yellowish white color as the second set of LEDs corresponding to the second region (e.g., region generating light with a CCT corresponding to a cool blueish white) of the wave length conversion component are turned off.” Ex.1005-12:6-20; Ex.1002¶164.

Edwards discloses that this effect can be achieved through “resistor 31 [that] is configured as a potential divider and is used to select the relative drive currents I_A and I_B to achieve selected correlated color temperature (CCT).” Ex.1005-14:17-19; Ex.1002¶¶167-168.



Ex.1005-Fig.5. Similarly, Figs. 6 and 7 show alternative driver circuits. Ex.1005-Fig. 5. Ex.1002¶169.

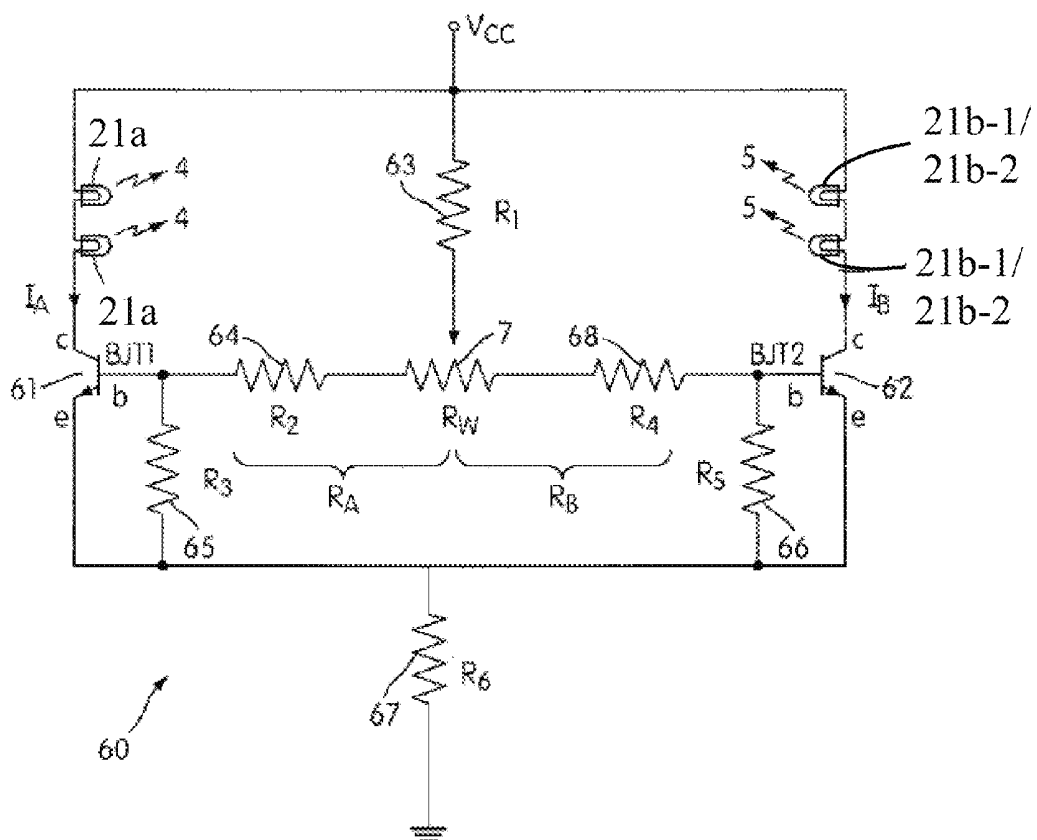
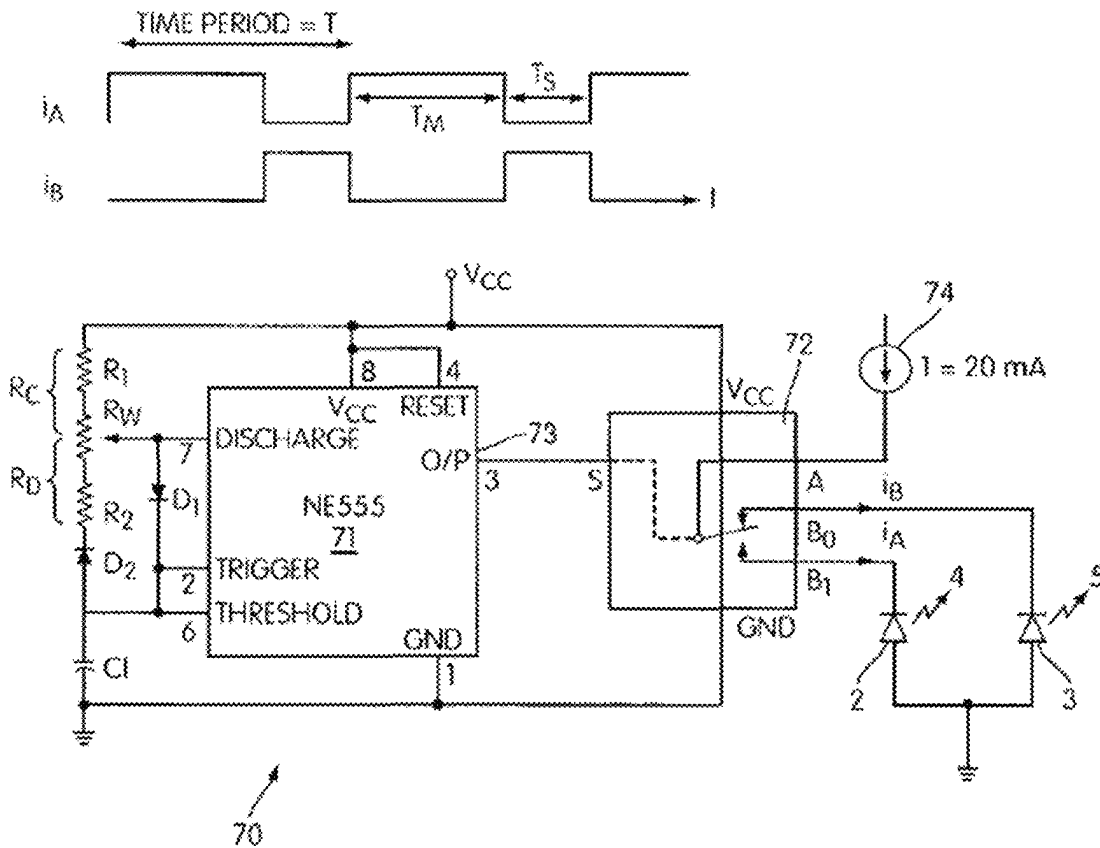


FIG. 6

Ex.1005-Fig.6



Ex.1005-Fig.7.

Alternatively, as set forth above for elements 1[a] and 1[d], it would also be obvious to use the current control mechanism of Sadwick with the disclosure of Edwards with a reasonable expectation of success. For similar reasons, it would also have been obvious to use the color temperature control mechanism of Sadwick in combination with Edwards's color temperature control switch 215b.

Ex.1002¶¶169-175 citing Ex.1006¶0194, Fig.35.

[1h] wherein the linear LED lighting apparatus is configured to electrically couple to an additional linear LED lighting apparatus having a second length different than the first length by a scale factor, wherein the additional linear LED lighting apparatus is configured to produce a third light having the first color temperature via a third plurality of LEDs or a fourth light having the second color temperature via a fourth plurality of LEDs.

Edwards, which discloses the ability to connect fixtures of different sizes and power them, discloses this limitation. Particularly Edwards teaches that the disclosed structure may be placed in a “a case 1307” and that “[t]he case 1307 may further comprise an electrical connector 1309 (e.g., plug) extending past the length of the body 1301 on one end, and a recessed complimentary socket (not shown) configured to receive a connector on another end” and that “this allows several linear lamps 1300 to be connected in series to cover a desired area.” Ex.1005-15:52-58; Ex.1002¶¶177-178. These lamps “range from 1 foot to 6 feet” and accordingly vary by a scale factor. Ex.1005-15:59; Ex.1002¶178.

In the second fixture, the “third light having the first color temperature via a third plurality of LEDs” would correspond to the light produced by the first plurality of LEDs of the first fixture and the “fourth light having the second color temperature via a fourth plurality of LEDs” would correspond to the second light produced by the second plurality of LEDs of the first fixture. Ex.1002¶180.

2. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions.

Edwards discloses a color temperature switch 215b having a plurality of selectable positions. Ex.1002¶¶181-183. That is, as described above for 1[g], the color temperature switch 215b is used to select among multiple overall color temperatures. Ex.1002¶183.

4. The linear LED lighting apparatus of claim 1, wherein the first color temperature corresponds to 3000 Kelvin and the second color temperature corresponds to 4000 Kelvin.

This feature is rendered obvious by Edwards or Edwards in view of Sadwick. Edwards discloses 4000K as potential color temperature for one of the pluralities of LEDs, noting “[v]arious percentages of the LEDs can be turned on/off for the different warm white settings, e.g., where 25% are on for a very warm white setting, such that a [4,000] lumen fixture would shift from 4000K CCT at full 40001 ms to 2200K CCT at >10001 ms.” Ex.1005-13:9-13. Edwards also discloses that color temperatures of 3000K are desirable, noting that “Typical incandescent light bulbs generate light of a warm yellowish white hue (e.g., 2,700-3,000K).” Ex.1005-2:49-62; Ex.1002¶¶186-187.

In light of the above, a POSA would be motivated to incorporate a combination of 3000K LEDs (for the first set of LEDs) and 4000K LEDs (for the second plurality of LEDs) in the disclosure of Edwards with a reasonable

expectation of success. Such a combination would be a combination of known elements to provide predictable results. Given that these were well known and commonly used LED temperatures, a POSA would expect them to work correctly to provide color temperatures between 3000K and 4000K. Ex.1002¶189.

To the extent that it is determined that Edwards does not disclose a first set of LEDs with a 3000K color temperature it would be obvious to utilize the disclosure of Sadwick. Sadwick discloses “connections 936 can go to two separate LED channels” having a color temperature such as “3000K.” Ex.1006-¶0201.

A POSA would be motivated to incorporate 3000K LEDs (for the first set of LEDs) into the disclosure of Edwards with a reasonable expectation of success. Such a combination would be a combination of known elements to provide predictable results. Given that 3000K was a well-known and commonly-used LED temperature, a POSA would expect them to work correctly to provide color temperatures between 3000K and 4000K. Ex.1002¶191.

5. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions, wherein each of the plurality of selectable positions is configured to cause the switch assembly to send a respective signal to the driver circuit, wherein the respective signal is configured to cause the driver circuit to output the one of the plurality of currents that corresponds to a current position of the plurality of selectable positions.

Edwards discloses that the “dimmer switch portion 215 of the driver circuit comprises a potentiometer/variable resistor 33” generating a “voltage to be applied to the control circuit 217 therefore controls the brightness of the LED arrays.”

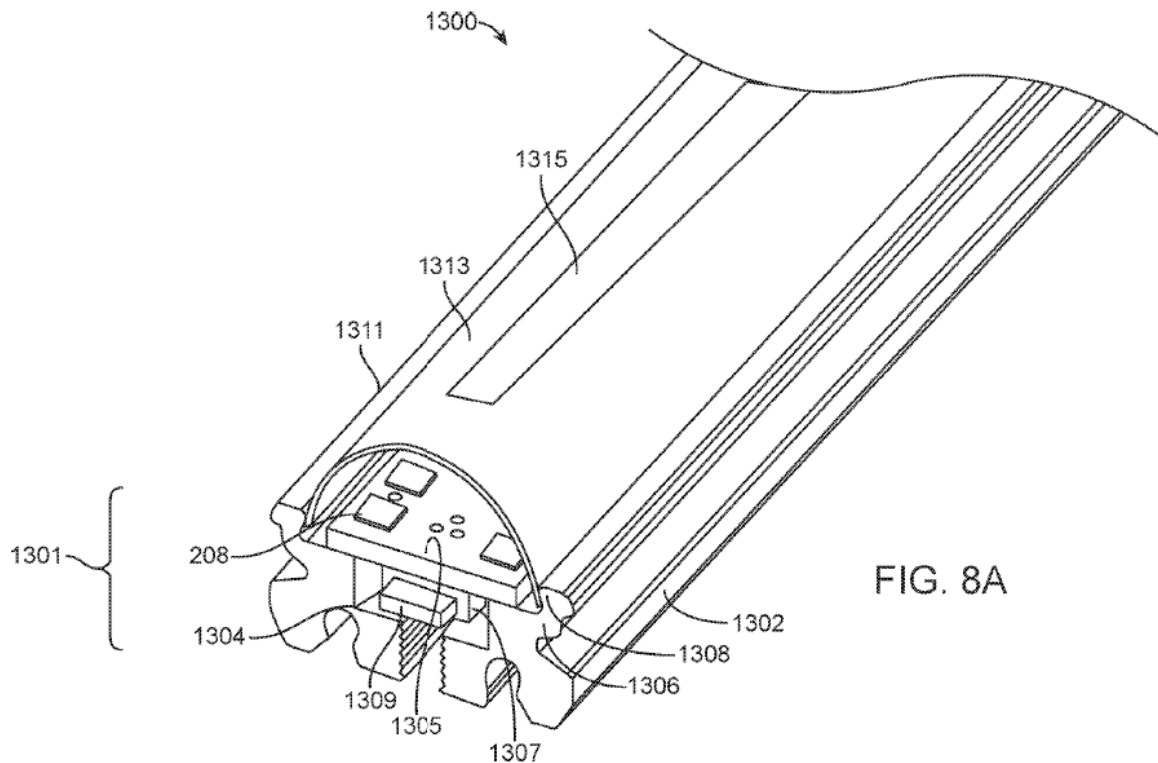
Ex.1005-14:1-5.

To the extent not disclosed by Edwards, it would be obvious in view of Sadwick. Sadwick discloses that “the remote fluorescent lamp replacement ballast can use or receive control signals/commands from, for example, but not limited to any or all of wired, wireless...vibrational, and/or PLC, etc., combinations of these, etc....” Ex.1006¶0344. Ex.1002¶¶194-195. A POSA would be motivated to implement control signals into Edwards with a reasonable expectation of success. The use of a control signal to modify the operation of an LED light was a common and favored way of controlling LED lights. Ex.1002¶¶194-195. Including control signals would be well within the understanding and capabilities of a POSA. *Id.*

6. The linear LED lighting apparatus of claim 1, comprising a housing comprising an interior volume configured to hold the driver circuit, the first plurality of LEDs, and the second plurality of LEDs.

