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United States Patent [19] Ge et al.

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- [54] **COLOR FLUORESCENT LIQUID CRYSTAL DISPLAY**
- [75] Inventors: **Shichao Ge, Santa Clara; Jemm Liang, San Jose, both of Calif.**
- [73] Assignee: **Panocorp Display Systems, Sunnyvale, Calif.**
- [21] Appl. No.: **245,454**
- [22] Filed: **May 18, 1994**

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Primary Examiner—Jeffery Brier
Attorney, Agent, or Firm—Majestic, Parsons, Siebert & Hsue

Related U.S. Application Data

- [63] Continuation of Ser. No. 812,730, Dec. 23, 1991, abandoned.
- [51] Int. Cl.⁶ **G09G 3/36**
- [52] U.S. Cl. **345/102; 345/75; 345/5**
- [58] Field of Search **345/4, 5, 74, 75, 102**
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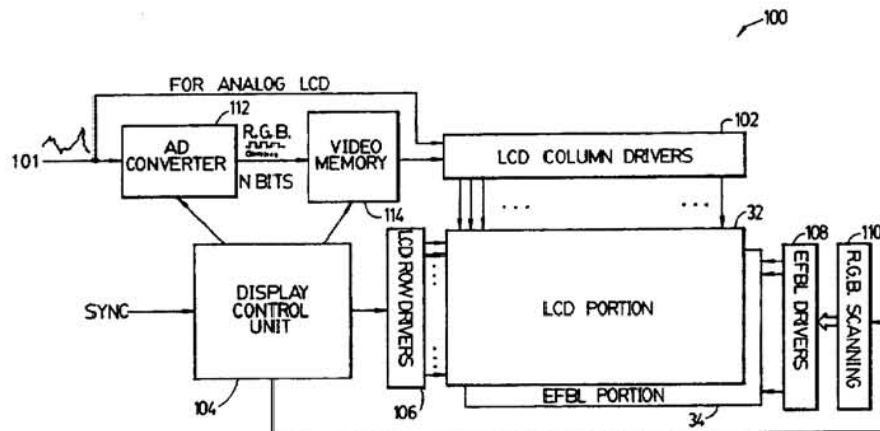
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[57] ABSTRACT

An electronic fluorescent device (EFD) is used as the back light source for a black/white LCD. Where the EFD provides red, green and blue light, the LCD displays multi-color or full-color images. The EFD includes a number of cathodes disposed in a vacuum chamber, an anode, phosphor strips near the anode, and grid electrodes for controlling the timing of the light generation and sequential color addressing. The control system may be such that the transmission rate of the LCD is proportional to the amplitude of the input signal forming an analog system; the EFD then simply provides sequential red, green and blue light pulses of constant intensity. Alternatively, selected pixels of the LCD may be addressed digitally to be either on or off, and the intensities of the red, green and blue pulses provided by the EFD are varied. In both instances, full scale gray tone monochromatic, multi-color or full-color images can be achieved.

