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(54) **LIGHTING ASSEMBLY WITH MULTIPLE LIGHTING UNITS**

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

This patent is subject to a terminal disclaimer.

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CPC ..... **G09F 13/22** (2013.01); **F21K 9/60** (2016.08); **F21S 6/006** (2013.01); **F21V 5/007** (2013.01);  
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(58) **Field of Classification Search**  
CPC ..... G09F 13/02; G09F 13/22; G09F 2013/222  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,254,961 A 9/1941 Lawrence et al.  
4,235,285 A 11/1980 Johnson et al.  
(Continued)

FOREIGN PATENT DOCUMENTS

CA 2615706 A1 9/2006  
CN 201925854 U 8/2011  
(Continued)

OTHER PUBLICATIONS

Lee, S., "How to Select a Heat Sink," <http://www.electronics-cooling.com/1995/06/how-to-select-a-heat-sink/>, Jun. 1, 1995, pp. 1-10.

(Continued)

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(57) **ABSTRACT**

A lighting assembly includes an assembly body. A first lighting unit is attached to the assembly body. The first lighting unit includes a number of light emitting diodes (LEDs) and optical elements arranged over the LEDs such that each optical element overlies only one associated LED. The first lighting unit is configured to illuminate a substantially rectangular region. A second lighting unit is attached to the assembly body and spaced from the first lighting unit. The second lighting unit includes a number of LEDs and optical elements arranged over the plurality of LEDs such that each optical element overlies only one associated LED. The lighting assembly is configured to direct the light toward the substantially rectangular area such that the light illuminates the substantially rectangular area with a unifor-

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