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(21) International Application Number: PCT/US92/00672 (22) International Filing Date: 3 February 1992 (03.02.92) (30) Priority data: 652,830 8 February 1991 (08.02.91) US (71) Applicant: EASTMAN KODAK COMPANY [US/US]; 343 State Street, Rochester, NY 14650 (US). (72) Inventor: STEVENS, Eric, Gordon ; 40 Haymarket Road, Rochester, NY 14624 (US). (74) Agent: KAUFMANN, Stephen, C.; 343 State Street, Ro- chester, NY 14650-2201 (US).		(81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, LU (European patent), MC (European patent), NL (European patent), SE (European patent). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 29 October 1992 (29.10.92)
(54) Title: CHARGE-COUPLED DEVICE (CCD) IMAGE SENSOR		
(57) Abstract A charge-coupled device (CCD) image sensor, which can be operated either in the interlace mode or in the non-interlace mode, includes in a substrate of a semiconductor material a plurality of photodetectors, such as photodiodes, arranged in an array of rows and columns. A separate CCD shift register in the substrate extends along each column of the photodetectors. First and second sets of conductive gates extend transversely across the CCD shift registers with each first gate extending across a portion of the photodetectors in each row and each of the second gates extending across the remaining portion of the photodetectors in each row. A transfer region extends across the substrate from a portion of each of the photodetectors to an adjacent CCD shift register. The transfer regions of alternate photodetectors in each column extends under the first gates of the photodectors and the transfer regions of the other photodetectors in each column extends under the second gates of the respective photodetectors. To operate the CCD image sensor in an interlace mode, during the transfer stage the two sets of gates are pulsed alternately with a shift register read-out after each set of gates is pulsed to read-out one-half of a frame at a time. To operate the CCD image sensor in the non-interlace mode, during the transfer stage all of the gates are pulsed simultaneously to read-out the entire frame in a single scan.		

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INTERNATIONAL SEARCH REPORT

PCT/US 92/00672

International Application No

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl. 5 H01L27/148		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	H01L	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
P, X	FR, A, 2 662 853 (GOLD STAR ELECTRON CO., LTD.) 6 December 1991	1-3, 10-12
P, Y	see page 1, line 34 - page 2, line 21 see page 10, line 4 - line 24; figure 4 ---	4-9, 13-18
P, Y	WO, A, 9 108 590 (EASTMAN KODAK COMPANY) 13 June 1991 see page 2, line 11 - line 30 see page 5, line 9 - page 6, line 33 see page 7, line 17 - line 26; figures 3, 4 ---	4-9, 13-18
Y	US, A, 4 527 182 (ISHIHARA ET AL.) 2 July 1985 cited in the application see column 11, line 7 - line 33; figure 12 --- -/--	9, 18
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IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
25 AUGUST 1992	29. 09. 92	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	ONSHAGE A.C. 	

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		Relevant to Claim No.
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	
A	WO,A,9 009 680 (EASTMAN KODAK COMPANY) 23 August 1990 see page 3, line 25 - page 5, line 6; figures 3,4 ---	4-9, 13-18
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**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. US 9200672
SA 58174**

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