40 Claims, 12 Drawing Sheets



SHARP EXHIBIT 1012

Sharp Corp. et al. v. Surpass Tech Innovation LLC

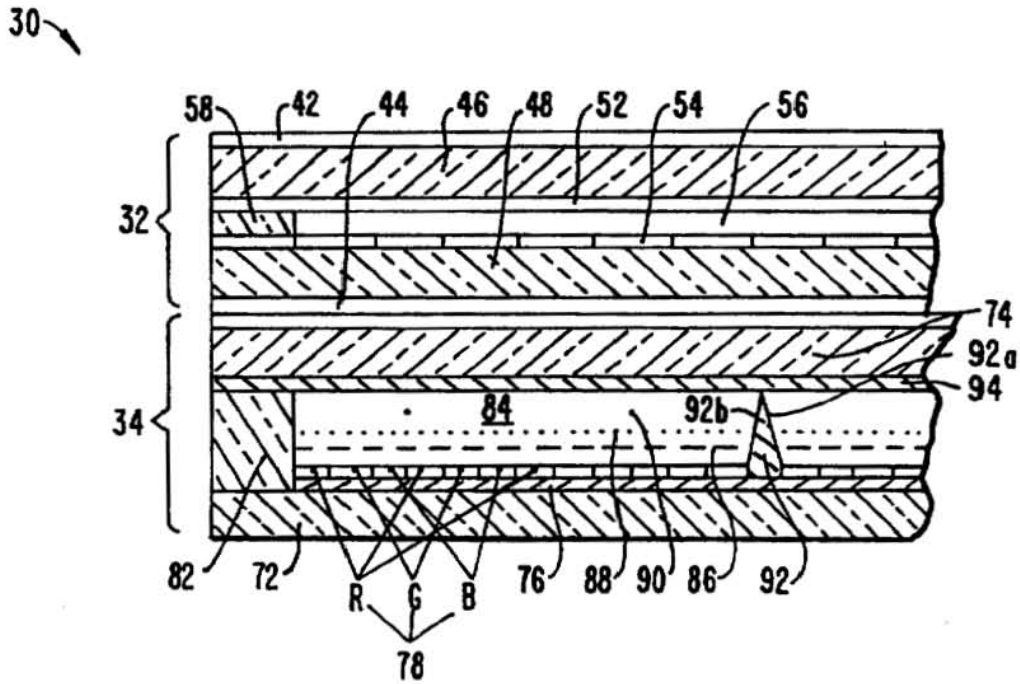


FIG. 1.

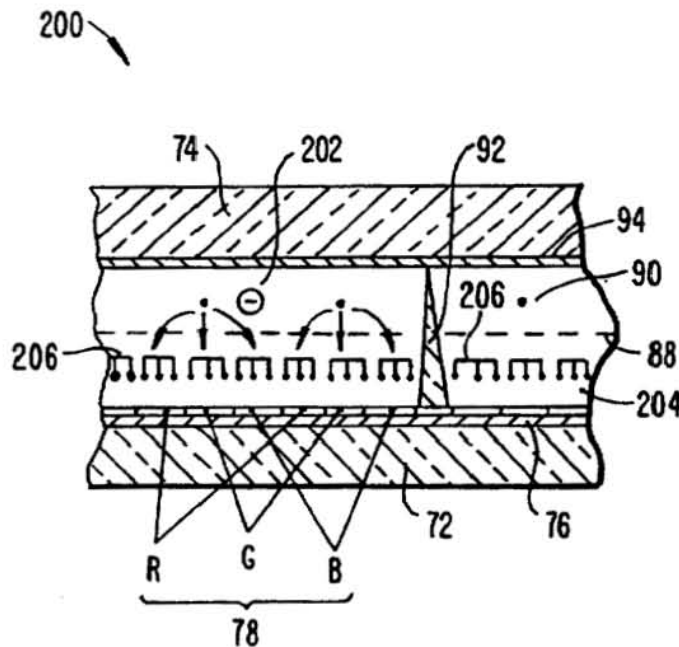


FIG. 5.

