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(71) Applicant : **MOTOROLA, INC.**
1303 East Algonquin Road
Schaumburg, IL 60196 (US)

(72) Inventor : **Wong, Harvey**
1st 26 Scheung Fung Street, Fung Wong
Village
Wong, Tai Sin, Kowloon (HK)
Inventor : **Tsang, Hoi-cheun**
120 Baker Street, Flat F.
Block 7, 16/FL Kowloon (HK)

(74) Representative : **Hudson, Peter David et al**
MOTOROLA European Intellectual Property
Operations Jays Close Viabes Industrial
Estate
Basingstoke, Hampshire RG22 4PD (GB)

(54) **LCD driver and control unit.**

(57) A LCD controller/driver utilizes a bi-directional data ring to enable quick and easy data alteration and shifting. The controller/driver couples cascaded segment drivers (32, 34) to a row data serial interface (24) which links the drivers with a micro-processor unit (MPU) (18). The cascaded segment drivers coupled to the row data serial interface define the bi-directional data ring. Display data input into the segment drivers may be altered by shifting the data into the data ring and transmitting such data to, or through, other segment drivers and to the row data serial interface, where the data is altered by inputs from the MPU. Two data rings are established by coupling the respective segment drivers in series with the row data serial interface. The two data rings generally operate independently. However, when data is to be transferred from one screen to another, such as during a vertical scroll, the two data rings are coupled together and the data is transferred serially. The data rings allow for easy alterations and smooth scrolling in both the horizontal and vertical directions.

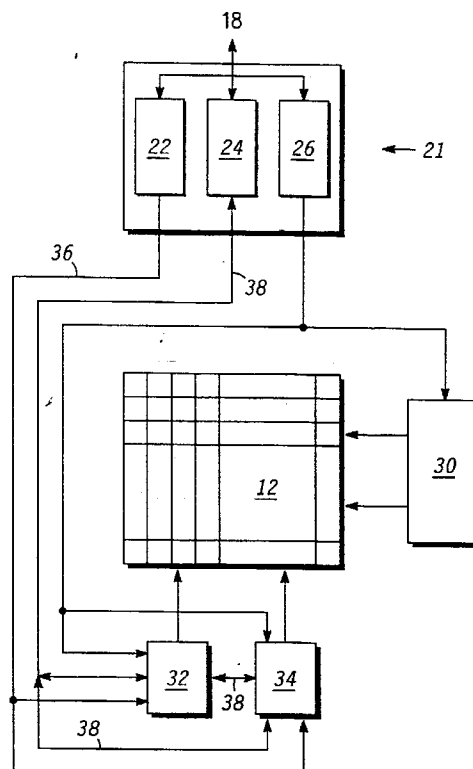


FIG. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 92 30 7590

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CLS)
A	JEE JOURNAL OF ELECTRONIC ENGINEERING. vol. 26, no. 273 , September 1989 , TOKYO JP pages 11112 - 114 XP000071552 AIICHIRO SAKUMOTO 'Driver LSIs Meet the Demands of Full-Color, Large Displays' * page 113, column 1, line 17 - page 114, column 3, line 3; figures 1-3 *	1,2	G09G3/36
A	EDN ELECTRICAL DESIGN NEWS vol. 30, no. 18 , August 1985 , NEWTON, MASSACHUSETTS US pages 83 - 88 ED TEJA 'LCD-driver/controller ICs offer versatility in configuration and function.' * figures 1-3 *	1-4	
A	EP-A-0 406 900 (SHARP KABUSHIKI KAISHA) * column 6, line 55 - column 7, line 7; figure 2 *	1,3	
			TECHNICAL FIELDS SEARCHED (Int.C1.5)
			G09G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 October 1993	Examiner VAN ROOST, L
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	

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