Edwards discloses that the “the form factor of the body 1301 [of the LED fixture] is configured to be mounted with a standard linear lamp housing.”

Ex.1005-15:46-65; Ex.1002¶¶¶196-197. Either the body or the “linear lamp housing” meet this limitation. As shown below the body 1301 includes a volume for the claimed electronics of Edwards.



Id.-Fig.8A.

7. The linear LED lighting apparatus of claim 6, wherein the housing comprises a length greater than or equal to 24 inches.

Edwards further discloses that “[i]ndividual linear lamps 1300 may range from 1 foot to 6 feet.” Ex.1005-15:59. A POSA would understand that the housing would necessarily be larger than the lamp. Ex.1002¶198.

9. The linear LED lighting apparatus of claim 1, comprising at least one electrical connection configured to transmit electricity from the lighting apparatus to at least one other lighting apparatus.

As disclosed for 1[h] the electrical connection of Edwards transmits electricity. Ex.1002¶199.

Independent Claim 10:

Independent claim 10 overlaps substantially with claim 1 in that it recites a modular lighting system with multiple connected fixtures. However, it differs in that (a) it only recites LEDs of a single color temperature for the first fixture; (b) it expressly recites the features of the connected second fixture; and (c) it additionally recites certain structural elements of the second fixture. Ex.1002¶200.

Claim Elements [10a]-[10g]

Claim 10[pre] recites a lighting system, which is shown by the structures of claim 1 generally. Ex.1002¶201.

The following features are substantially identical between claim 1 and claim 10 and accordingly for these elements of claim 10 these limitations are rendered

obvious by Edwards in view of Sadwick based on the disclosures and analysis for the corresponding elements in claim 1, which are incorporated by reference.

Ex.1002¶202.

Claim Feature	Claim 10	Claim 1
A lighting apparatus that is modular	10[a]	1[pre](Lighting apparatus) 1[h] modular
plurality of LEDs having first color temperature, and in linear form factor	10[b]	1[b]
driver outputting plurality of currents	10[c]	1[d]
Switch assembly	10[d]	1[e]
Switch for outputting current	10[e]	1[f]
Switch for coupling first plurality of currents to LEDs	10[f]	1[g]
Connector for adjoining fixture	10[g]	1[h]

Claim Elements [10h]-[10n]

Claim elements 10[h]-10[n] additionally recite features in the second fixture that correspond to features in the first fixture. As described with respect to claim element 1[h] Edwards discloses a connector port that enables a similar fixture varying in size by a scale factor to be connected and thus the features of claim elements 10[i]-10[n] are similarly rendered obvious by Edwards in view of Sadwick according to the disclosures and analysis for the claim elements below which are incorporated by reference. Ex.1002¶203.

Features on Second LED	Claim 10	Claim 1
A lighting apparatus that is modular and larger than first apparatus	10[h]	1[a] (lighting apparatus) 1[h] (modular/larger)
plurality of LEDs having first color temperature, and in linear form factor	10[i]	1[b]
driver outputting plurality of currents	10[j]	1[d]
Switch assembly	10[k]	1[e]
Switch for outputting current	10[l]	1[f]

Features on Second LED	Claim 10	Claim 1
Switch for coupling first plurality of currents to LEDs	10[m]	1[g]
Connector for adjoining fixture	10[n]	1[h]

[10i] a second plurality of light-emitting diodes (LEDs) arranged within a second linear form factor and having a second number of LEDs, each LED of the second plurality of LEDs associated with the first color temperature, wherein the second number is greater than the first number by a scale factor;

In addition to the common subject matter from claim element 1[b] identified for claim element 10[i] this element additionally recites that the “second number” of the “second plurality of LEDs” is greater than the “first number” of the “first number” of LEDs by a scale factor.

As shown in 1[h] above Edwards discloses that connected LED arrays may be connected and may vary in length by a scale factor. *See also* Ex.1005-15:59. Further the disclosure of Edwards shows the LEDs as evenly spaced a fixed distance apart. Ex.1002¶205.

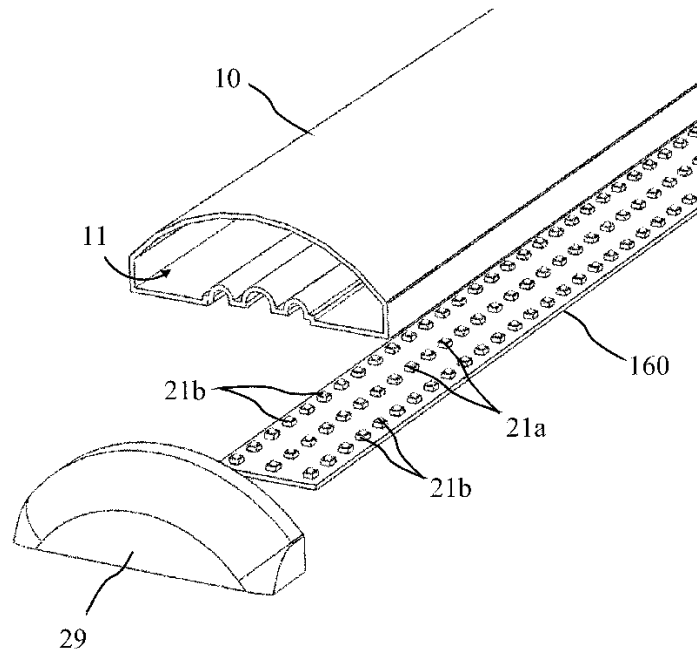


FIG. 1B

Id.-Fig. 1B.

A POSA would understand that the number of LEDs in each fixture would scale with the length of the fixture. Ex.1002¶¶206-209. Accordingly, a POSA would understand that the “second number” of LEDs in the second fixture is greater than the “first number” of LEDs in the first fixture by a scale factor. To the extent this relationship is not expressly disclosed, it is obvious. A POSA would be motivated to add this feature with a reasonable expectation of success. Having the number of LEDs scale with the length of the fixture merely a selection from a finite number of known predictable solutions. Ex.1002¶209.

[10m] couple the one of the second plurality of currents to the second plurality of LEDs, wherein the one of the second plurality of currents is greater than the one of the first plurality of currents by the scale factor; and

In addition to the subject matter from claim element 1[g] identified for claim element 10[m], this element recites that “the one of the second plurality of currents is greater than the one of the first plurality of currents by the scale factor”

As set forth above for element 10[i], a POSA would understand that the number of LEDs in each fixture would be proportional to the length of the fixture. Ex.1002¶¶206-209, 211. A POSA would understand that for a given brightness level that the current sent to each LED fixture would be proportional to the number of LEDs and accordingly the second current (sent to the LEDs of the second fixture) would be greater than the current sent to the LEDs of the first fixture by the scale factor. Ex.1002¶¶211-231. Particularly, as explained by Dr. Eden the linear fixtures disclosed in Edwards would include multiple strings of LEDs arranged serially but connected in parallel as this was the standard approach to designing linear fixtures and required by safety standards. Ex.1002¶¶216-223, citing Ex.1010¶¶003-4; Ex.1011¶¶25;1020,p.1.

Edwards and Sadwick both disclose the use of parallel-connected LEDs and/or strings of LEDs. Ex.1002¶¶224-226 citing Ex.1005, Fig.6; Ex.1006¶¶0340, Figs. 5-7,35,36,38-40. A POSA would be motivated to utilize parallel connected

strings to provide the longer fixtures disclosed in Edwards. To the extent this relationship is not expressly disclosed, it is obvious. A POSA would be motivated utilize strings connected in parallel but extended serially because it would be difficult to provide a single voltage across a single long serially connected series of LEDs and would be able to add this feature with a reasonable expectation of success. Ex.1002¶228 Such an arrangement would merely be a selection from a finite number of known predictable solutions. *Id.*

A POSA would expect the number of parallel connected strings to scale with the fixture. The amount of current necessary to drive those additional strings in parallel would scale according to the scale factor and thus the currents to vary according to the scale factor. Ex.1002¶230.

[10n] a second extender port configured to couple with the first extender port to combine the first modular lighting apparatus and the second modular lighting apparatus to traverse the first linear distance and the second linear distance.

As described for element 1[h] Edwards discloses a connector port. Accordingly, the connector of the second fixture constitutes a “second extender port” and the first and second fixtures traverse the first linear distance. Ex.1002¶232. To the extent that this second connector is not determined to be a “port,” it would be obvious to include a port in the connector. A POSA would be motivated to add this feature with a reasonable expectation of success. Including a

“port” in a connector would merely be a selection from a finite number of known predictable solutions. *Id.*

11. The linear LED lighting system of claim 10, wherein the first switch assembly is configured to receive a signal to cause the first driver circuit to output the one of the first plurality of currents.

Sadwick discloses receiving “control signals/commands from, ...wired, wireless...vibrational, and/or PLC, etc., combinations of these, etc...”

Ex.1006¶0344. A POSA would be motivated to implement wired or wireless control signals into Edwards with a reasonable expectation of success. The use of a wired or wireless control signal to modify the operation of an LED light was a common and favored way of controlling LED lights. Ex.1002¶233. Including control signals would improve the ease of use of the system of Edwards and would be well within the understanding and capabilities of a POSA. Ex.1002¶233.

12. The linear LED lighting system of claim 11, wherein the signal is received via a wired connection.

See claim 11 describing combining a wired connection in Edwards.

Ex.1002¶234.

13. The linear LED lighting system of claim 11, wherein the signal is received via a mechanical switch.

As described above for element 1[g] the color temperature switch 215b can be used to change the color temperature between multiple settings. Ex.1002¶235.

Edwards discloses that the dimmer switch includes an “on” position (Ex.1005-

13:6-8). Accordingly, Edwards discloses a mechanical switch. To the extent that it is not disclosed a POSA would be motivated to utilize a mechanical control for the color temperature switch 215b with a reasonable expectation of success.

Ex.1002¶235. Such a modification would merely be a selection from a finite number of known predictable solutions.

14. The linear LED lighting system of claim 11, wherein the signal comprises a wireless signal.

As described for claim 11, Sadwick discloses wireless control signals.

Ex.1006¶0344. A POSA would be motivated to implement wireless controls in Edwards as they were a common and favored way of controlling LED lights.

Ex.1002¶236. Including wireless controls would improve the ease of use of the system of Edwards and would be well within the understanding and capabilities of a POSA. 1002¶236.

15. The linear LED lighting system of claim 10, wherein the first driver circuit comprise a current regulator.

This feature would be obvious over Edwards in view of Sadwick. Sadwick discloses that “[t]he current source 126 can comprise... a current power supply, a current driver, a constant current driver and/or power supply, a variable constant current driver and/or power supply.” Ex.1006¶0049. A “constant current driver” or “variable constant current driver” would necessarily include a current regulator to control the current. Ex.1002¶237. A POSA would be motivated to include the

constant current driver or variable constant current driver of Sadwick in Edwards with a reasonable expectation of success. Such a system allows for better and more stable regulation of electrical operation and avoidance of damage to the LEDs. *Id.* Incorporation of the current regulator of Sadwick in the system of Edwards would be the combination of known elements to obtain a predictable result. *Id.* Given that constant current and variable constant current components were common a POSA would easily be able to adapt them to the system of Edwards. *Id.*

16. The linear LED lighting system of claim 10, wherein the first extender port is configured to electrically couple the first modular lighting apparatus to the second modular lighting apparatus.

See 1[h].

17. The linear LED lighting system of claim 10, wherein each LED of the first plurality of LEDs receives a same amount of current via the one of the first plurality of currents that each LED of the second plurality of LEDs receives via the one of the second plurality of currents.

As set forth for element 10[m], each LED would receive approximately the same current, with the current being sent to each of the plurality of LEDs being proportional to the number of LEDs. Accordingly, the amount of current that is used to light any particular LED to a specific brightness will be the same between the first and second pluralities of LEDs. Ex.1002¶¶86-89, 211-214, 239.

Independent Claim 18

Independent claim 18 overlaps substantially with claim 1 in that it recites a modular lighting system with multiple connected fixtures. However, it differs in that (a) it expressly recites the features of the second fixture; and (b) it additionally recites certain current characteristics. Ex.1002¶¶240.

Claim 18[pre] recites a lighting system, which is shown by the structures of claim 1 generally. Ex.1002¶241.

Claim elements 18[a]-18[k]

The following features are substantially identical between claim 1 and claim 18 and accordingly for these elements of claim 18 these limitations are rendered obvious by Edwards in view of Sadwick based on the disclosures and analysis for the corresponding elements in claim 1, which are incorporated by reference.

Ex.1002¶242.

Claim Feature	Claim 18	Claim 1
A lighting apparatus that is modular	18[a]	1[pre] (lighting apparatus) 1[h] (modular)
LED array	18[b]	1[a]
First plurality of LEDs having first color	18[c]	1[b]

Claim Feature	Claim 18	Claim 1
temperature, and in linear shape		
Second plurality of LEDs with second color temperature	18[d]	1[c]
Second plurality of LEDs are in linear shape	18[e]	1[c]
driver outputting plurality of currents	18[f]	1[d]
Switch assembly	18[g]	1[e]
First switch for outputting current	18[h]	1[f]
Second switch for coupling first plurality of currents to LEDs	18[i]	1[g]
Second switch can cause currents to couple to first plurality of LEDs	18[j]	1[g]

Claim Feature	Claim 18	Claim 1
Second switch can cause currents to couple to second plurality of LEDs	18[k]	1[g]

[18l] cause half of the first portion of the one of the first plurality of currents to couple to each LED of the first plurality of LEDs and each LED of the second plurality of LEDs; and

As described for element 1[g], Edwards discloses the entirety of a range of potential current distributions, from all of the current going to the first set of LEDs and second set of LEDs and all ranges in between. Ex.1005-12:8-20. A POSA would understand that a system that can shift between all current going to one set of LEDs and all going to the second and all ranges in between would necessarily be able to produce half the current to the first and half going to the second. Ex.1002¶243.

