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United States Patent [19]

Kalt

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[54] **ELECTROSTATIC VIDEO DISPLAY DRIVE CIRCUITRY AND DISPLAYS INCORPORATING SAME**

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Related U.S. Application Data

[63] Continuation-in-part of application No. 08/871,486, Jun. 9, 1997, abandoned, which is a continuation-in-part of application No. 08/681,606, Jul. 29, 1996, Pat. No. 5,638,084, which is a continuation of application No. 08/228,111, Apr. 15, 1994, abandoned, which is a continuation-in-part of application No. 08/066,949, May 24, 1993, Pat. No. 5,519,565.

[51] **Int. Cl.**[7] **G09G 3/00**

[52] **U.S. Cl.** **345/58**; 345/85; 345/31; 359/230

[58] **Field of Search** 345/31, 85, 58, 345/84, 87, 94, 95, 96, 208–210; 361/280–281; 359/227, 230; 340/825.79, 825.71; 313/459, 511

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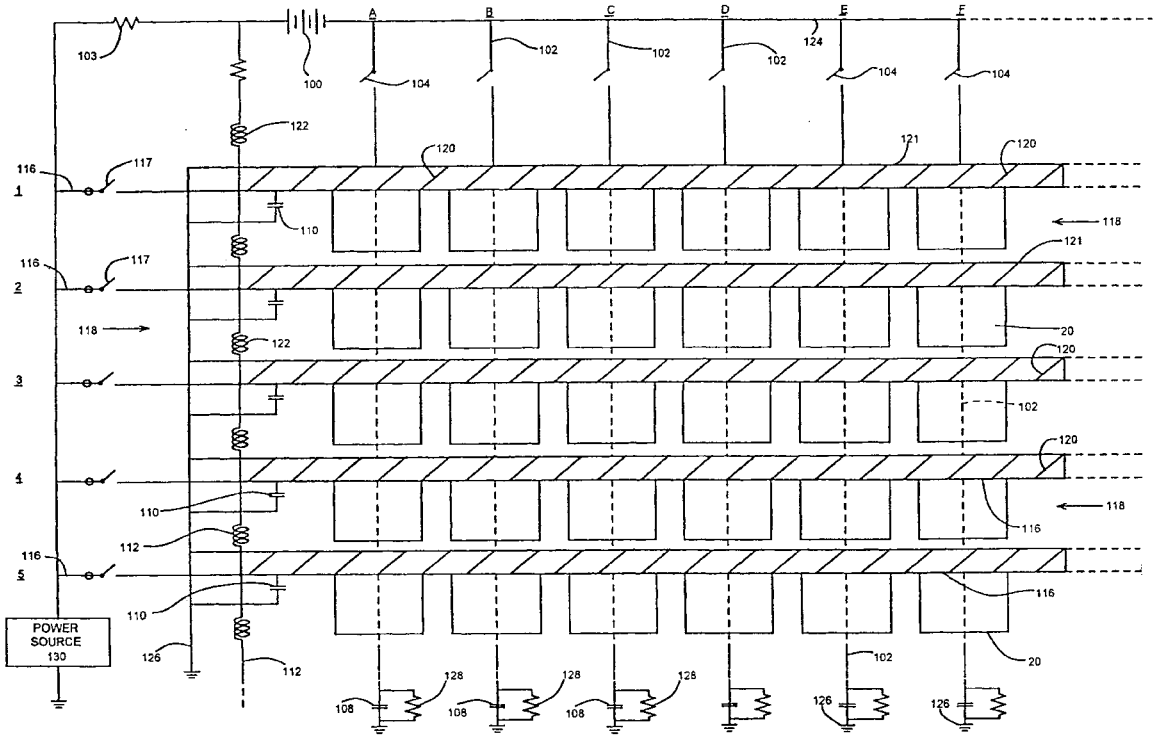
[57] **ABSTRACT**

Disclosed are cross-talk resistant drive circuitry for electrostatic video displays and flexible, foldable and shaped embodiments of such displays including books, fanfolds and scrolls employing flexible polymer film construction. Transitorless drive circuitry uses row and column dumping capacitors to charge electrostatic pixels in a traveling group to avoid simultaneously charging row-adjacent pixels. Also, individual pixels can be shielded each with their own Faraday cage to control charge leakage from the pixel. The pixels' have spiral rollout shutters whose time parameters can be controlled by the use of suitable bleed resistors. Low-cost film technology manufacturing methods are also described.

16 Claims, 8 Drawing Sheets