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[Continued on next page]

(54) Title: LED LAMP

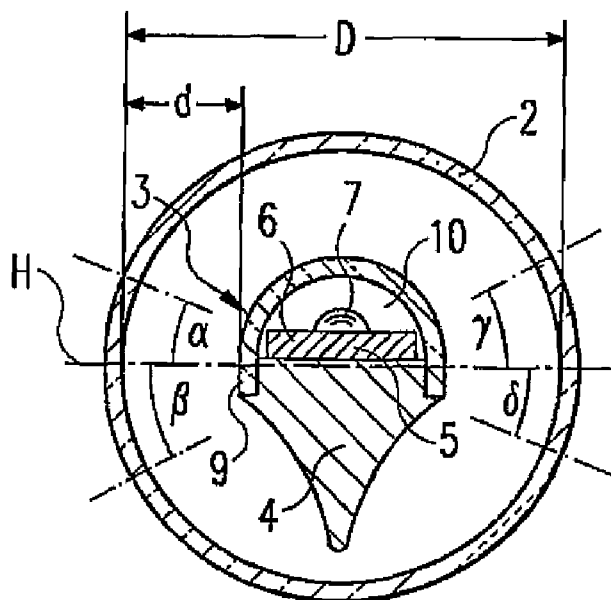


Fig. 3

(57) Abstract: The invention is directed to an LED lamp comprising a tubular translucent housing (2), and a linear light engine (3) having a linear heat sink (4, 40) and at least one LED module (5) being arranged on the heat sink (4, 40). The linear light engine (3) is arranged inside and enclosed by the housing (2) such that the linear light engine (3) is distanced from the inner wall of the housing (2) about its circumference in sectional side view, wherein the linear light engine (3) is distanced from the inner wall of the housing (2) by a predefined minimum distance (d) of at least 3mm in a horizontal direction (H) and angles (α , β , γ , δ) of at least $\pm 45^\circ$, preferably $\pm 60^\circ$, more preferably $\pm 75^\circ$, most preferably $\pm 90^\circ$ from the horizontal direction (H) to allow the generation of an air circulation around the linear light engine (3) for enhanced heat transfer from the heat sink (4, 40) to the housing (2) by convection.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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ADD. F21Y101/02 F21Y103/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F21V F21K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 239 493 A2 (YADENT CO LTD [CN]) 13 October 2010 (2010-10-13)	1-9, 12-15
Y	the whole document	10,11
Y	----- WO 03/004930 A1 (MORIYAMA SANGYO KK [JP]; MORIYAMA HIDEO [JP]; KATO GI TOMOYUKI HM [JP]) 16 January 2003 (2003-01-16)	10,11
A	abstract figures 1, 2	1
X	----- WO 2010/082655 A1 (ROHM CO LTD [JP]; FUKUI HIROYUKI [JP]) 22 July 2010 (2010-07-22)	1-9, 12-15
	the whole document	
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 267 355 A1 (FOXSEMICON INTEGRATED TECH INC [TW]) 29 December 2010 (2010-12-29) paragraphs [0013] - [0017] page 3 -----	1-9, 12-15
X	US 2011/019421 A1 (LAI CHIH-MING [TW]) 27 January 2011 (2011-01-27) the whole document -----	1-9, 12-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/EP2012/057149

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 2239493	A2	13-10-2010	EP	2239493 A2		13-10-2010
			JP	2010245018 A		28-10-2010
			TW	201037224 A		16-10-2010
			US	2010253226 A1		07-10-2010

WO 03004930	A1	16-01-2003	JP	4153870 B2		24-09-2008
			WO	03004930 A1		16-01-2003

WO 2010082655	A1	22-07-2010	CN	202176924 U		28-03-2012
			US	2011273871 A1		10-11-2011
			WO	2010082655 A1		22-07-2010

EP 2267355	A1	29-12-2010	CN	101929624 A		29-12-2010
			EP	2267355 A1		29-12-2010
			JP	2011009209 A		13-01-2011
			KR	20100138836 A		31-12-2010
			US	2010327750 A1		30-12-2010

US 2011019421	A1	27-01-2011	CN	101963292 A		02-02-2011
			US	2011019421 A1		27-01-2011