Additionally, Edwards notes that “in some embodiments, 100% utilization of all LEDs is implemented at a full ‘on’ position for the dimmer switch (both warm and cool are on at same time)....”Ex.1002¶¶244-245. If maximum current levels are going to both sets of LEDs at the same time, half of the overall current is sent to each set of LEDs as recited in the claims. *Id.*

To the extent sending equal amounts of current is not expressly disclosed, it is obvious. Given that Edwards discloses both having all current go to the first set of LEDs and all current going to the second set of LEDs, a POSA would be motivated to add a light setting where half goes to each as one of the commonly used applications for the varying light distribution with a reasonable expectation of success. Ex.1002¶246. Having half the current go to each set of LED is a selection from a finite number of known predictable solutions. *Id.*

Independent Claim 18 -Claim elements 18[m]-18[w]

Claim elements 18[m]-18[w] additionally recite features in the second fixture that correspond to features in the first fixture. As described with respect to claim element 1[h], Edwards discloses a connector port that enables a similar fixture varying by a scale factor to be connected and thus the features of claim elements 18[m]-18[w] are similarly rendered obvious by Edwards in view of Sadwick according to the disclosures and analysis for the claim elements below which are incorporated by reference. Ex.1002¶247. With respect to claim elements 18[m]-18[w], the third and fourth pluralities of LEDs in the second fixture respectively correspond to the first and second pluralities of LEDs of the first fixture. Similarly, the second plurality of currents of the second fixture corresponds to the first plurality of currents of the first fixture.

Claim Feature of Second Fixture	Claim 18	Claim 1
A lighting apparatus that is modular	18[m]	1[pre] (lighting apparatus) 1[h] (modular)
LED array	18[n]	1[a]
Third plurality of LEDs having first color temperature, and in linear shape	18[o]	1[b]
Fourth plurality of LEDs with second color temperature	18[p]	1[c]
Fourth plurality of LEDs in linear shape	18[p]	1[c]
driver outputting plurality of currents	18[q]	1[d]
Switch assembly	18[r]	1[e]
Third Switch for outputting current	18[s]	1[f]

Claim Feature of Second Fixture	Claim 18	Claim 1
Fourth switch for coupling first plurality of currents to LEDs	18[t]	1[g]
Fourth switch can cause currents to couple to third plurality of LEDs	18[u]	1[g]
Fourth switch can cause currents to couple to fourth plurality of LEDs	18[v]	1[g]

[18o] a third plurality of LEDs associated with a third color temperature, wherein the third plurality of LEDs aligns within a third linear shape, wherein the third color temperature matches the first color temperature, and wherein the third plurality of LEDs is longer than the first plurality of LEDs;

In addition to the incorporated disclosure from element 1[b], claim limitation 18[o] additionally recites that the third plurality of LEDs is longer than the first plurality of LEDs on the first fixture. As set forth with respect to 1[h], the fixtures and their lengths of LEDs vary by a scale factor, which would cause the third plurality of LEDs to be longer than the first plurality of LEDs. Ex.1002¶248.

[18p] a fourth plurality of LEDs associated with a fourth color temperature matching the second color temperature, wherein the fourth plurality of LEDs aligns within a fourth linear shape, and wherein the fourth plurality of LEDs is longer than the second plurality of LEDs;

In addition to the incorporated disclosure from element 1[b], claim limitation 18[p] additionally recites that the fourth plurality of LEDs is longer than the second plurality of LEDs on the first fixture. As set forth with respect to 1[h] the fixtures and their lengths of LEDs vary by a scale factor, which would cause the fourth plurality of LEDs to be longer than the second plurality of LEDs.

Ex.1002¶249.

[18w] cause half of the second portion of the one of the second plurality of currents to couple to each LED of the third plurality of LEDs and each LED of the fourth plurality of LEDs.

As described for 18[l], Edwards discloses or renders obvious that the second switch of each LED fixture can send half of its current to the first plurality of LEDs of each fixture (*i.e.*, the “third plurality of LEDs”) and half of its current to the second plurality of LEDs of each fixture (*i.e.*, the “fourth plurality of LEDs.”).

Ex.1002¶250.

19. The linear LED system of claim 18, wherein the first modular lighting apparatus comprises a first connector configured to couple to a second connector part of the second modular lighting apparatus, wherein the first connector and second connector are configured to transmit data between the first modular light apparatus and the second modular lighting apparatus.

This feature is obvious over Edwards in view of Sadwick. *See* 1[h] describing connections between the LED fixtures of Edwards. Further, Sadwick discloses data connections between the fixtures, noting, “[t]he present device can use combinations of wireless and wired interfaces to control and monitor; for example ...[o]ne (or more) of the replacements can be wireless with wired connections from the one (or more) replacement(s) to the other replacements....” Ex.1006¶0315; Ex.1002¶251.

A POSA would be motivated to improve the design of Edwards with the data connections of Sadwick by adding data connections to the power connections of Edwards. The data features of circuit of Sadwick would allow for an alternate control mechanism and allow for Edwards to implement additional control mechanisms and more easily control connected features. Ex.1002¶252. Including the data communication disclosure of Sadwick in Edwards would be a combination of known features to obtain a predictable result. Ex.1002¶252. Because data connections were well known in the art, a POSA could easily implement the data

connections of Sadwick in Edwards and thus would have a reasonable expectation of success. *Id.*

20. The linear LED system of claim 18, wherein a first ratio of the one of the second plurality of currents to the one of the first plurality of currents matches a second ratio of a first number of LEDs in the first plurality of LEDs to a second number of LEDs in the third plurality of LEDs.

See 10[m] describing how the ratio of current sent to the second plurality of LEDs (referred to as the second plurality of current) and current sent to the first plurality of LEDs (referred to as the first plurality of currents) is the same as the scale factor between the first and second fixtures and particularly the number of LEDs and particularly the ratio between the number of LEDs in the second fixture and the number of LEDs in the first fixture. Ex.1002¶253.

V. GROUND 2-CLAIMS 2, 3, AND 8 ARE OBVIOUS OVER EDWARDS IN VIEW OF SADWICK AND FURTHER IN VIEW OF JESWANI

2. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions.

As described with respect to Ground 1, claim 2 is obvious over Edwards standing alone or Edwards in view of Sadwick. The additional subject matter of claim 2 is also disclosed by Jeswani. Jeswani discloses an “interface on the lamp housing 100 for selecting a lumen setting and for selecting a correlated color temperature (CCT) setting for the light being emitted by the light engine 60 of the

downlight 100.” Ex.1007-8:19-25. As shown below it includes a plurality of selectable positions. Ex.1002¶254.

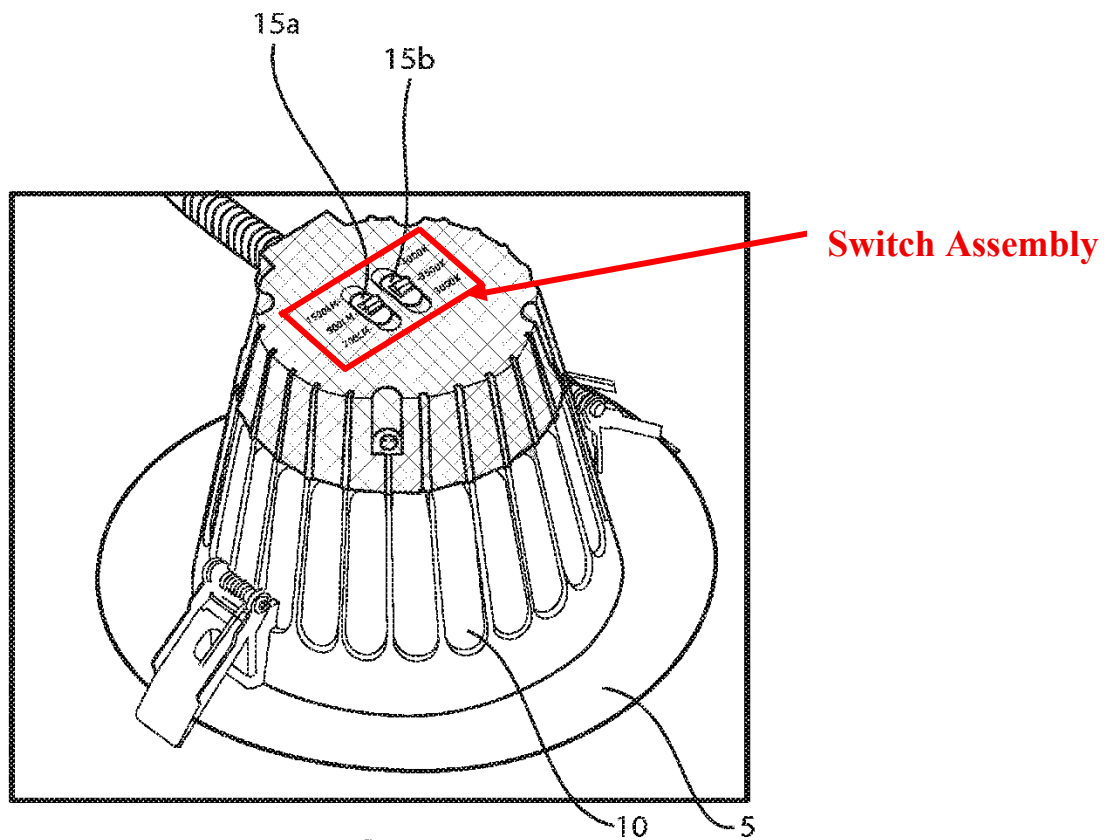
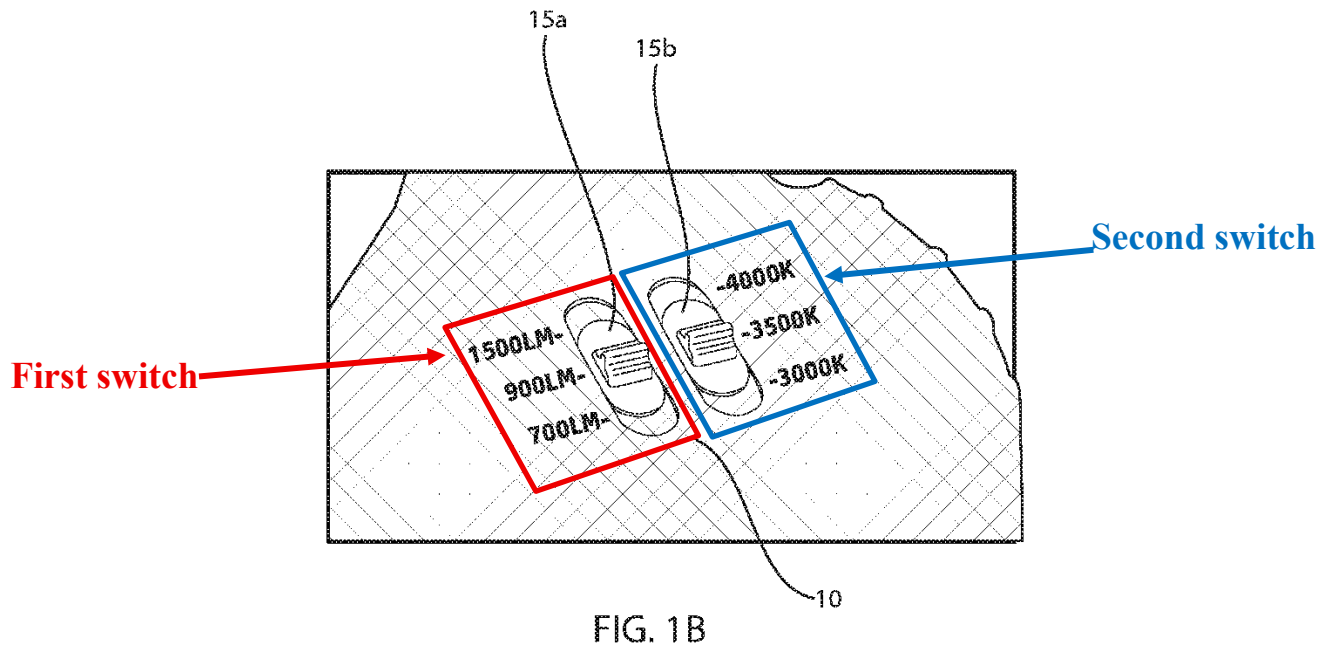


FIG. 1A

Ex.1007-1 A-Annotated.



Ex.1007-Fig.1B-Annotated.

A POSA would be motivated to use the design of the CCT and brightness switch assembly of Jeswani in the system of Edwards with a reasonable expectation of success. As both Edwards and Jeswani include switches for brightness and CCT, a POSA would be motivated to use the design of Jeswani to more easily allow the system of Edwards to be controlled and to minimize the physical profile of those controls. Such a combination would be the combination of known elements in known ways to achieve a predictable result. *Id.* Because the insertion of physical controls was well known in the art, a POSA would have a reasonable expectation of success in adding the physical controls of Jeswani. *Id.*

3. The linear LED lighting apparatus of claim 2, wherein the plurality of selectable positions comprises:

a first position configured to cause the switch assembly to couple the one of the plurality of currents to the first plurality of LEDs;

a second position configured to cause the switch assembly to couple the one of the plurality of currents to the second plurality of LEDs; and

a third position configured to cause the switch assembly to couple a first portion of the one of the plurality of currents to the first plurality of LEDs and a second portion of the one of the plurality of currents to the second plurality of LEDs.

As described above for claim 2, Jeswani discloses a CCT control with three selectable positions and a POSA would be motivated to use this functionality with Edwards. Ex.1007-8:20-25, Fig.1B. Further, Jeswani discloses that the three positions respectively send current a first set of LEDs, a second set of LEDs or both. Ex.1002¶256 quoting Ex.1007-11:23-35. *See also* Ground 3 analysis of claim 3. As described for claim 2, a POSA would be motivated to combine this with the functionality for controlling the current distribution disclosed in Edwards which allows current to be sent to either of the two pluralities of LEDs or both. Ex.1002¶257.

8. The linear LED lighting apparatus of claim 6, wherein the switch assembly is configured to be positioned in a receptacle of the housing, and wherein the switch assembly is configured to be flush with a surface of the housing when positioned in the receptacle.

As described with respect to Ground 1, claim 6 is obvious over Edwards standing alone or Edwards in view of Sadwick. The additional subject matter of claim 8 is disclosed by Jeswani. Ex.1002¶¶259.

