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(54) Title: OPTICAL COUPLING TO GATED PHOTOCATHODES

(57) Abstract: An electron source is disclosed in which control signals having transition times less than about 10 nanoseconds and electrically isolated from a gated photocathode control an electron beam supplied by the gated photocathode. In one embodiment, the electron source includes a transmissive substrate, a photoemitter on the substrate, a gate insulator on the photoemitter, a gate electrode on the gate insulator, a housing enclosing the photoemitter and the gate electrode, a light source located outside the housing, and a detector located in the housing to receive light from the light source. The detector is electrically coupled to control a voltage applied to one of the gate electrode or the photoemitter.

# INTERNATIONAL SEARCH REPORT

International Application No

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**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H01J37/073 H01J3/02

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)

IPC 7 H01J

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 practical, search terms used)

WPI Data, PAJ, EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99 50874 A (ETEC SYSTEMS INC) 7 October 1999 (1999-10-07) cited in the application page 11, line 10 -page 15, line 33; figure 3	1-4, 16
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A	EP 0 729 169 A (HAMAMATSU PHOTONICS KK) 28 August 1996 (1996-08-28) column 11, line 43 -column 15, line 20; figure 11	1, 5, 16
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A	US 5 313 138 A (DESMUR HENRI) 17 May 1994 (1994-05-17) abstract; figure 2	1, 16
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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International Application No

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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.
A	US 5 808 425 A (HAERLE RAINER) 15 September 1998 (1998-09-15) cited in the application abstract; figures -----	1,16

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