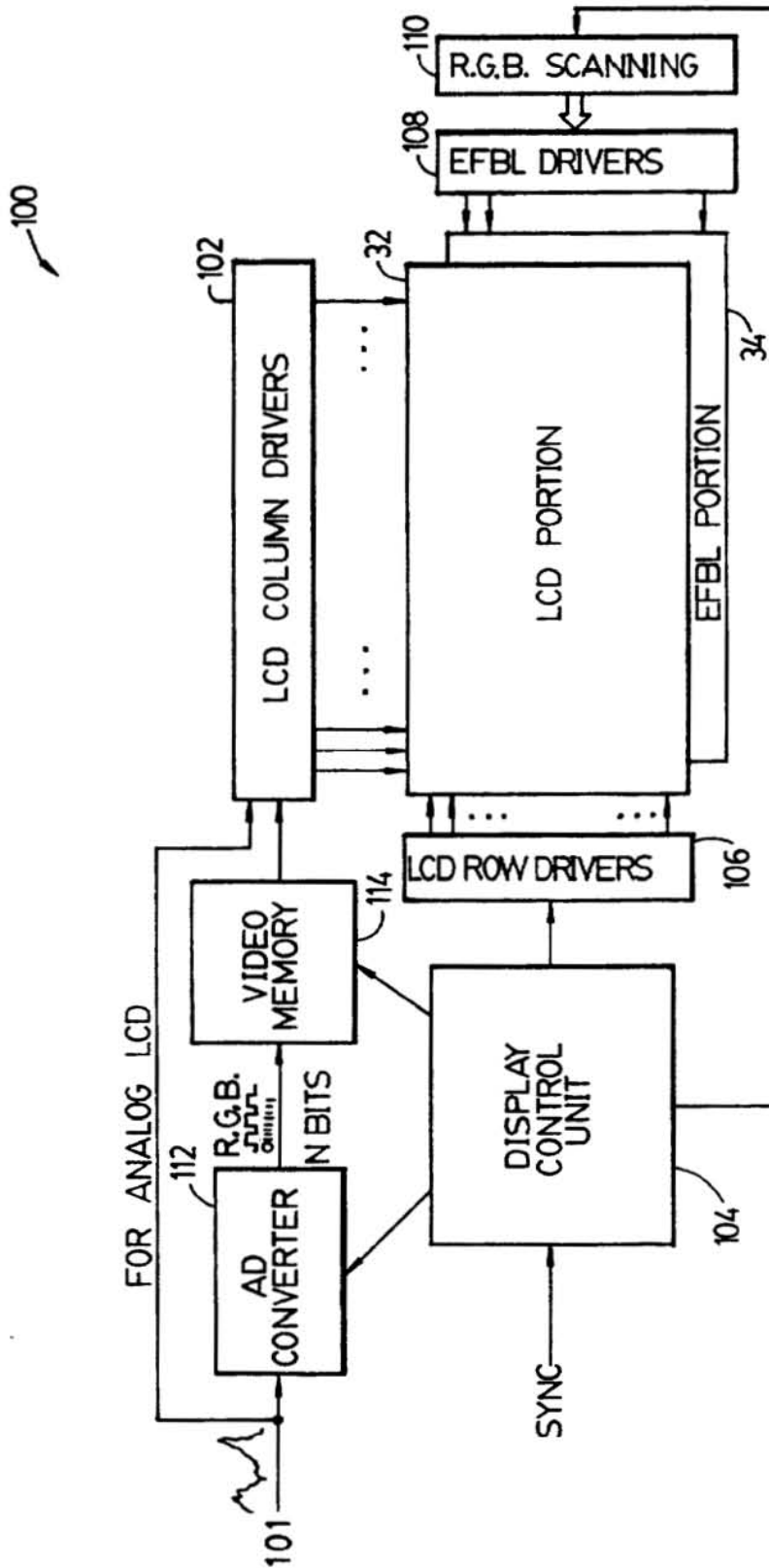


FIG. 2

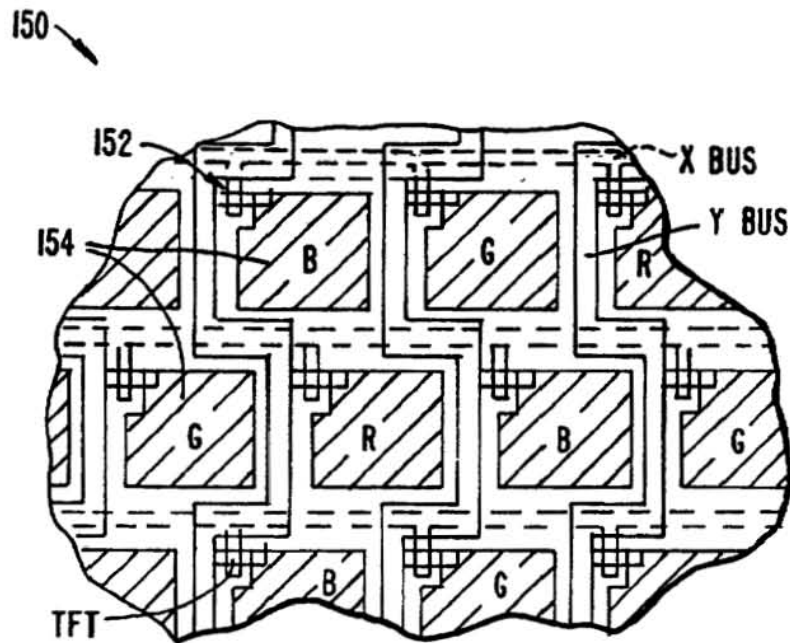


FIG. 3. PRIOR ART

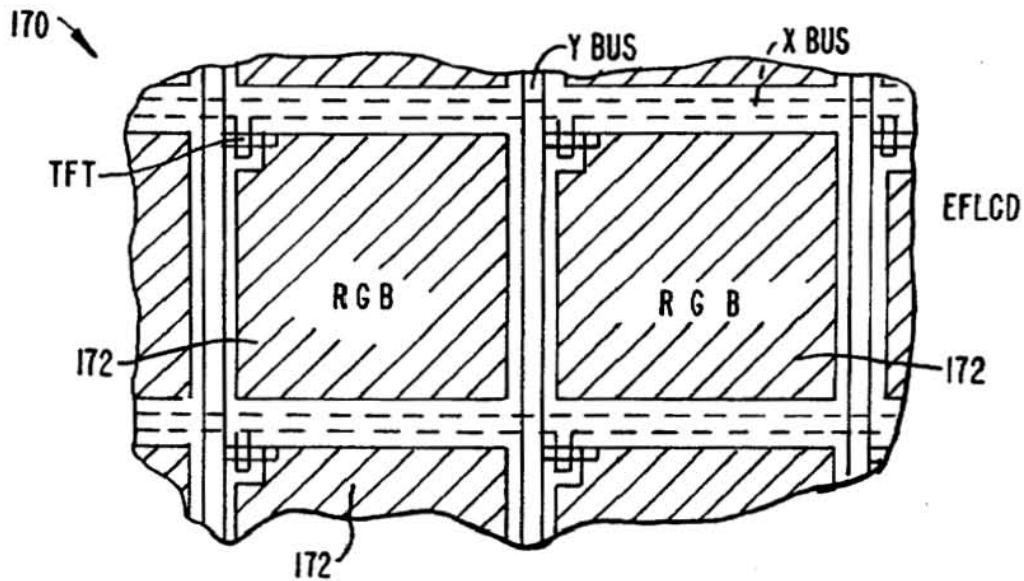