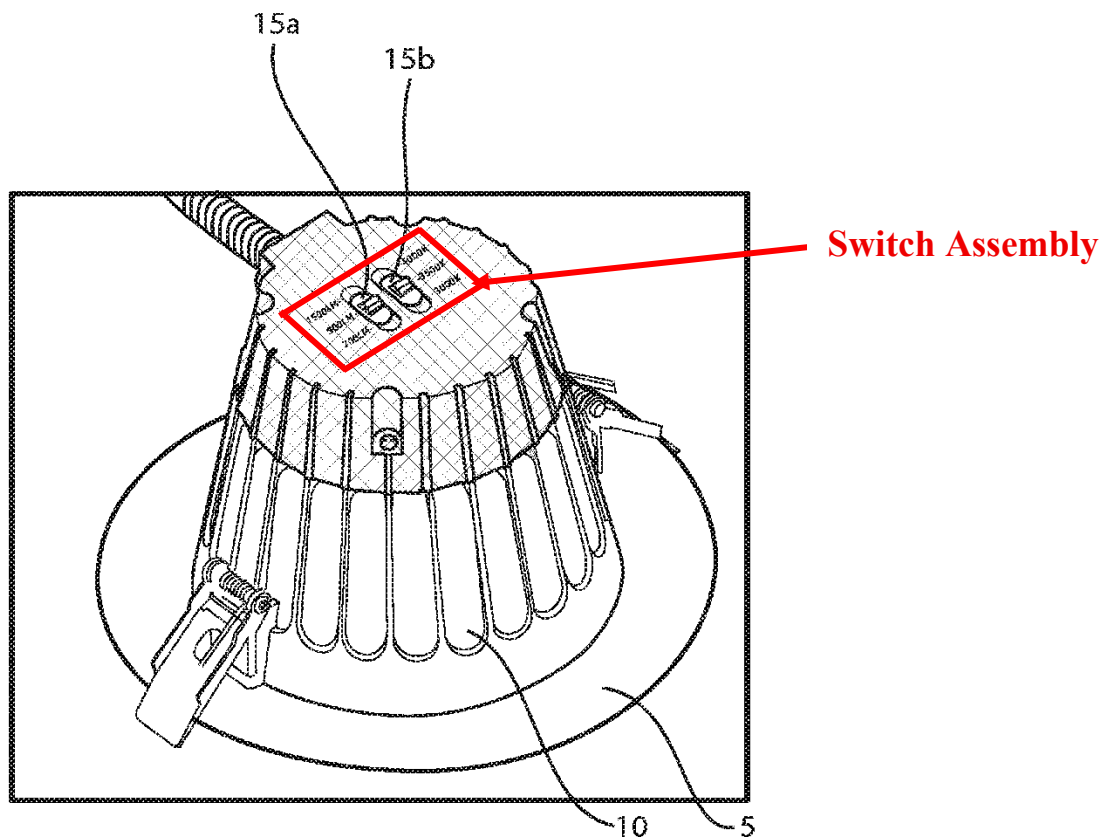
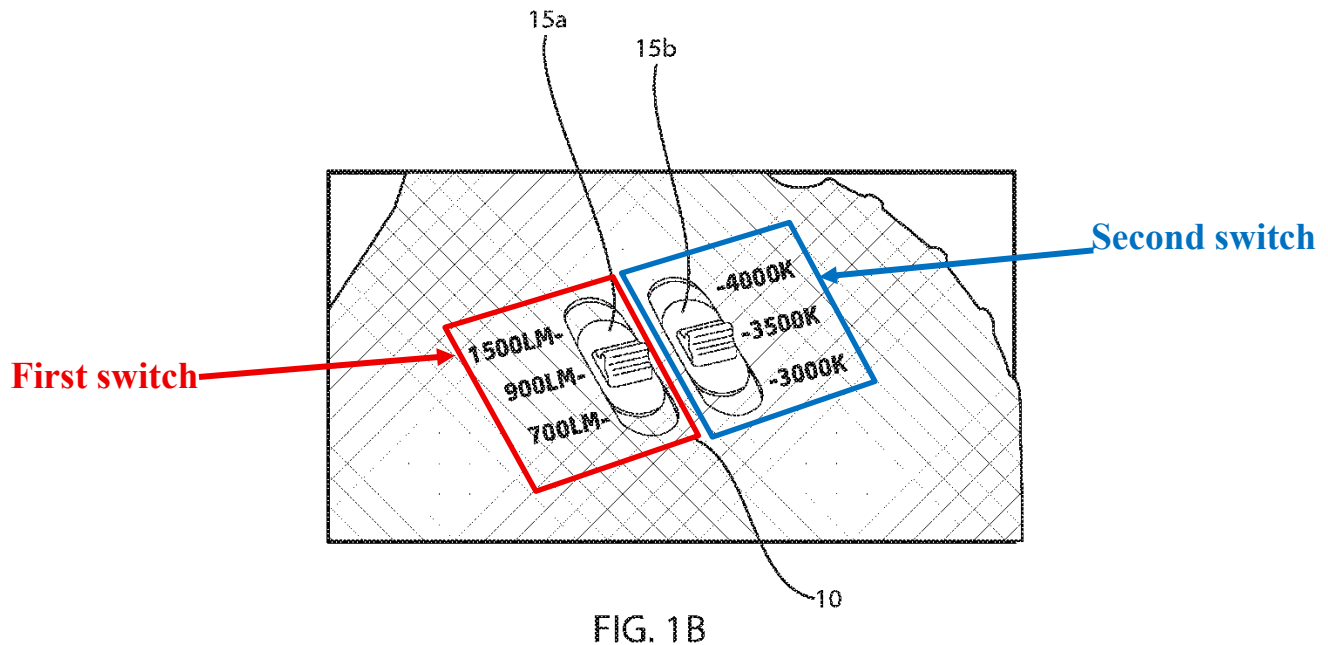


FIG. 1A

Ex.1007-1A-Annotated.



Ex.1007-Fig.1B-Annotated.

The switch assembly of Jeswani is positioned in a receptacle of the housing and is flush with a surface of the housing as shown above where there are open receptacles in which the switches slide. Ex.1002¶260. For the reasons set forth with respect to claim 3, it would be obvious to add the switch assembly of Jeswani to Edwards with a reasonable expectation of success. Ex.1002¶261.

VI. GROUND 3-CLAIMS 1-14 AND 16-20 ARE OBVIOUS OVER MAY IN VIEW OF JESWANI

For the reasons set forth below, the claims are obvious over May in view of Jeswani.

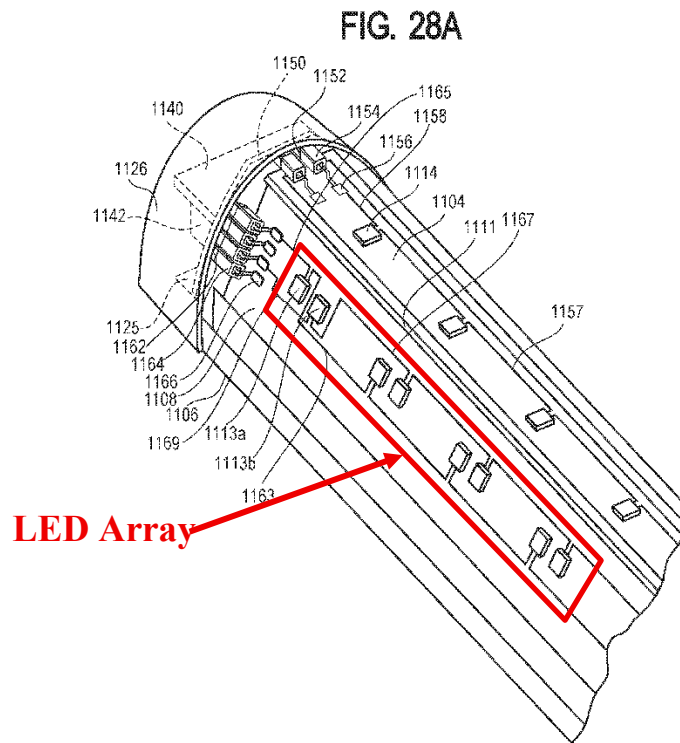
Independent Claim 1:

[1pre] A linear light-emitting diode (LED) lighting apparatus, comprising:

May discloses “An improved LED lighting system is provided for overhead ceiling lighting, as well as for other uses.” Ex.1008-Abstract; Ex.1002¶263. This includes a “linear LED lamp.” Ex.1008¶216.

[1a] an array of light emitting diodes (LEDs) having a first length, wherein the array of LEDs comprises:

May discloses an LED array, particularly “a linear LED lamp illustrating a further specific implementation of the disclosed subject matter” with “emitter panels 1108 and 1102 in a V-orientation such that LED emitters 1113 a,b, and 1115 a,b arranged along the length of the emitter panels distribute light generally downward and laterally over a wide area when the lamp is installed in overhead lighting system.” Ex.1008¶216; Ex.1002¶264.



Ex.1008-Fig.28A-Annotated.

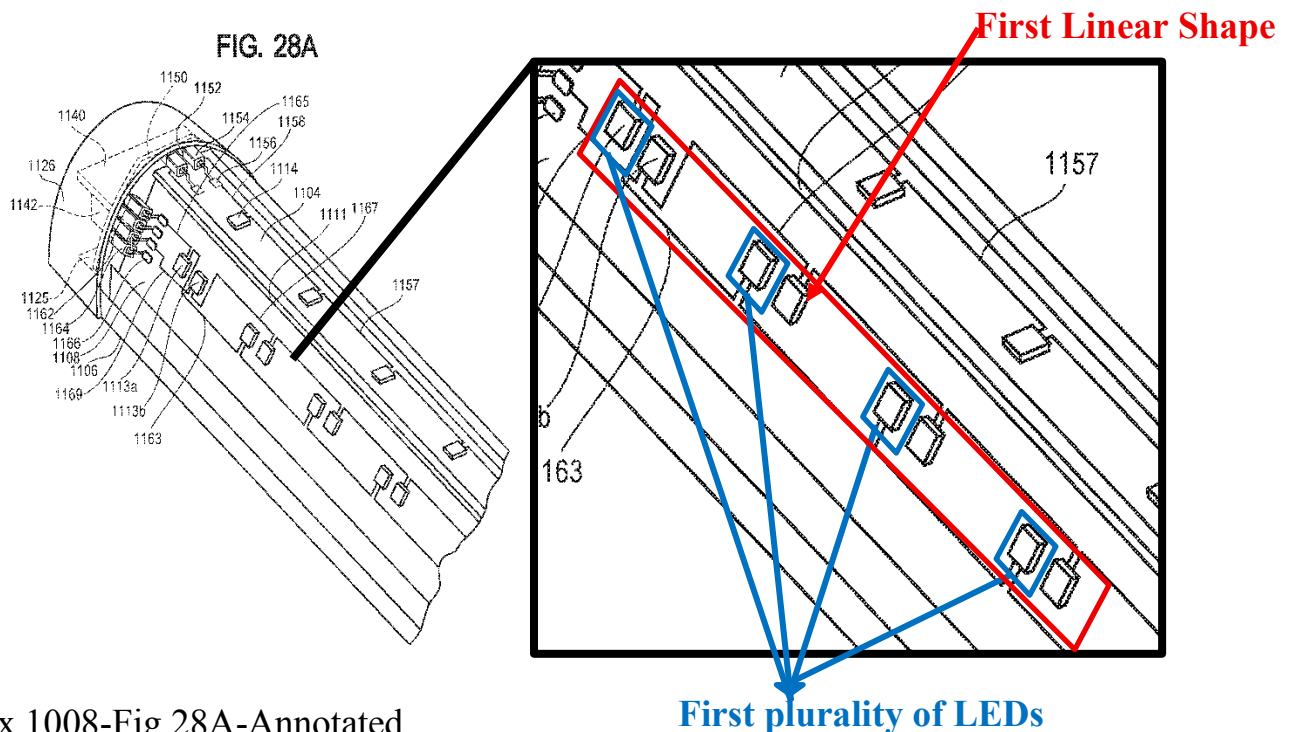
[1b] a first plurality of LEDs configured to produce a first light having a first color temperature, wherein the first plurality of LEDs aligns within a first linear shape;

May discloses this limitation, particularly that “Linear LED lamps ... may also be configured to support automated color tuning and color shifting.”

Ex.1008¶228. May discloses “emitter boards 1102 and 1108 may include a series of LED emitter pairs located at regularly spaced intervals in a row along the length of the board. Emitter traces connect a first string of LED emitters in series and a second parallel string of LED emitters in series. As shown in FIG. 28A, the emitter pairs consist of one emitter of each of the two parallel strings of emitters.”

Ex.1008¶231. “[T]he boards 1108 and 1102 each consist of a first string of LED emitters with a color temperature in a first range, and a second string of LED emitters with a color temperature in a second range.” *Id.*

Accordingly, the first LED of each pair of LEDs shown is an LED of a first color temperature and the second LED in each pair of LEDs is a second color temperature and both are arranged in a linear shape. Ex.1002¶¶265-266.



