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**Yuh-Ren et al.**

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(54) **LIQUID CRYSTAL DISPLAY DRIVING DEVICE OF MATRIX STRUCTURE TYPE AND ITS DRIVING METHOD**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 677 days.

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**G09G 3/36** (2006.01)

(52) **U.S. Cl.** ..... **345/204; 345/50; 345/90; 345/98; 345/103; 345/214; 349/143**

(58) **Field of Classification Search** ..... **345/50; 345/58, 90, 93, 95, 98, 103, 204, 205, 214; 349/143**

See application file for complete search history.

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*Primary Examiner*—Bipin Shalwala

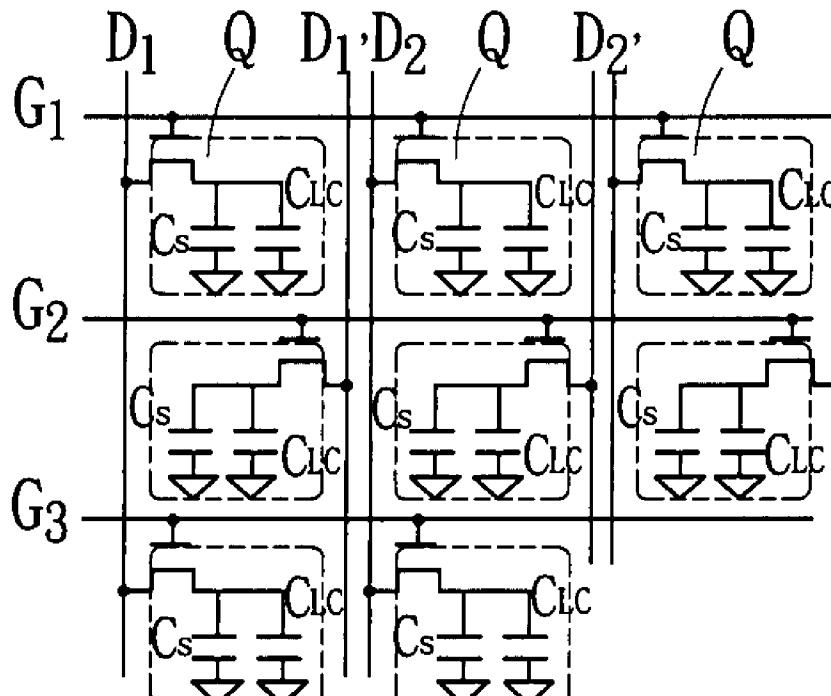
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(57) **ABSTRACT**

A liquid crystal display driving device of matrix structure type and its driving method are disclosed in the present invention. The driving device consists of a group of thin film transistors with matrix array, a plurality of gate lines and a plurality of data lines. The object of increasing response speed can be accomplished by the different arrangement of gate lines and data lines and the different connection between each thin film transistor and the gate and data lines. The driving method for the said driving device includes: each pair of gate lines in the display panel are simultaneously and orderly turned on at different time of driving transistor, and the different driving voltages are orderly applied to the thin film transistors connected to the gate lines. The structure and method can suit for picture treating of various displays such as liquid crystal display, organic light-emitting diode (OLED) display or plasma display panel (PDP).

**7 Claims, 26 Drawing Sheets**



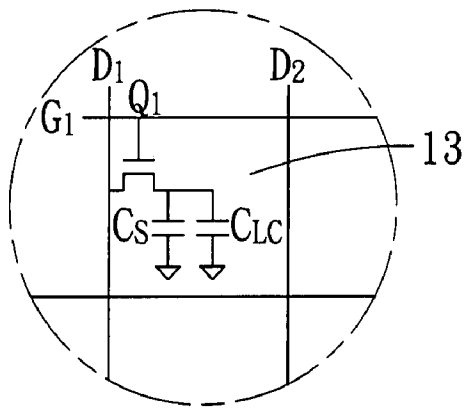


Fig. 1B (Prior Art)

