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**United States Patent** [19]  
**Ho et al.**

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[54] **METHOD AND APPARATUS FOR PARALLEL IN SERIAL OUT TRANSMISSION**

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[57] **ABSTRACT**

[21] Appl. No.: **08/820,291**

A method and apparatus for providing serial transmission of a parallel input is accomplished by a parallel input serial output transmitter that includes a shift register operably coupled to receive a parallel input and to provide data serially to a gating circuit. The gating circuit, based on the state of the data it receives, generates a drive signal which causes a switching circuit to route current from a first current source to a second current source over different paths to produce a serial output. A bias circuit is coupled to the switching circuit to bias the serial output to a desired level.

[22] Filed: **Mar. 18, 1997**

[51] **Int. Cl.**<sup>6</sup> ..... **G09G 3/36**

[52] **U.S. Cl.** ..... **345/98; 345/100; 345/197**

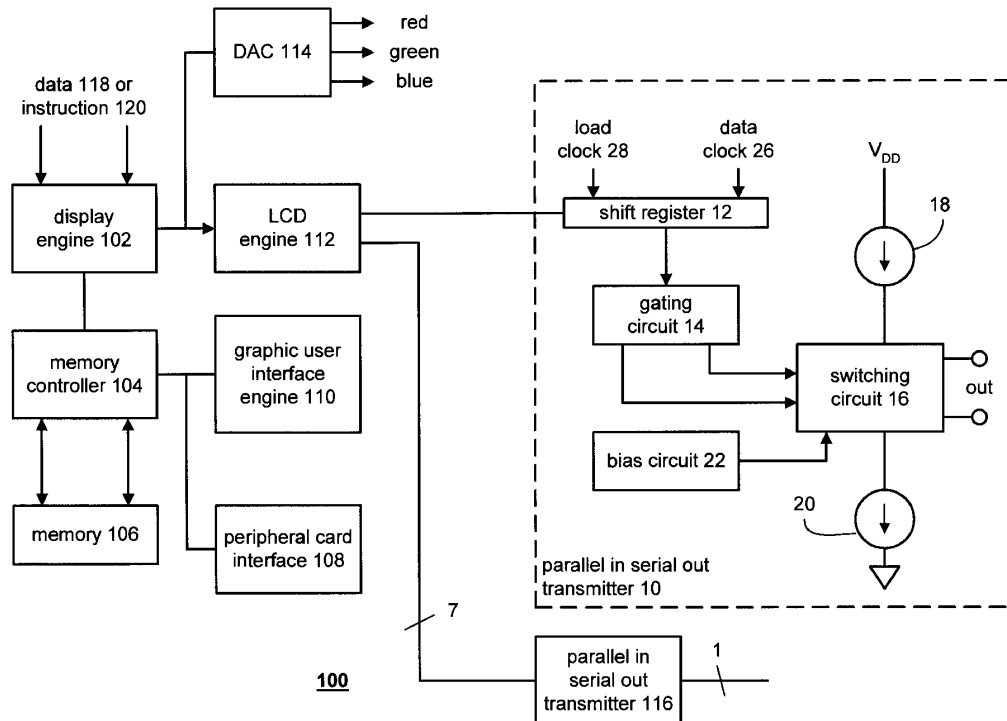
[58] **Field of Search** ..... 345/98, 100, 101, 345/211, 197, 198