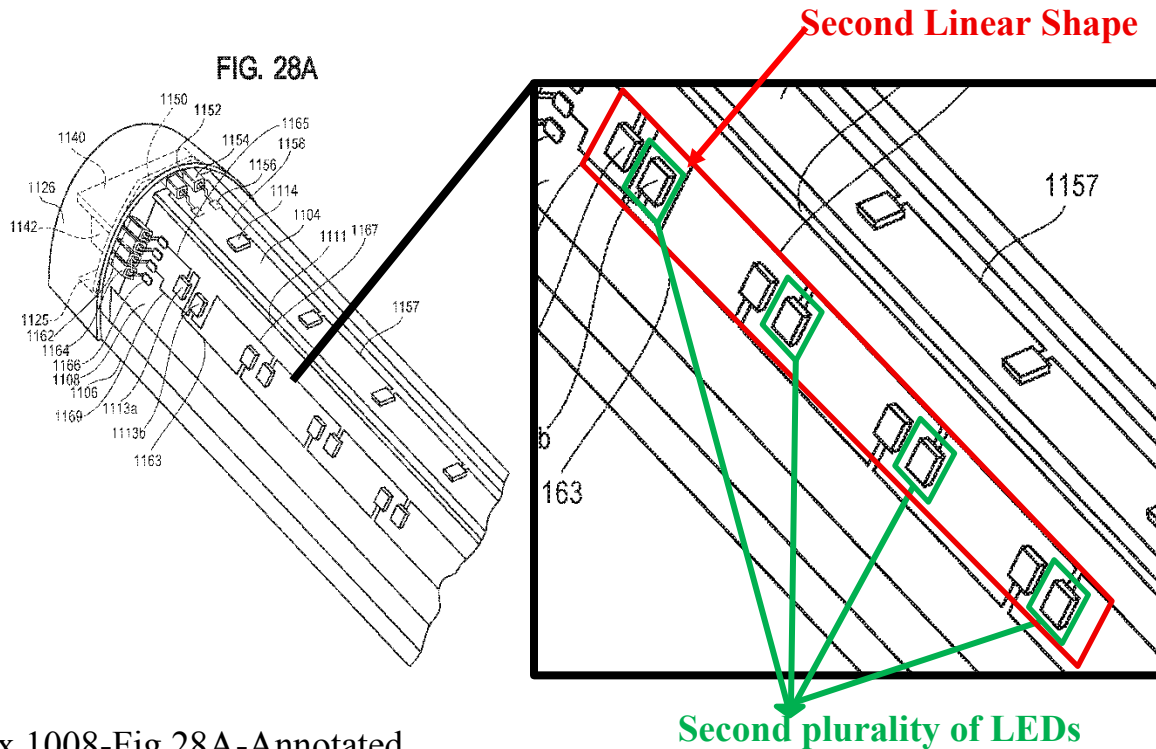
Ex.1008-Fig.28A-Annotated.

[1c] a second plurality of LEDs configured to produce a second light having a second color temperature different from the first color temperature, wherein the second plurality of LEDs align within a second linear shape;

As set forth with respect to element 1[b] May discloses that the second plurality of LEDs (*i.e.*, the second LEDs from each pair of LEDs) is aligned in a

linear shape and arranged to produce light with a second color temperature.

Ex.1002¶267.

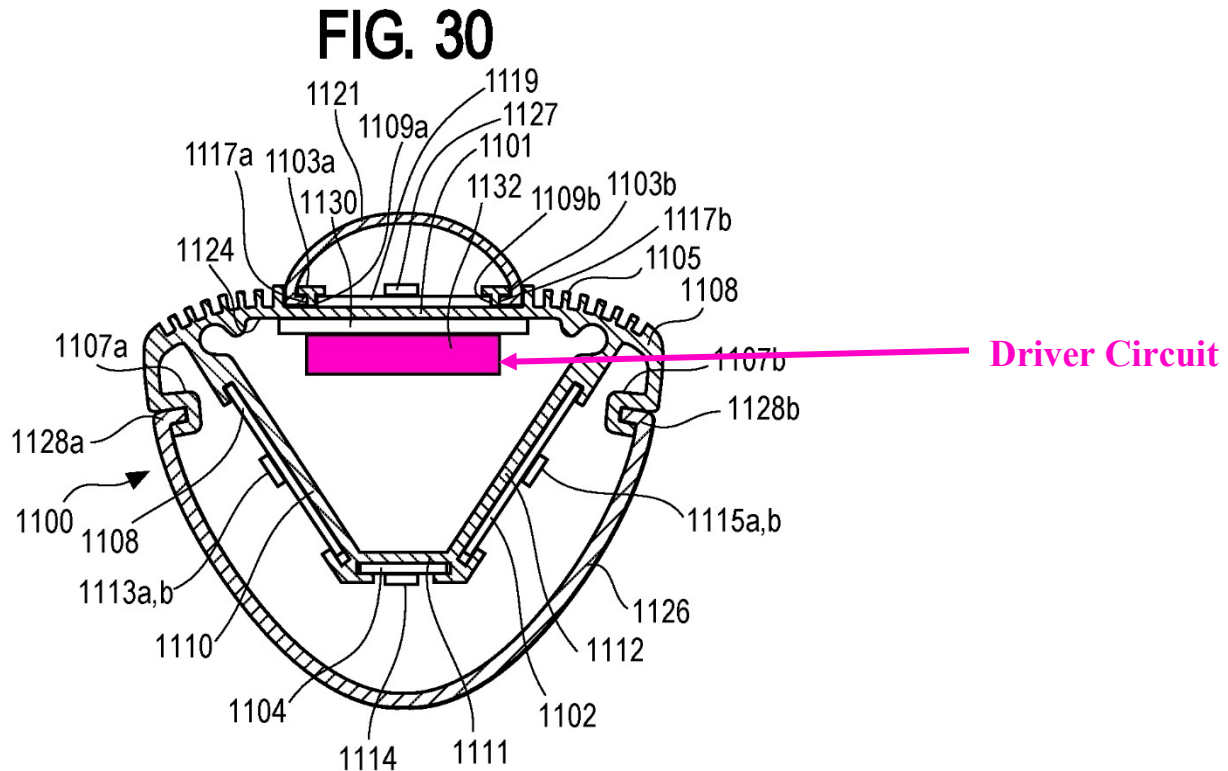


Ex.1008-Fig.28A-Annotated.

[1d] a driver circuit configured to output a plurality of currents;

May discloses a driver circuit outputting a plurality of currents - “[c]ontrol module 1132 may include circuitry to isolate power and data delivered via a network cable” and that “power directed to individual strings of LED emitters is governed by one or more parallel driver sub-circuits of the control module”

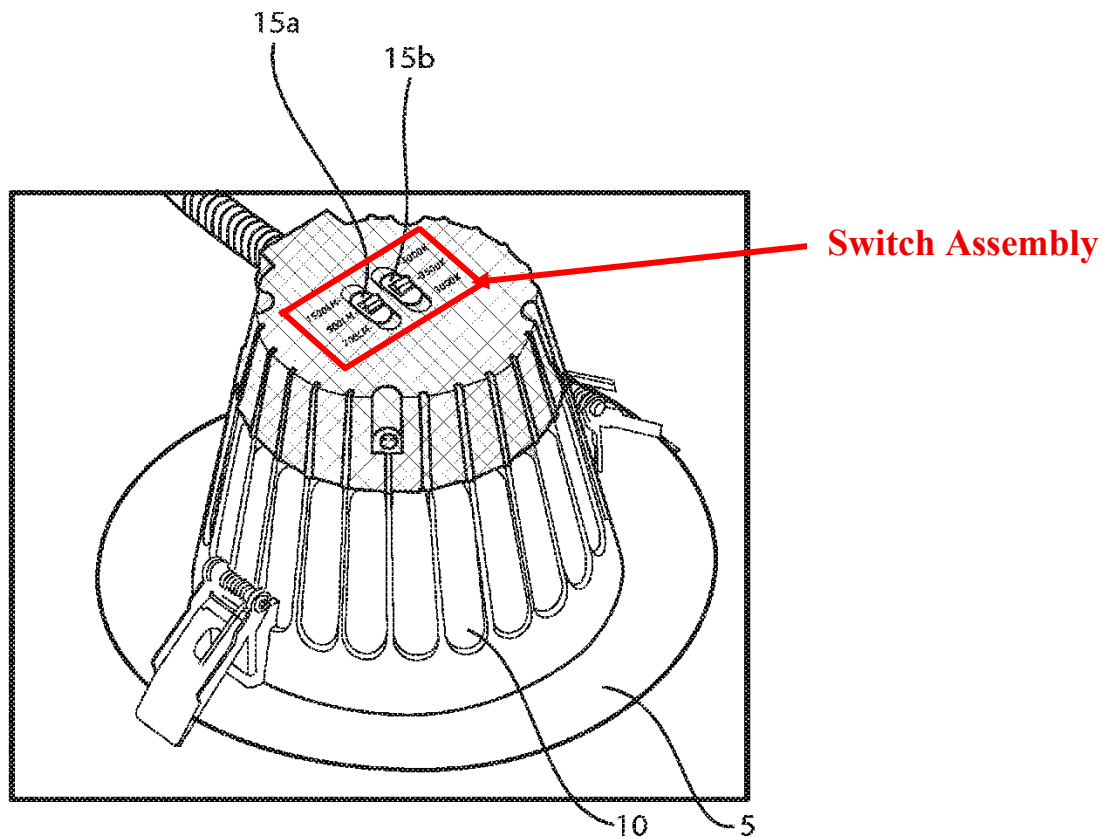
Ex.1008¶0222.



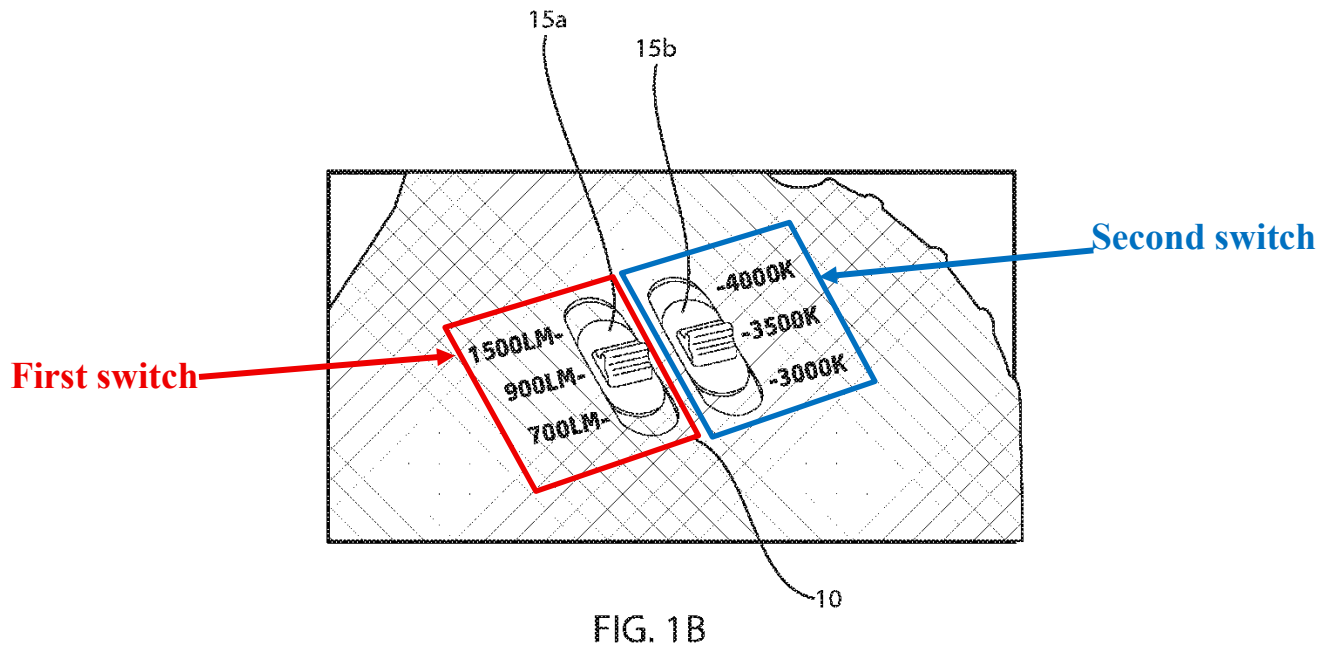
The module can “modify aspects of the operation of the LED lamp based on [received data communication] instructions, such as controlling the brightness, color and other aspects of the LED emitters” and includes “dedicated driver sub-circuits to independently control the magnitude of DC current provided to each string of emitters based on control instructions.” Ex.1008¶0231. The control module, which controls magnitude of DC current and brightness of the lamp 1100 is a driver circuit which provides a “plurality of currents” with the plurality including either the individual currents to each string or the total current. Ex.1002¶¶269-270.

[1e] a switch assembly configured to couple to the driver circuit, wherein the switch assembly comprises:

This feature is obvious over May in view of Jeswani. Jeswani discloses an “interface on the lamp housing 100 for selecting a lumen setting and for selecting a correlated color temperature (CCT) setting for the light being emitted by the light engine 60 of the downlight 100.” Ex.1007-8:19-25. Ex.1002¶271.



Ex.1007-1A-Annotated.



Ex.1007-1B-Aannotated.

Fig. 6 of Jeswani shows the switch 15a coupled to the driver of Jeswani.