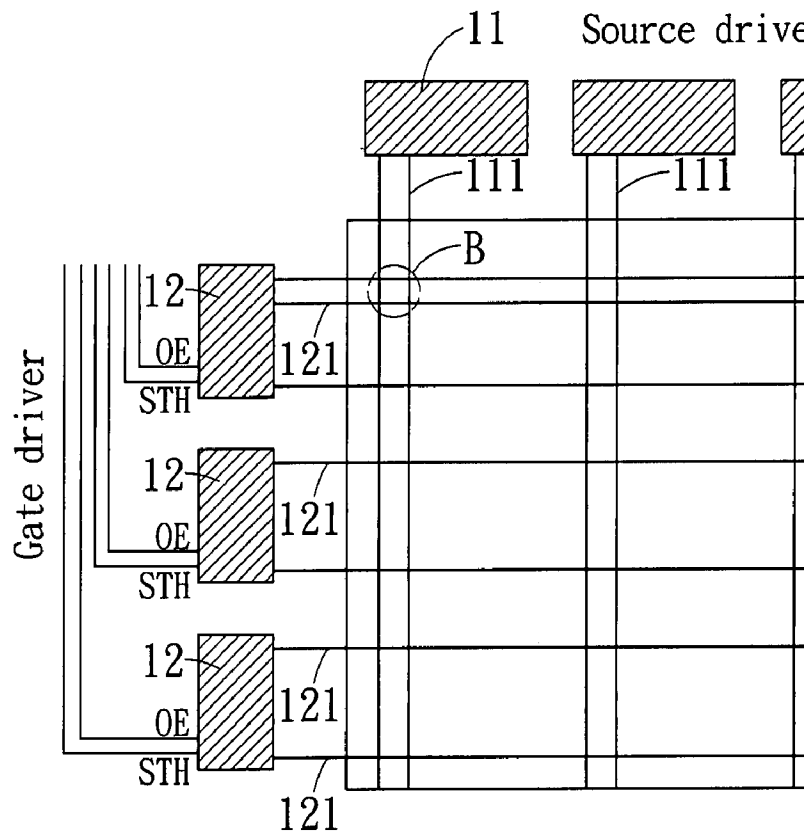


Fig. 1A (Prior Art)

