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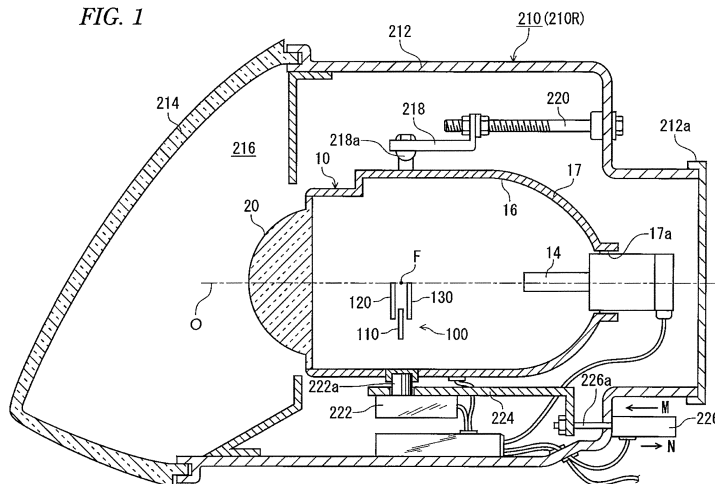
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(54) **Vehicle headlamp**

(57) A lamp unit (210) includes: a projection lens (20) that radiates light from a light source (14); and a shade (110,120,130) interposed between the light source and the projection lens and for forming a light distribution pattern having a first cutoff line extending horizontally from a neighborhood of a center of the light distribution pattern and a second cutoff line extending upwardly from the

neighborhood of the center. The shade includes a gradation forming portion for forming a gradation in the second cutoff line in the second cutoff line forming edge portion. The gradation is for making variations gradual in illumination in the portion of the second cutoff line than that in an area of the neighborhood of the center.

FIG. 1





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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 10 2009 010558 A1 (AUTOMOTIVE LIGHTING REUTLINGEN [DE]) 19 August 2010 (2010-08-19) * paragraph [0043]; figures 1,2,4 * -----	1-10	INV. F21V14/08 F21S8/12 F21V11/16 F21S8/10
A	US 2010/309680 A1 (AKUTAGAWA TAKASHI [JP] ET AL) 9 December 2010 (2010-12-09) * paragraphs [0060], [0064], [0071]; figures 3b,11 * -----	1-10	
A	US 2005/225999 A1 (BUCHER LLOYD K [US] BUCHER LLOYD KEITH [US]) 13 October 2005 (2005-10-13) * paragraph [0024]; figures * -----	1-10	
A	JP 2006 294380 A (ICHIKOH INDUSTRIES LTD) 26 October 2006 (2006-10-26) * abstract; figures * -----	1-10	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			F21S
Place of search		Date of completion of the search	Examiner
Munich		30 March 2015	Panatsas, Adam
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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The members are as contained in the European Patent Office EDP file on
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30-03-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102009010558 A1	19-08-2010	DE 102009010558 A1	19-08-2010
		FR 2942294 A1	20-08-2010
		US 2010226144 A1	09-09-2010

US 2010309680 A1	09-12-2010	JP 5544676 B2	09-07-2014
		JP 2010282842 A	16-12-2010
		US 2010309680 A1	09-12-2010

US 2005225999 A1	13-10-2005	CA 2562438 A1	27-10-2005
		EP 1735186 A2	27-12-2006
		JP 4971137 B2	11-07-2012
		JP 2007533080 A	15-11-2007
		KR 20070004088 A	05-01-2007
		US 2005225999 A1	13-10-2005
		WO 2005100088 A2	27-10-2005

JP 2006294380 A	26-10-2006	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82