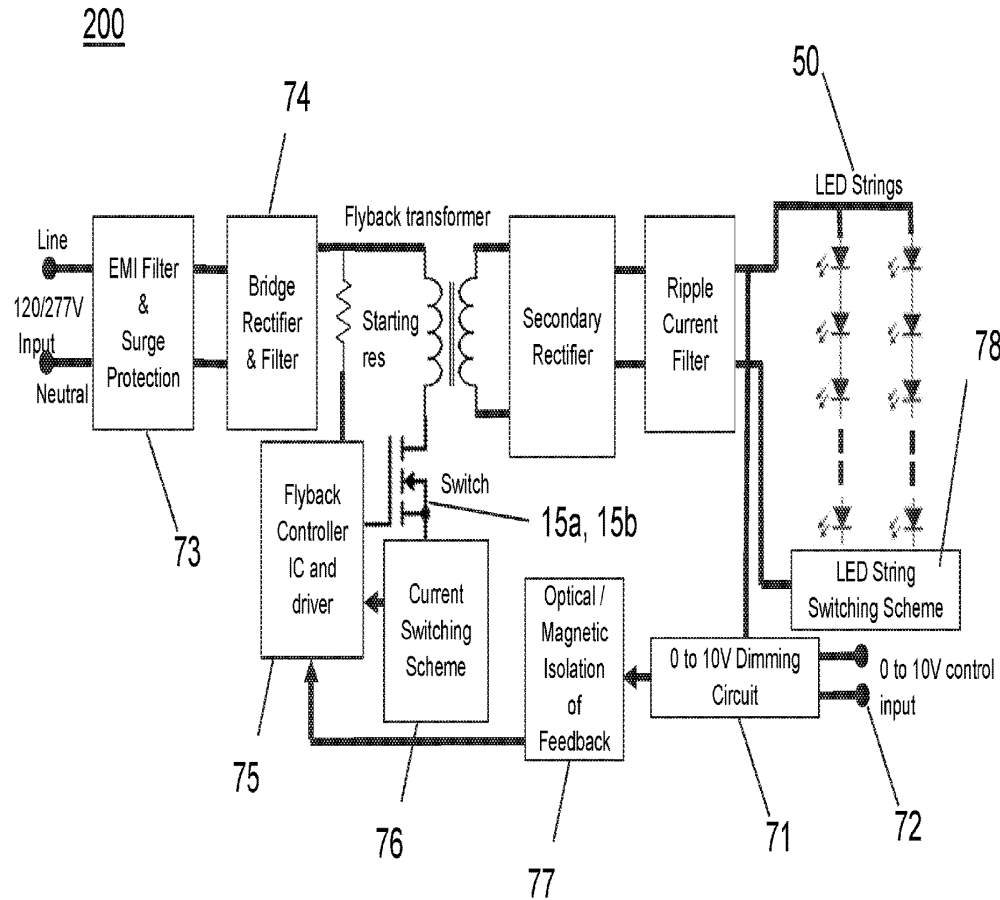
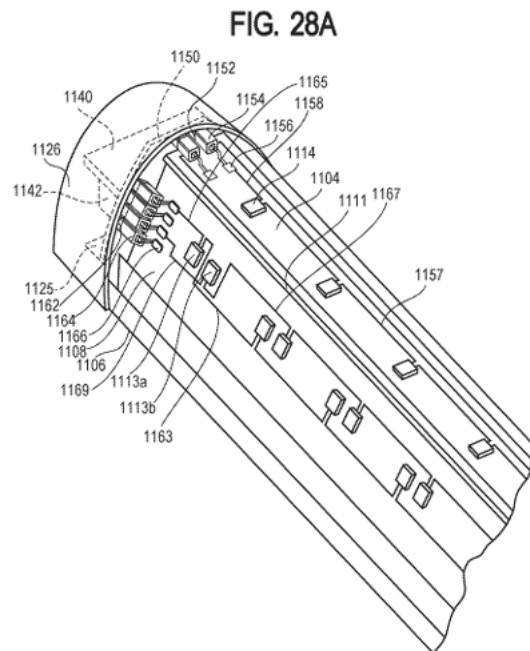


FIG. 6

Ex.1007-Fig.6.

A POSA would be motivated to include the external CCT and brightness controls of Jeswani on the outer housing of the lamp 1100 of May to control color temperature and brightness. Ex.1002¶¶273-276. May discloses that the control module may “receive instructions from the data communications.”

A POSA would be motivated to install the CCT and brightness controls of May to allow local control of each lamp so that in the event of a network failure or a scenario where a user cannot send communications electronically, a user could manually modify the color temperature and brightness of the lamps of May with a reasonable expectation of success as the components were conventional. Ex.1002 ¶¶274-276. Jeswani itself discloses that its fixture may also include the ability to be remotely controlled, thus teaching a POSA that an in-fixture switch is useful in a fixture that is remotely controlled. Ex.1007-14:32-59.



Such an assembly could send control signals to the control module of May based on the position of the brightness and CCT settings of the disclosed switches. Ex.1002¶276. Such a modification would be a combination of known elements to obtain a predictable result. Ex.1002¶276. Because the installation of manual controls to electronically controlled devices was well known in the art a POSA could easily add the manual control of Jeswani to May. Ex.1002¶276.

[1f] a first switch configured to cause the driver circuit to output one of the plurality of currents;

As shown above for 1[e] Jeswani discloses a switch (15a) to control the lumens or brightness of the disclosed lamp and a POSA would find it obvious to combine that switch into May.

When integrated within the system of May, the switch of Jeswani would cause the control module to control the brightness of the lamp 1100. As described for element 1[d] May discloses that a control module can adjust the current in response to received brightness instructions. Ex.1008¶231. Further, as described for element 1[e] it would be obvious to incorporate the switches of Jeswani to control the current of May. Ex.1002¶278.

A POSA would understand that each of the currents sent from one of the sub-circuits can be one of the plurality of currents, or that the combined current

sent at any given time, which controls the overall brightness of the lamp, can be one of the plurality of currents. Ex.1002¶278.

[1g] a second switch configured to cause the one of the plurality of currents to couple to the first plurality of LEDs, the second plurality of LEDs, or both; and

As shown above for 1[e] and 1[f] Jeswani discloses a switch (15b) to control the color temperature of the disclosed lamp and a POSA would find it obvious to combine that switch into May to control brightness and color temperature in May. May discloses a control mechanism whereby color temperature is allocated by varying current between the two strings of LEDs and accordingly current is coupled to either or both of the pluralities of LEDs:

if a drive current is provided only to the second emitter string of each board [which has a color temperature of 6500K], the lamp will produce light of a CCT of about 6500K. Conversely, if a drive current is only provided to the first emitter string of each board [which has a color temperature of 4500K], the lamp will produce light of a CCT of about 4500K. If drive currents are provided to both strings of emitters of each board, the lamp will produce light having a CCT somewhere between 4500K and 6500K, depending on the relative magnitude of the drive current of each LED emitter string.

Ex.1008¶0231. Accordingly, the switch of Jeswani combined into May would cause current to couple to one of the pluralities of LEDs or both. Ex 1002¶¶273-276, ¶279-280.

[1h] wherein the linear LED lighting apparatus is configured to electrically couple to an additional linear LED lighting apparatus having a second length different than the first length by a scale factor, wherein the additional linear LED lighting apparatus is configured to produce a third light having the first color temperature via a third plurality of LEDs or a fourth light having the second color temperature via a fourth plurality of LEDs.

May renders this limitation obvious. May discloses “Ethernet communications interface and connector boards provided within first end cap assembly 1126” of the lamp 1100. Ex.1008¶221. May also discloses that a “second end cap assembly of similar geometry is mounted at the opposite second lamp end” and accordingly another Ethernet port is present on the opposite end, consistent with the other embodiments shown (*e.g.* Figs. 15, 21, 23). Ex.1002¶¶282.

May further discloses that “a lamp may receive power and data at one end and provide power and/or data to another similarly configured lamp connected in series by a jumper Ethernet cable.” Ex.1008¶113. Particularly, May discloses that in a system of multiple lamps “[p]ower and data is communicated from the switch and to the serially connected LED lamps over cable 611 and the intermediate jumper cables” and “lamps are networked to each other by a jumper cable 615 having a male plug at each end mated with the corresponding Ethernet jack in the end wall of end cap assemblies 560” and 560’.” Ex.1008¶¶00190,191.

Doing so would be the combination of known elements to obtain a predictable result. Because the functionality of connecting multiple lamps is taught in May and utilizes conventional technology a POSA could apply it to the lamp 1100 with a reasonable expectation of success. Ex.1002¶¶284-286.

May also discloses that the lamps may vary by a scale factor. May teaches that the lamp may be sized “so that the linear LED lamp may be installed in an overhead lighting fixture designed to accept linear lamps of a standardized nominal length, wherein the standardized nominal length is about 2 feet, 3, feet, 4 feet, 6 feet or 8 feet.” Ex.1008-Claim 82. May further discloses that the invention is for “lamp replacement” (¶205) and identifies the lamps to be replaced as “typically ranging from 2 to 8 feet.” Ex.1008¶204. A two-foot lamp and an eight-foot lamp vary in length by a factor of four. Ex.1002¶¶287-288.

To the extent that May does not expressly teach using lamps of different lengths together, a POSA would be motivated to connect multiple lamps of different size together to cover additional space efficiently, such as a room having a length that is not an even multiple of the size of a larger lamp, with a reasonable expectation of success. Ex.1002¶¶289-290. For example, a POSA may use a six-foot long lamp and a four-foot long lamp to cover ten feet. 1002¶290. Doing so would be the combination of known elements to obtain a predictable result. Because the functionality of connecting multiple lamps is taught in May and

utilizes conventional technology a POSA could do so with a reasonable expectation of success. Ex.1002¶290.

2. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions.

As set forth for 1[e] the combination of May and Jeswani discloses switches 15a and 15b having a plurality of selectable positions.Ex.1002¶291.

3. The linear LED lighting apparatus of claim 2, wherein the plurality of selectable positions comprises:

a first position configured to cause the switch assembly to couple the one of the plurality of currents to the first plurality of LEDs;

a second position configured to cause the switch assembly to couple the one of the plurality of currents to the second plurality of LEDs; and

a third position configured to cause the switch assembly to couple a first portion of the one of the plurality of currents to the first plurality of LEDs and a second portion of the one of the plurality of currents to the second plurality of LEDs.

As described for 1[e]-1[g] the CCT switch of Jeswani includes three selectable positions that can be used to toggle between three color temperatures. Ex.1007-1A, 1B, 8:19-25. Jeswani further teaches that individual strings of LEDs may be turned on for the highest temperature and for the lowest temperatures it “may energize a different LED string of LEDs 50” but for a middle color temperature, “this light color is achieved by mixing light from both the 2700K and

4000K LEDs” and that “color temperature (CCT) levels of 3000K, 3500K, and 4000K” can be similarly obtained with “20 LEDs of CCT 3000K in 2 parallel strings of 10 LEDs in series, and 20 LEDs of CCT 4000K in 2 parallel strings of 10 LEDs.” Ex.1007-11:23-45.

As set forth for 1[g] the circuit of May can also generate varying color temperatures by (a) providing current to only its first emitter string with a lower color temperature; (b) providing current to only the second emitter string with a higher color temperature; or (c) providing current to both. Ex.1008¶231. Ex.1002¶293.

As May and Jeswani provide varying color temperatures through the same overall mechanism, a POSA would be motivated to integrate the adjustable switch of Jeswani so that a first position sends current to only the first emitter string of May, a second position sends current to only the second emitter string of May and a third position sends current to both, with a reasonable expectation of success. Ex.1002¶294. Doing so would be the combination of known elements to obtain a predictable result. Because the use of switches to send control signals was conventional technology a POSA could do so with a reasonable expectation of success. Ex.1002¶294.

4. The linear LED lighting apparatus of claim 1, wherein the first color temperature corresponds to 3000 Kelvin and the second color temperature corresponds to 4000 Kelvin.

As set forth for claim 3, Jeswani discloses the use of higher color temperature LEDs at 4000K and lower temperature LEDs at 3000K. A POSA would be motivated with a reasonable expectation of success to integrate LEDs with these color temperatures into the system of May. A POSA would be motivated to do so because these were common and widely used color temperatures and would look to the disclosure of Jeswani which is directed to a common goal of controlling color temperature. Ex.1002¶295. Doing so would be the combination of known elements to obtain a predictable result. Because these LEDs were widely available conventional technology a POSA could do so with a reasonable expectation of success. Ex.1002¶295.

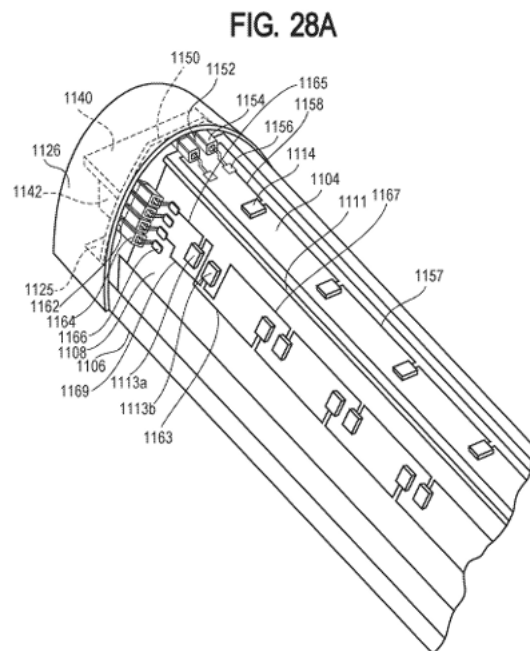
5. The linear LED lighting apparatus of claim 1, wherein the second switch comprises a plurality of selectable positions, wherein each of the plurality of selectable positions is configured to cause the switch assembly to send a respective signal to the driver circuit, wherein the respective signal is configured to cause the driver circuit to output the one of the plurality of currents that corresponds to a current position of the plurality of selectable positions.

As set forth for claim 1[g] the control module of May is configured to receive control signals to adjust the current sent to the LED strings and it would be obvious to configure the switch of Jeswani, which includes selectable positions for

each color temperature to send those control signals according to the position of the switch assembly. Ex.1008¶231. Ex.1002¶296.

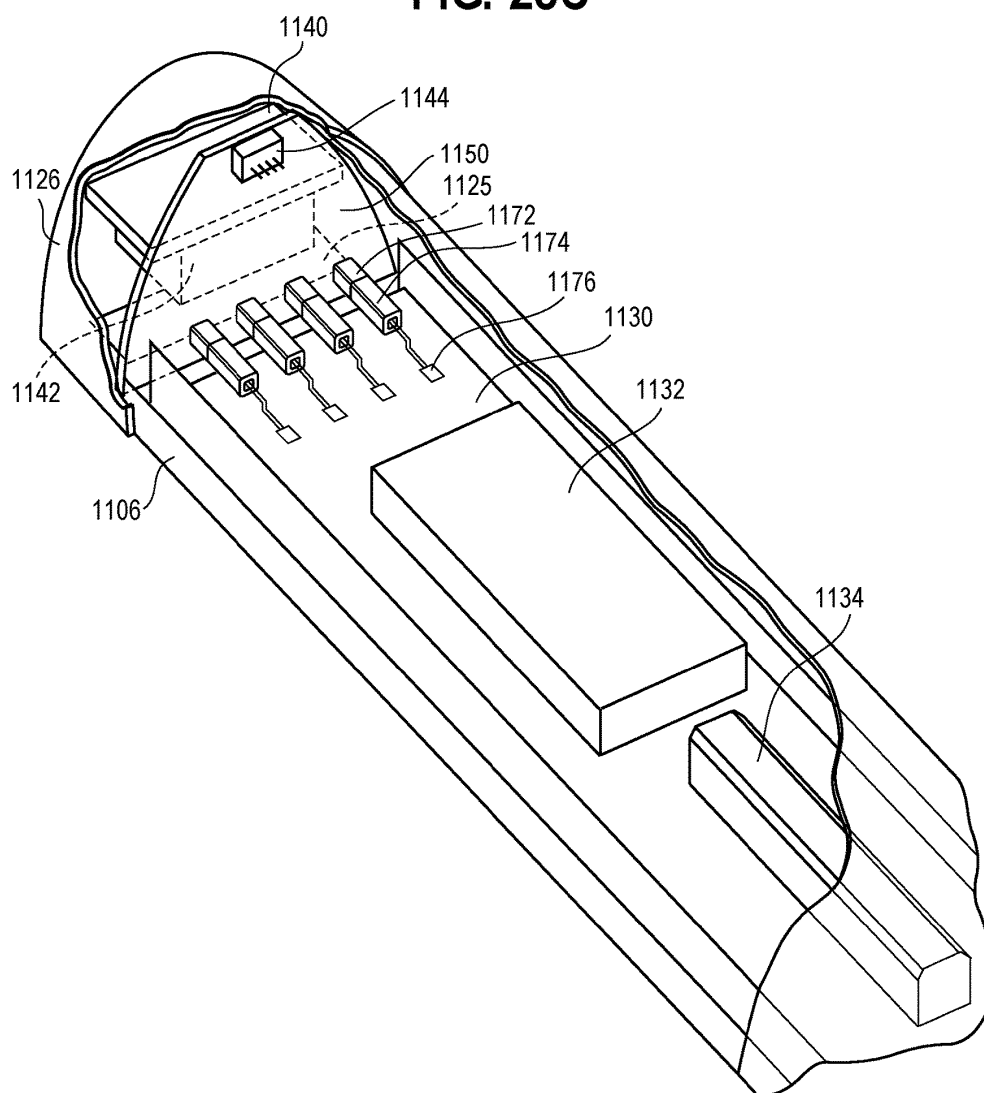
6. The linear LED lighting apparatus of claim 1, comprising a housing comprising an interior volume configured to hold the driver circuit, the first plurality of LEDs, and the second plurality of LEDs.