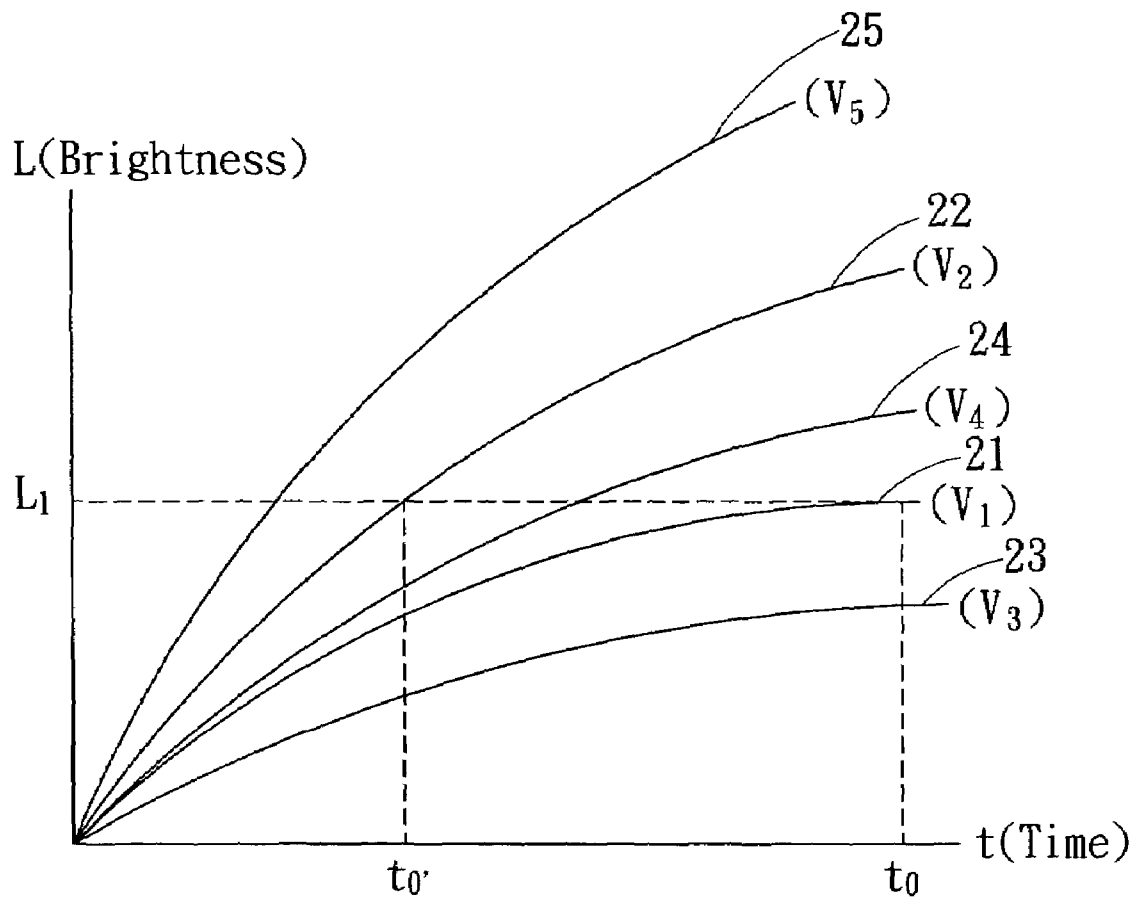


Fig. 2 (Prior Art)

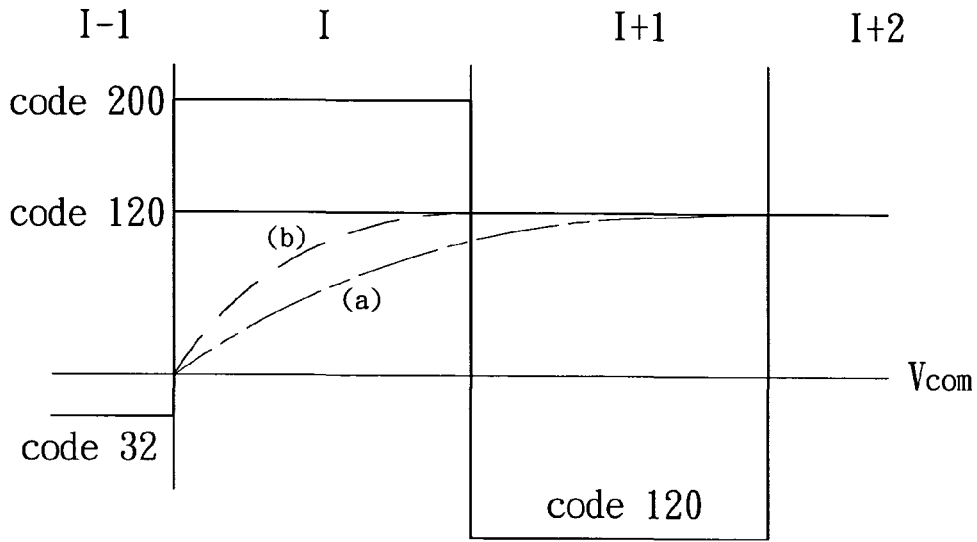


Fig. 3A (Prior Art)

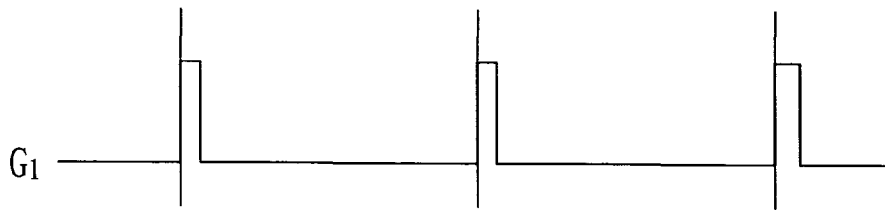


Fig. 3B (Prior Art)

