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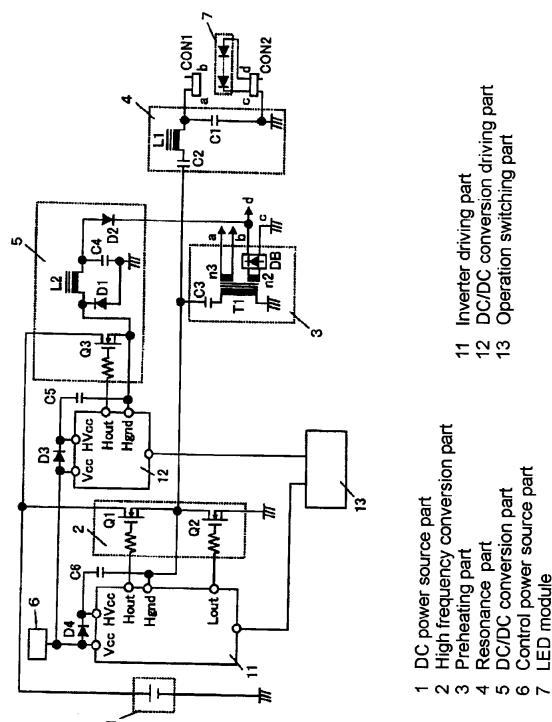
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(54) Lighting Device and Illumination Fixture using thereof

(57) [Object] To provide a lighting device which enables a user of an illumination fixture to select any of a fluorescent lamp and a DC lighting light source as represented by a light emitting diode, and further realizes safe use. [Means for Settlement] A lighting device has first control means 11 adapted to output a driving signal to switching elements Q1 and Q2 which are used to drive a discharge lamp La at high frequency via a resonance part 4, and second control means 12 adapted to output a driving signal to a switching element Q3 of a voltage conversion circuit (i.e. DC/DC conversion part 5) which steps down an output of a DC power source circuit 1, and the lighting device includes an inductor (i.e. preheating transformer T1) having secondary windings n2 and n3 for use in supplying a preheating current to a filament of the discharge lamp La, and a rectifier DB for rectifying a voltage in an output end of at least one of the secondary windings n2 and n3 (i.e. secondary winding n2), wherein an output path of the voltage conversion circuit (i.e. DC/DC conversion part 5) is connected in parallel with an output path of the rectifier DB.

Figure 2





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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)
7 A,D	JP 2009 272088 A (ROHM CO LTD) 19 November 2009 (2009-11-19) * the whole document *	1-6	INV. H05B41/295 H05B33/08 H05B35/00
7 A,D	JP 2009 087588 A (HITACHI LIGHTING LTD) 23 April 2009 (2009-04-23) * the whole document *	1-6	
7 A,D	JP 2003 264090 A (MATSUSHITA ELECTRIC WORKS LTD) 19 September 2003 (2003-09-19) * the whole document *	1-6	
1 X	EP 1 740 020 A2 (PATENT TREUHAND GES FUER ELEKTRISCHE GLUEHLAMPEN MBH [DE]) 3 January 2007 (2007-01-03) * figure 3 *	1-6	
1 X	DE 10 2005 030114 A1 (PATENT TREUHAND GES FUER ELEKTRISCHE GLUEHLAMPEN MBH [DE]) 18 January 2007 (2007-01-18) * figure 2 *	1-6	
1 X	WO 99/52329 A1 (KONINKL PHILIPS ELECTRONICS NV [NL]; PHILIPS SVENSKA AB [SE]) 14 October 1999 (1999-10-14) * figures *	1-6	
1 X	US 2006/226795 A1 (WALTER SCOTT D [US] ET AL) 12 October 2006 (2006-10-12) * figures 1-3 *	3,6	TECHNICAL FIELDS SEARCHED (IPC) H05B
1 X	JP 2007 035324 A (MATSUSHITA ELECTRIC WORKS LTD) 8 February 2007 (2007-02-08) * figures *	1-6	
1 A	US 2008/143274 A1 (ITOU KAZUHIKO [JP] ET AL) 19 June 2008 (2008-06-19) * figures 4,9B *	1,4	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 25 November 2016	Examiner Maicas, Jesús
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document 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			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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25-11-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2009272088 A	19-11-2009	NONE	
JP 2009087588 A	23-04-2009	JP 5032933 B2 JP 2009087588 A	26-09-2012 23-04-2009
JP 2003264090 A	19-09-2003	NONE	
EP 1740020 A2	03-01-2007	CA 2550952 A1 CN 1968560 A DE 102005030115 A1 EP 1740020 A2 US 2006290299 A1	28-12-2006 23-05-2007 18-01-2007 03-01-2007 28-12-2006
DE 102005030114 A1	18-01-2007	AT 417489 T CA 2550940 A1 CN 1893754 A DE 102005030114 A1 EP 1755363 A1 US 2007210719 A1	15-12-2008 28-12-2006 10-01-2007 18-01-2007 21-02-2007 13-09-2007
WO 9952329 A1	14-10-1999	CN 1263688 A EP 0986936 A1 JP 2002500819 A US 5986408 A WO 9952329 A1	16-08-2000 22-03-2000 08-01-2002 16-11-1999 14-10-1999
US 2006226795 A1	12-10-2006	AU 2006234972 A1 CA 2603640 A1 CN 101189917 A EP 1867214 A1 JP 2008538053 A US 2006226795 A1 WO 2006110340 A1	19-10-2006 19-10-2006 28-05-2008 19-12-2007 02-10-2008 12-10-2006 19-10-2006
JP 2007035324 A	08-02-2007	JP 4742720 B2 JP 2007035324 A	10-08-2011 08-02-2007
US 2008143274 A1	19-06-2008	US 2008143274 A1 US 2010171431 A1	19-06-2008 08-07-2010

EPO FORM P0459

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