May discloses a housing which holds the previously discussed control module 1132 and LEDs within its interior volume as shown below, 1113a, 1115a. Ex.1008¶217, 0085 (“FIG. 28A is a side perspective view of a linear LED lamp embodiment with portions cut away to expose internal components”). Ex.1002¶297.



Ex.1008-Fig.-28A.

FIG. 28C



Ex.1008-Fig.-28C.

7. The linear LED lighting apparatus of claim 6, wherein the housing comprises a length greater than or equal to 24 inches.

May discloses that the lamps (which are surrounded by housing) may be “2 feet, 3 feet, 4 feet, 6 feet or 8 feet” and “typically ranging from 2 to 8 feet.”

Ex.1008¶204, Claim 82. Ex.1002¶298.

8. The linear LED lighting apparatus of claim 6, wherein the switch assembly is configured to be positioned in a receptacle of the housing, and wherein the switch assembly is configured to be flush with a surface of the housing when positioned in the receptacle.

As shown below the switch assembly of Jeswani is positioned in a receptacle of the housing and is flush with a surface of the housing. Ex.1002¶299.

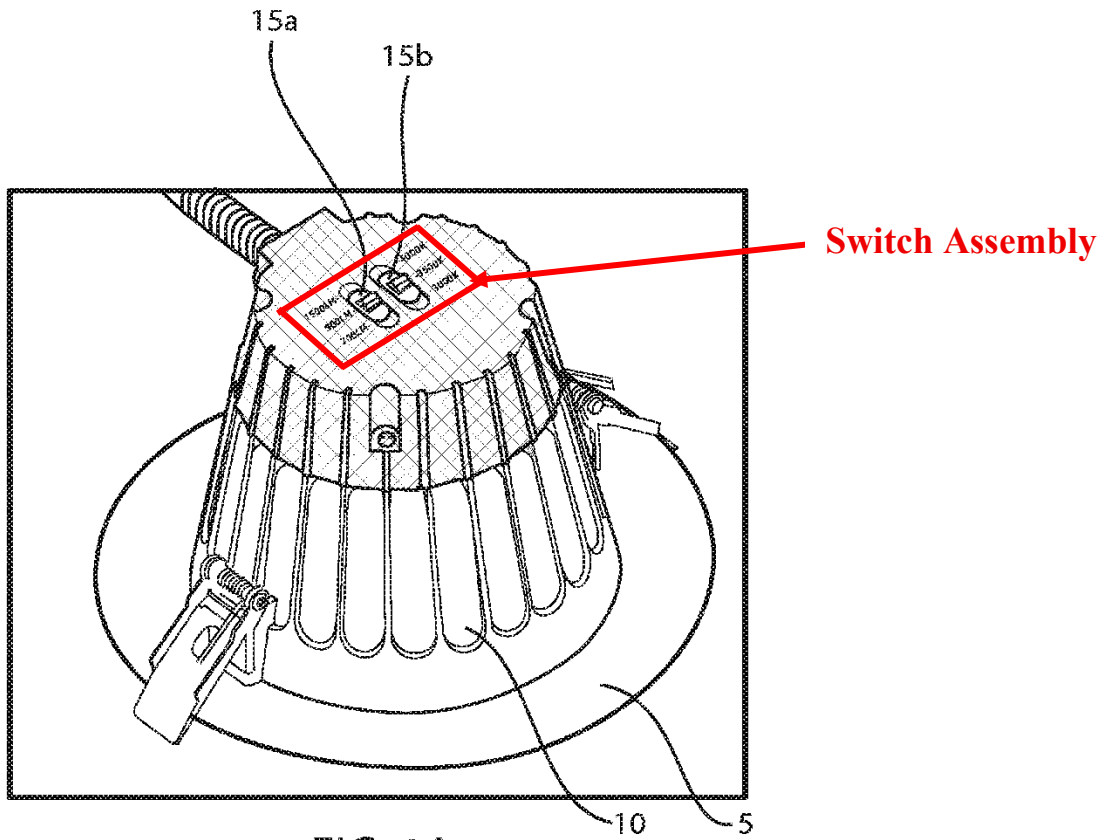


FIG. 1A

Ex.1007-1A-Annotated.

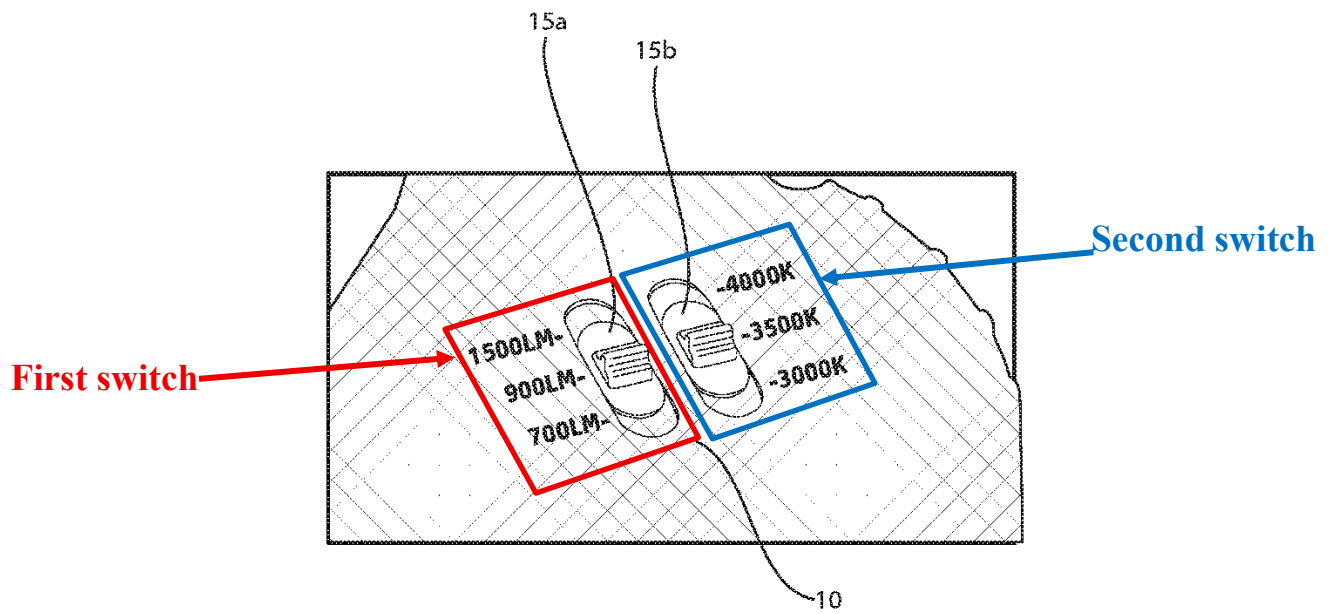


FIG. 1B

Ex.1007-Fig.-1B-Annotated.

9. The linear LED lighting apparatus of claim 1, comprising at least one electrical connection configured to transmit electricity from the lighting apparatus to at least one other lighting apparatus.

As described for 1[h] May discloses or renders obvious serially connecting the lamps and providing power from a first lamp to a second lamp. Ex.1002¶300.

Independent Claim 10:

Independent claim 10 overlaps substantially with claim 1 in that it recites a modular lighting system with multiple connected fixtures. However, it differs in that (a) it only recites LEDs of a single color temperature for the first fixture; (b) it expressly recites the features of the second fixture; and (c) it additionally recites certain structural elements of the second fixture. Ex.1002¶¶301.

Claim Elements [10a]-[10g]

Claim 10[pre] recites a lighting system, which is shown by the structures of claim 1 generally. Ex.1002¶¶302.

The following features are substantially identical between claim 1 and claim 10 and accordingly for these elements of claim 10 these limitations are rendered obvious by May in view of Jeswani based on the disclosures and analysis for the corresponding elements in claim 1, which are incorporated by reference.

Ex.1002¶303.

Claim Feature	Claim 10	Claim 1
A lighting apparatus that is modular	10[a]	1[pre] (lighting apparatus) 1[h] (modular)
plurality of LEDs having first color temperature, and in linear form factor	10[b]	1[b]
driver outputting plurality of currents	10[c]	1[d]
Switch assembly	10[d]	1[e]
Switch for outputting current	10[e]	1[f]
Switch for coupling first plurality of currents to LEDs	10[f]	1[g]
Connector for adjoining fixture	10[g]	1[h]

Claim Elements [10h]-[10n]

Claim elements 10[h]-10[n] additionally recite features in the second fixture that correspond to features in the first fixture. As described with respect to claim element 1[h], May discloses a connector port that enables a similar fixture varying in size by a scale factor to be connected and thus the features of claim elements

10[i]-10[n] are similarly rendered obvious by May in view of Jeswani according to the disclosures and analysis for the claim elements below which are incorporated by reference. Ex.1002¶304.

Features on Second LED	Claim 10	Claim 1
A lighting apparatus that is modular and larger than first apparatus	10[h]	1[pre] (lighting apparatus) 1[h] (modular)
plurality of LEDs having first color temperature, and in linear form factor	10[i]	1[b]
driver outputting plurality of currents	10[j]	1[d]
Switch assembly	10[k]	1[e]
Switch for outputting current	10[l]	1[f]
Switch for coupling first plurality of currents to LEDs	10[m]	1[g]
Connector for adjoining fixture	10[n]	1[h]

[10i] a second plurality of light-emitting diodes (LEDs) arranged within a second linear form factor and having a second number of LEDs, each LED of the second plurality of LEDs associated with the first color temperature, wherein the second number is greater than the first number by a scale factor;

As shown in 1[h] above May discloses that additional LED lamps may be connected and may vary by a scale factor.

May also discloses that the LEDs are “located at regularly spaced intervals.” Ex.1008¶0231.

Accordingly, a POSA would understand that the number of LEDs in each lamp would scale with the length of the lamp, with a lamp twice as long having twice as many LEDs. Ex.1002¶¶305-307. Accordingly, a POSA would understand that the “second number” of LEDs in the second lamp is greater than the “first number” of LEDs in the first lamp by a scale factor. To the extent this relationship is not expressly disclosed, it is obvious. A POSA would be motivated to add this feature with a reasonable expectation of success. Having the number of LEDs scale with the length of the lamp merely be a selection from a finite number of known predictable solutions. Ex.1002¶308.

[10m] couple the one of the second plurality of currents to the second plurality of LEDs, wherein the one of the second plurality of currents is greater than the one of the first plurality of currents by the scale factor; and

In addition to the subject matter from claim element 1[g] identified for claim element 10[m] this element recites that “the one of the second plurality of currents is greater than the one of the first plurality of currents by the scale factor.”

As set forth above for element 10[i] the number of LEDs in each fixture would be proportional to the length of the fixture. For a given brightness level that the current sent to each LED fixture would be proportional to the number of LEDs and accordingly the second current (sent to the LEDs of the second fixture) would be greater than the current sent to the LEDs of the first fixture by the scale factor. Ex.1002¶¶310-327.

Particularly, as explained by Dr. Eden the linear fixtures disclosed in May would include multiple strings of LEDs arranged serially but connected in parallel as this was the standard approach to designing linear fixtures and required by safety standards. Ex.1002¶¶315-320 citing Ex.1010¶¶003-4, Ex.1011¶25, Ex. 1020,p.1.

May discloses the use of parallel-connected LEDs and/or strings of LEDs and teaches that additional combinations may be used. Ex.1002¶¶322-323 citing Ex.1008¶¶211, 218, Figs.28-29. A POSA would be motivated to utilize parallel

connected strings to provide the longer fixtures disclosed in May. A POSA would be motivated utilize strings connected in parallel but extended serially because it would be difficult to provide a single voltage across a single long serially connected series of LEDs and would be able to add this feature with a reasonable expectation of success. Ex.1002¶326. Such an arrangement would merely be a selection from a finite number of known predictable solutions. Ex.1002¶326.

The number of parallel connected strings will scale with the fixture. The amount of current necessary to drive those additional strings in parallel would scale according to the scale factor. Ex. 1002¶327.

[10n] a second extender port configured to couple with the first extender port to combine the first modular lighting apparatus and the second modular lighting apparatus to traverse the first linear distance and the second linear distance.

See element 1[h] describing how multiple lamps can be connected via their Ethernet ports accordingly enabling the first extender port to combine the first modular lighting apparatus and the second modular lighting apparatus to traverse the first and second linear distances. Ex.1008¶¶113,190,191. Ex.1002¶329.

11. The linear LED lighting system of claim 10, wherein the first switch assembly is configured to receive a signal to cause the first driver circuit to output the one of the first plurality of currents.