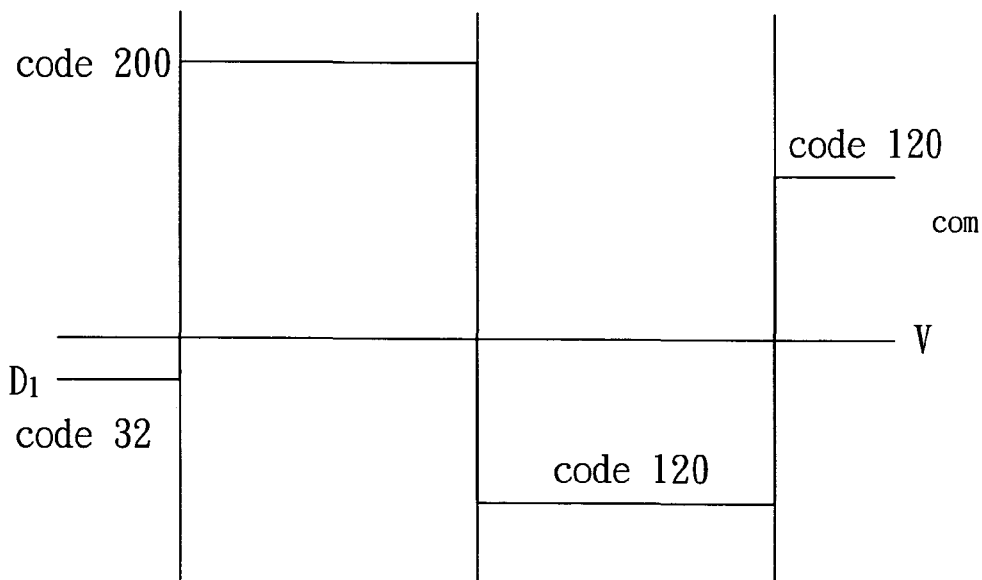


Fig. 3C (Prior Art)

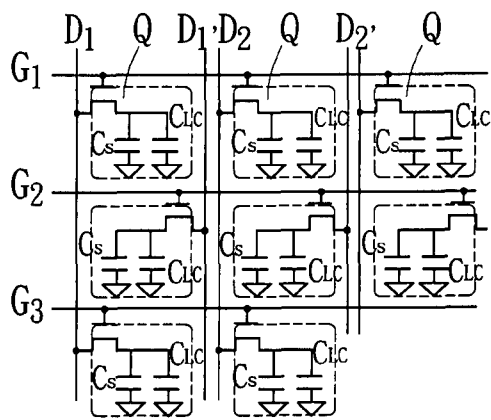


Fig. 4B

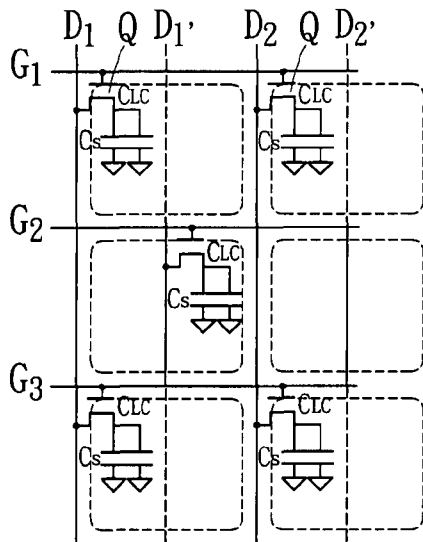


Fig. 4C

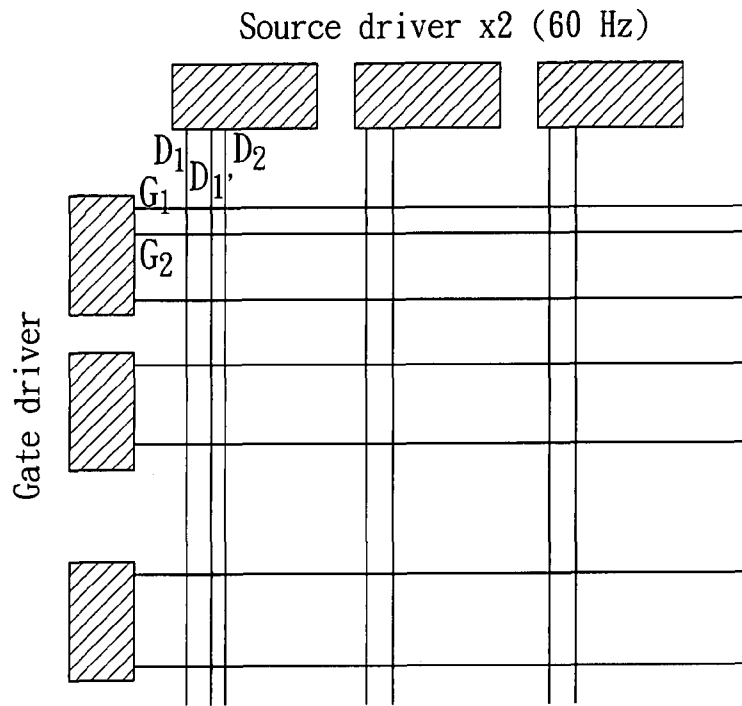


Fig. 4A

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