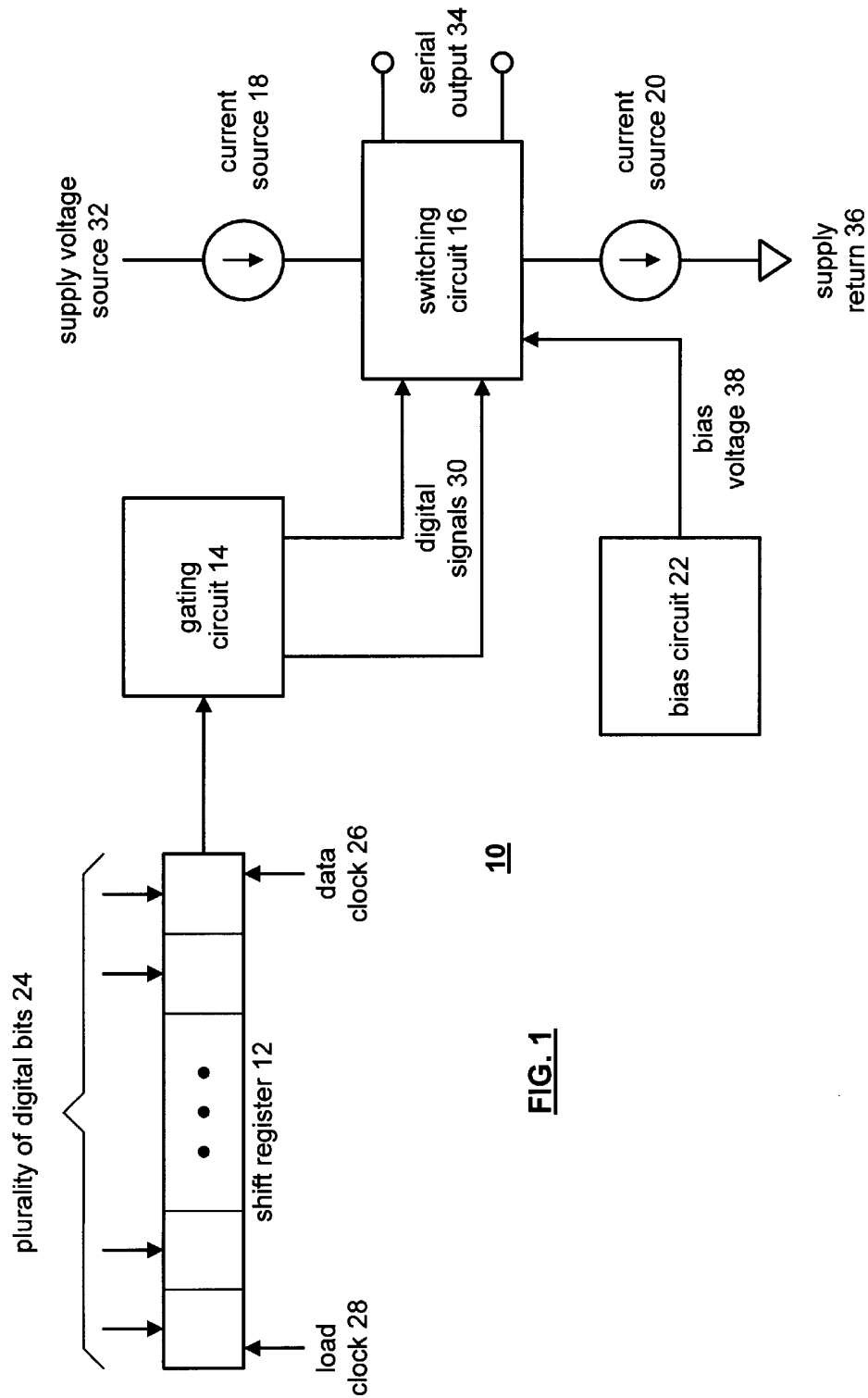
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**12 Claims, 4 Drawing Sheets**