See claim 1[f] and 1[h] describing how the control module of the lamp of May can receive data communications over its Ethernet port *i.e.*, a signal. Ex.1002¶330.

12. The linear LED lighting system of claim 11, wherein the signal is received via a wired connection.

As described for claim 1 [h] May discloses a wired Ethernet connection between the fixtures.

13. The linear LED lighting system of claim 11, wherein the signal is received via a mechanical switch.

See claim 1[e] describing that incorporating the mechanical switch of Jeswani in May is obvious. Ex.1002¶332.

14. The linear LED lighting system of claim 11, wherein the signal comprises a wireless signal.

May discloses that “the connector board 1130 may also include...wireless transceivers...” Ex.1008¶221. May also discloses that the wireless signals may control “one or more operational characteristics” of the lamp, which include color temperature. Ex.1008-claim 22, ¶231. Ex.1002¶333.

16. The linear LED lighting system of claim 10, wherein the first extender port is configured to electrically couple the first modular lighting apparatus to the second modular lighting apparatus.

See 1[h]

17. The linear LED lighting system of claim 10, wherein each LED of the first plurality of LEDs receives a same amount of current via the one of the first plurality of currents that each LED of the second plurality of LEDs receives via the one of the second plurality of currents.

As set forth for element 10[m] a POSA would understand that each LED would receive approximately the same current, with the current being sent to each of the plurality of LEDs being proportional to the number of LEDs. Accordingly, the amount of current that is used to light any particular LED to a specific brightness will be the same between the first and second pluralities of LEDs.

Ex.1002¶¶86-88, 311-317, 335.

Independent Claim 18

Claim 18 overlaps substantially with claim 1 in that it recites a modular lighting system with multiple connected fixtures. However, it differs in that (a) it expressly recites the features of the second fixture; and (b) it additionally recites certain current characteristics. Ex.1002¶¶336.

Claim 18[pre] recites a lighting system, which is shown by the structures of claim 1 generally. Ex.1002¶337.

Claim elements 18[a]-18[k]

The following features are substantially identical between claim 1 and claim 18 and accordingly for these elements of claim 18 these limitations are rendered obvious by May in view of Jeswani based on the disclosures and analysis for the

corresponding elements in claim 1, which are incorporated by reference.

Ex.1002¶338.

Claim Feature	Claim 18	Claim 1
A lighting apparatus that is modular	18[a]	1[pre] (lighting apparatus) 1[h] (modular)
LED array	18[b]	1[a]
First plurality of LEDs having first color temperature, and in linear shape	18[c]	1[b]
Second plurality of LEDs with second color temperature	18[d]	1[c]
Second plurality of LEDs are in linear shape	18[e]	1[c]
driver outputting plurality of currents	18[f]	1[d]
Switch assembly	18[g]	1[e]

Claim Feature	Claim 18	Claim 1
First switch for outputting current	18[h]	1[f]
Second switch for coupling first plurality of currents to LEDs	18[i]	1[g]
Second switch can cause currents to couple to first plurality of LEDs	18[j]	1[g]
Second switch can cause currents to couple to second plurality of LEDs	18[k]	1[g]

[18l] cause half of the first portion of the one of the first plurality of currents to couple to each LED of the first plurality of LEDs and each LED of the second plurality of LEDs; and

As described for 1[g] May discloses adjusting the relative current sent to its first and second strings of LEDs to only the first string, only the second string, or in ranges in between. Ex.1008¶¶231. A POSA would understand this to include a color temperature in the middle in which equal amounts of current are sent to both strings of LEDs. Ex.1002¶339. Further, as described claim 3, Jeswani discloses an

arrangement in which a setting on the switch may create a color temperature of 3500K by sending equal amounts of currents to LED groups of 3000K and 4000K. Ex.1007-11:23-45. Ex.1002¶339.

A POSA would be motivated with a reasonable expectation of success to utilize the teachings of May or Jeswani to configure the lamp to a color temperature halfway between the minimum and maximum to obtain a color temperature in the middle between first and second color temperatures. Having half the current go to each set of LEDs would a selection from a finite number of known predictable solutions. Ex.1002¶340.

Independent Claim 18 -Claim elements 18[m]-18[w]

As discussed above, claim elements 18[m]-18[w] additionally recite features in the second fixture that correspond to features in the first fixture. As described with respect to claim element 1[h], May discloses a connector port that enables a similar fixture varying by a scale factor to be connected and thus the features of claim elements 18[m]-18[w] are similarly rendered obvious by May in view of Jeswani according to the disclosures and analysis for the claim elements below which are incorporated by reference. Ex.1002¶¶342. With respect to claim elements 18[m]-18[w] the third and fourth pluralities of LEDs in the second fixture respectively correspond to the first and second pluralities of LEDs of the first

fixture. Similarly, the second plurality of currents of the second fixture corresponds to the first plurality of currents of the first fixture. Ex. 1002¶¶342.

Claim Feature of Second Fixture	Claim 18	Claim 1
A lighting apparatus that is modular	18[m]	1[pre] (lighting apparatus) 1[h] (modular)
LED array	18[n]	1[a]
Third plurality of LEDs having first color temperature, and in linear shape	18[o]	1[b]
Fourth plurality of LEDs with second color temperature	18[p]	1[c]
Fourth plurality of LEDs in linear shape	18[p]	1[c]
driver outputting plurality of currents	18[q]	1[d]
Switch assembly	18[r]	1[e]

Claim Feature of Second Fixture	Claim 18	Claim 1
Third Switch for outputting current	18[s]	1[f]
Fourth Switch for coupling first plurality of currents to LEDs	18[t]	1[g]
Fourth switch can cause currents to couple to third plurality of LEDs	18[u]	1[g]
Fourth switch can cause currents to couple to fourth plurality of LEDs	18[v]	1[g]

[18o] a third plurality of LEDs associated with a third color temperature, wherein the third plurality of LEDs aligns within a third linear shape, wherein the third color temperature matches the first color temperature, and wherein the third plurality of LEDs is longer than the first plurality of LEDs;

In addition to the incorporated disclosure from element 1[b], claim limitation 18[o] additionally recites that the third plurality of LEDs is longer than the first plurality of LEDs on the first fixture. As set forth with respect to 1[h] the fixtures

and their lengths of LEDs vary by a scale factor, which would cause the third plurality of LEDs to be longer than the first plurality of LEDs. Ex.1002¶343.

[18p] a fourth plurality of LEDs associated with a fourth color temperature matching the second color temperature, wherein the fourth plurality of LEDs aligns within a fourth linear shape, and wherein the fourth plurality of LEDs is longer than the second plurality of LEDs;

In addition to the incorporated disclosure from element 1[b], claim limitation 18[p] additionally recites that the fourth plurality of LEDs is longer than the second plurality of LEDs on the first fixture. As set forth with respect to 1[h] the fixtures and their lengths of LEDs vary by a scale factor, which would cause the fourth plurality of LEDs to be longer than the second plurality of LEDs. Ex.1002¶344.

[18w] cause half of the second portion of the one of the second plurality of currents to couple to each LED of the third plurality of LEDs and each LED of the fourth plurality of LEDs.

As described for 18[l], May and Jeswani discloses or renders obvious that the second switch of each LED fixture can send half of its current to the first plurality of LEDs of each fixture (*i.e.*, the “third plurality of LEDs”) and half of its current to the second plurality of LEDs of each fixture (*i.e.*, the “fourth plurality of LEDs.”). Ex.1002¶345.

19. The linear LED system of claim 18, wherein the first modular lighting apparatus comprises a first connector configured to couple to a second connector part of the second modular lighting apparatus, wherein the first connector and second connector are configured to transmit data between the first modular light apparatus and the second modular lighting apparatus.

See 1[h] describing how the lamps may be connected by Ethernet cables to provide power and data through their Ethernet ports. Ex.1002¶346.

20. The linear LED system of claim 18, wherein a first ratio of the one of the second plurality of currents to the one of the first plurality of currents matches a second ratio of a first number of LEDs in the first plurality of LEDs to a second number of LEDs in the third plurality of LEDs.

See 10[m] describing how the ratio of current sent to the third plurality of LEDs in the second lamp (referred to as the second plurality of currents) and current sent to the first plurality of LEDs in the first lamp (referred to as the first plurality of currents) is the same as the scale factor between the first and second lamps and particularly the ratio between the number of LEDs in the second lamp and the number of LEDs in the first lamp. Ex.1002¶347.

VII. GROUND 4- CLAIM 15 IS OBVIOUS OVER MAY IN VIEW OF TESWANI AND FURTHER IN VIEW OF SADWICK

15. The linear LED lighting system of claim 10, wherein the first driver circuit comprise a current regulator.

As described for Ground 1, claim 15, Sadwick discloses a “constant current driver” and “variable constant current driver” which entails a current regulator. Ex.1002¶348; Ex.1006¶¶49. A POSA would further be motivated to include the

constant current driver or variable constant current driver of Sadwick in May with a reasonable expectation of success. Such a system allows for better and more stable regulation of electrical operation and avoidance of damage to the LEDs.

Ex.1002¶348. Incorporation of the current regulator of Sadwick in the system of May would be the combination of known elements to obtain a predictable result.

Ex.1002¶348. Given that constant current components were common a POSA would easily be able to adapt them to the system of May. Ex.1002¶348.

VIII. NO EVIDENCE OF OBJECTIVE INDICIA OF NONOBVIOUSNESS

Petitioner is unaware of any objective indicia, and in any event, the strength of the grounds herein would render such evidence deficient.

IX. MANDATORY NOTICES (37 C.F.R. § 42.8(b))

A. Real Parties-in-Interest (§ 42.8(b)(1))

The real party in interest in this matter is Petitioner Jesco Lighting Group, LLC.

B. Related Matters (§ 42.8(b)(2))

The '302 Patent is currently asserted in *AGS Lighting Management LLC v. Jesco Lighting Group, LLC*, DDE-1-25-cv-00141, in the District Court for the District of Delaware.

C. Lead and Back-Up Counsel (§ 42.8(b)(3))

Lead Counsel: David C. Radulescu, Ph.D. (Reg. No. 36,250).

Back-Up Counsel: Bryon Wasserman (Reg. No. 48,404).

D. Service Information (§ 42.8(b)(4))

Petitioner consents to electronic service.

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Post: Radulescu LLP; 5 Penn Plaza, 19th Fl.; New York, NY 10001

Phone: (646) 502-5950. Fax: (646) 502-5959

X. STANDING CERTIFICATION (37 C.F.R. § 42.104(a))

Petitioner certifies that the '302 Patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting *inter partes* review challenging the patent claims based on the grounds identified in this Petition.

XI. CONCLUSION

Petitioner requests that *inter partes* review be instituted of claims 1-20 and those claims canceled.

Date: July 19, 2025

Respectfully submitted,

/s/ David C. Radulescu

David C. Radulescu, Lead Counsel
Reg. No. 36,250

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I hereby certify that this petition complies with the type-volume limitation of 37 C.F.R. § 42.24(a). The word count application of the word processing program used to prepare this petition indicates that the petition contains 13,977 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

Date: July 19, 2025

/s/ David C. Radulescu
David C. Radulescu, Lead Counsel
Reg. No. 36,250

PAYMENT OF FEES (37 C.F.R. §§ 42.15(A) AND 42.103)

The required fees are submitted herewith. If any additional fees are due at any time during this proceeding, the Office is authorized to charge such fees to Deposit Account No. DA606603.

APPENDIX A – EXHIBIT LIST

Exhibit No.	Description
EX1001	U.S. Patent No. 11,751,302
EX1002	Declaration of J. Gary Eden
EX1003	Curriculum Vitae of J. Gary Eden
EX1004	U.S. Patent No. 11,751,302 File History
EX1005	U.S. Patent No. 9,995,440B2 (“Edwards”)
EX1006	U.S. Patent Appln. 2019/0320515A1 (“Sadwick”)
EX1007	U.S. Patent No. 10,683,969B2 (“Jeswani”)
EX1008	U.S. Patent Appln. 2019/0041009A1 (“May”)
EX1009	Montes de Oca, Samantha, “CCT: Understanding the Basics”, Superbrightleds.com, dated March 2, 2016, available at https://www.superbrightleds.com/blog/what-is-cct-understanding-the-basics.html
EX1010	U.S. Patent Publication 2017/0314743 to Del Castillo (“Del Castillo”)
EX1011	U.S. Patent Publication No. 2004/0062041 to Cross (“Cross”)
EX1012	U.S. Patent No. 9,345,112B2 (“112 Patent”)
EX1013	U.S. Patent No. 9,964,289B2 (“Pearson”)
EX1014	U.S. Patent No. 8,764,220B2 (“Chan”)
EX1015	Kay, Gregory, “Tunable white light and its benefits become more accessible”, Architectural Products, dated June 28, 2023, available at https://www.arch-products.com/architectural-lighting/article/55092734/tunable-white-light-and-its-benefits-for-commercial-offices-become-more-accessible .
EX1016	U.S. Patent No. 7,014,336B1 (“Ducharme”)
EX1017	U.S. Patent No. 8,207,821B2 (“Roberge”)
EX1018	“The Light Emitting Diode”, Electronics Tutorials, available at https://www.electronics-tutorials.ws/diode/diode_8.html
EX1019	“Tunable White technology At a Glance”, Tridonic, dated March 2019
Ex. 1020	ENERGY STAR® Program Requirements Product Specification for Decorative Light Strings Eligibility Criteria Version 1.5 downloaded from https://www.energystar.gov/sites/default/files/specs//private/spec_v1.5_draft.pdf

Exhibit No.	Description
EX. 1021	<i>“Decorative Light Strings Specification Version 1.5”</i> , Energy Star, available at https://www.energystar.gov/products/spec/decorative_light_strings_specification_version_1_5_pd .

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(a), I hereby certify that on this date, I caused to be served a true and correct copy of the foregoing petition for *inter partes* review (and accompanying exhibits) by United States Postal Services, which is a method that is at least as fast and reliable as Priority Mail Express®, on the Patent Owner at the correspondence address of Patent Owner's counsel as follows:

FLETCHER YODER P.C.
P.O. Box 692289
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UNITED STATES

Date: July 19, 2025

/s/ David C. Radulescu
David C. Radulescu, Lead Counsel
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