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(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: CONFIGURABLE VEHICLE SOLID STATE LIGHTING

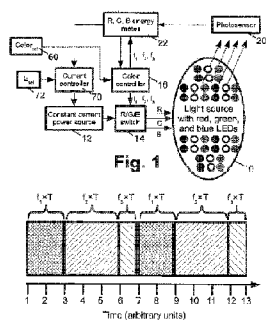


Fig. 2

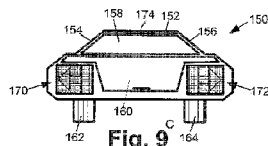


Fig. 9

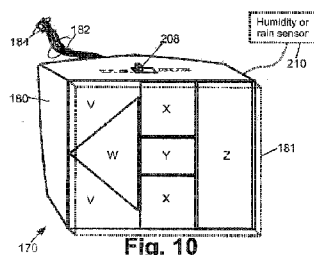


Fig. 10

(57) Abstract: A vehicle signal light assembly (170, 172) includes : at least one color mixing light source (V, W, X, Y, Z); a support element (180) configured to support the at least one color mixing light source (V, W, X, Y, Z) on a vehicle as a signal light (170, 172); and a controller (200) configured to selectively drive each color mixing light source (V, W, X, Y, Z) to generate light of a selected visually perceived color based on a received control signal (R,G,B). In some such embodiments, each color mixing light source (V, W, X, Y, Z) of the vehicle signal light assembly (170, 172) comprises a plurality of light emitting diodes (LEDs) of at least two constituent colors. In some such embodiments, the controller (200) is configured to operate each color mixing light source (V, W, X, Y, Z) of the vehicle signal light assembly (170, 172) using time domain multiplexing (TDM) to generate the light of the selected visually perceived color. In some such embodiments, the vehicle signal light assembly (170, 172) comprises a taillight assembly. In some of the embodiments, the vehicle light assembly comprises an ambient or auxiliary lighting, or a dashboard lighting assembly.



GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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17 January 2013

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/038738

A. CLASSIFICATION OF SUBJECT MATTER INV. B60Q1/26 B60Q1/44 H05B33/08 B60Q1/00 ADD.		
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) B60Q H05B F21S		
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	US 2008/055896 A1 (FELDMEIER DAVID CHARLES [US]) 6 March 2008 (2008-03-06)	1,2,4, 6-13, 15-17, 19,20, 22-27,29
Y	claims 1-3,10,11,14,15,21,25-29,33,35-38; figures 1a,1b,2h,5d-6c,7a,7b paragraphs [0131], [0132], [0139] -----	3,14,28, 30
Y	WO 2010/030462 A1 (GEN ELECTRIC [US]; ROBERTS BRUCE R [US]) 18 March 2010 (2010-03-18) claims 1,2,5,6; figures 1-8 ----- -/-	3,14,28, 30
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
20 November 2012		28/11/2012
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Giraud, Pierre

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International application No

PCT/US2012/038738

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 100 11 843 A1 (VOLKSWAGEN AG [DE]) 20 September 2001 (2001-09-20) column 1, line 31 - column 2, line 15 column 4, lines 23-33 column 5, lines 2-23 claims 1,2,6,10; figures 1-4c -----	1,2, 4-10, 16-18, 20-27,29
X	DE 39 16 875 A1 (ULLMANN ULO WERK [DE]) 6 December 1990 (1990-12-06) claims 1,6,8; figures 1-7 columns 4,5 -----	1,2, 4-10,20, 22-24, 26,27,29
X	US 2002/085377 A1 (MUKOGAWA TAKAO [JP] ET AL) 4 July 2002 (2002-07-04) claims 1-5; figures 1-4 paragraph [0040] -----	34 3
A	EP 1 338 469 A2 (VOLKSWAGEN AG [DE]) 27 August 2003 (2003-08-27) paragraph [0012]; claim 1; figure 1 -----	1,2,4,5, 10,15, 27,29
A	DE 100 43 660 A1 (VOLKSWAGEN AG [DE]) 14 March 2002 (2002-03-14) claims 1-3,9,10; figure 1 paragraph [0016] -----	1,2,4, 10,15, 27,29
X	WO 99/06760 A1 (SDL INC [US]) 11 February 1999 (1999-02-11) claims 1,17-19, 30,36,42,49,50; figures 1-11 pages 3-11 pages 17,18 -----	31-33
Y	EP 2 295 849 A1 (PEUGEOT CITROEN AUTOMOBILES SA [FR]) 16 March 2011 (2011-03-16) claims 1-14; figures 1-4c paragraphs [0020], [0026] -----	31,32
Y	GB 2 139 340 A (BOSCH GMBH ROBERT) 7 November 1984 (1984-11-07) claims 1-4; figures 1-5 -----	31,32
A	US 5 184 883 A (FINCH WILLIAM W [US] ET AL) 9 February 1993 (1993-02-09) abstract; figure 1 -----	31,32
9 6	A JP 2005 019155 A (ICHIKOH INDUSTRIES LTD) 20 January 2005 (2005-01-20) abstract; figures 1-7 -----	31-33

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/038738

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-30, 34

Vehicle signal light assembly using color mixing light sources

1.1. claims: 1, 2, 4-13, 15-17, 19, 20, 23-27, 29(completely); 22(partially)

Choice of colors and of color point adjustment parameters

1.2. claims: 3, 14, 28, 30

Time domain multiplexing for generating a coloured light

1.3. claims: 18, 21(completely); 22(partially)

Means for switching between two colors for a signal lamp depending on the region (USA/EU)

1.4. claim: 34

Vehicle ambient light or auxiliary light assembly including a color mixing light source

2. claims: 31-33

Combination of a color mixing light source with optical paths

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/038738

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2008055896	A1	06-03-2008	NONE	
WO 2010030462	A1	18-03-2010	CN 102150474 A EP 2335453 A1 JP 2012502500 A KR 20110053448 A TW 201013351 A US 2010066255 A1 WO 2010030462 A1	10-08-2011 22-06-2011 26-01-2012 23-05-2011 01-04-2010 18-03-2010 18-03-2010
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