FIG. 4.

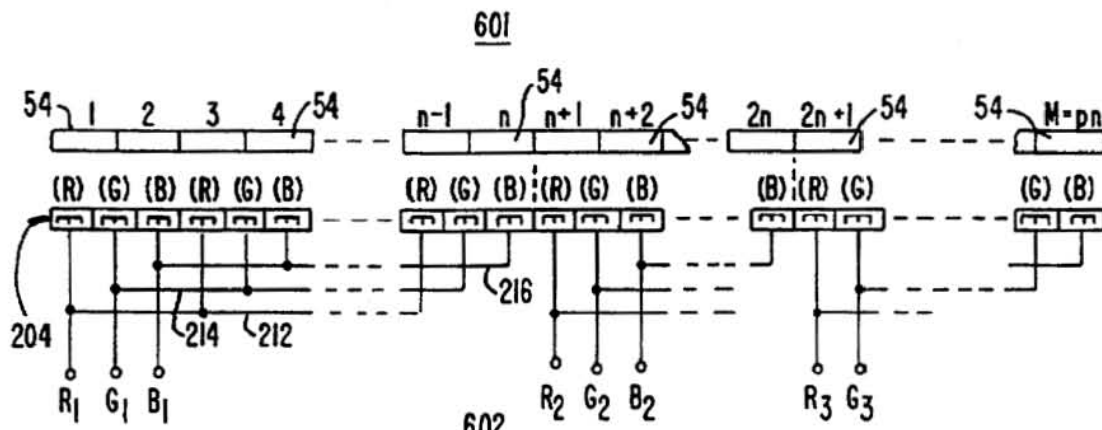


FIG. 6.

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