



US009410683B2

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

(10) **Patent No.:** **US 9,410,683 B2**  
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **MODULAR LED LIGHTING SYSTEMS**  
(71) Applicants: **Michael A. Tischler**, Vancouver (CA);  
**Paul Palfreyman**, New Westminster (CA)  
(72) Inventors: **Michael A. Tischler**, Vancouver (CA);  
**Paul Palfreyman**, New Westminster (CA)  
(73) Assignee: **Cooledge Lighting, Inc.**, Richmond (CA)

(52) **U.S. CL.**  
CPC . *F21V 23/06* (2013.01); *F21S 2/00* (2013.01);  
*F21S 2/005* (2013.01); *F21V 21/005* (2013.01);  
*F21V 21/14* (2013.01); *G09F 13/00* (2013.01);  
*H01S 5/042* (2013.01); *H05B 33/08* (2013.01);  
*H05B 37/02* (2013.01); *F21V 17/10* (2013.01);  
*F21V 17/16* (2013.01); *F21V 19/004* (2013.01);  
*F21V 21/35* (2013.01); *F21Y 2101/02*  
(2013.01); *F21Y 2105/001* (2013.01)

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

(58) **Field of Classification Search**  
CPC ..... *F21V 17/10*; *F21V 17/16*; *F21V 17/162*;  
*F21V 17/164*; *F21V 17/166*; *F21V 17/168*;  
*F21V 17/18*; *H01R 4/26*  
USPC ..... 362/217.13, 217.17, 225, 367; 439/638  
See application file for complete search history.

(21) Appl. No.: **14/713,014**

(56) **References Cited**

(22) Filed: **May 15, 2015**

U.S. PATENT DOCUMENTS

(65) **Prior Publication Data**  
US 2015/0308671 A1 Oct. 29, 2015

6,851,831 B2 \* 2/2005 Karlicek, Jr. .... 362/249.06  
7,108,392 B2 \* 9/2006 Strip et al. .... 362/145

**Related U.S. Application Data**

(Continued)

(63) Continuation of application No. 14/699,149, filed on Apr. 29, 2015.

OTHER PUBLICATIONS

(60) Provisional application No. 61/985,759, filed on Apr. 29, 2014, provisional application No. 62/029,151, filed on Jul. 25, 2014.

International Search Report and Written Opinion issued in a corresponding International Application No. PCT/US2015/028152 dated Jul. 30, 2015.

(51) **Int. Cl.**  
*F21S 2/00* (2016.01)  
*F21V 23/06* (2006.01)  
*F21V 21/005* (2006.01)  
*F21V 21/14* (2006.01)  
*H01S 5/042* (2006.01)  
*H05B 33/08* (2006.01)  
*H05B 37/02* (2006.01)  
*G09F 13/00* (2006.01)  
*F21Y 105/00* (2016.01)  
*F21V 17/10* (2006.01)  
*F21V 17/16* (2006.01)  
*F21V 19/00* (2006.01)

*Primary Examiner* — Evan Dzierzynski  
*Assistant Examiner* — Zheng Song  
(74) *Attorney, Agent, or Firm* — Morgan, Lewis & Bockius LLP

(57) **ABSTRACT**

In accordance with various embodiments, a modular lighting system features multiple light panels each having multiple light-emitting elements thereon, as well as connectors for electrically and mechanically interconnecting the light panels.

(Continued)

**76 Claims, 31 Drawing Sheets**