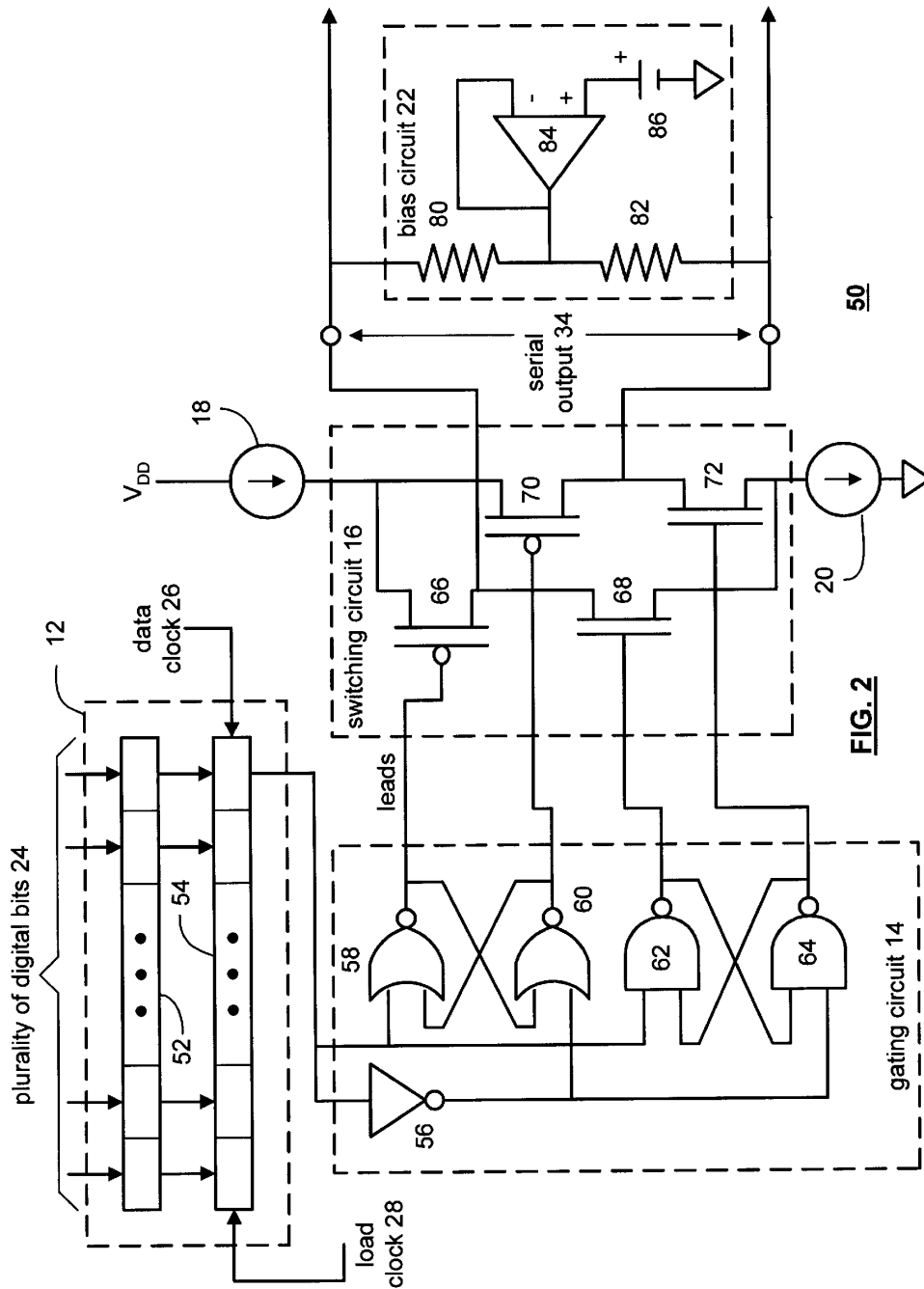


FIG. 2

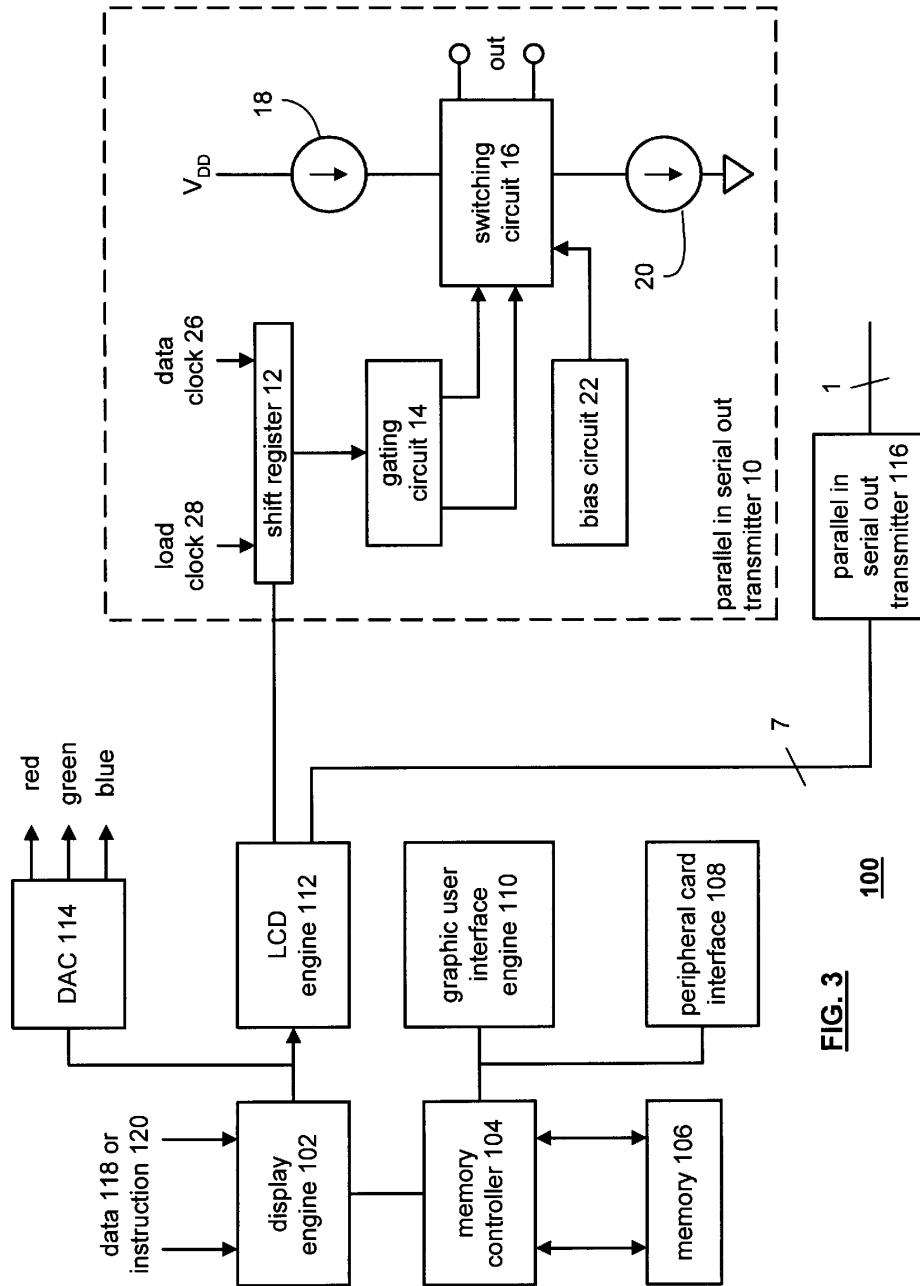
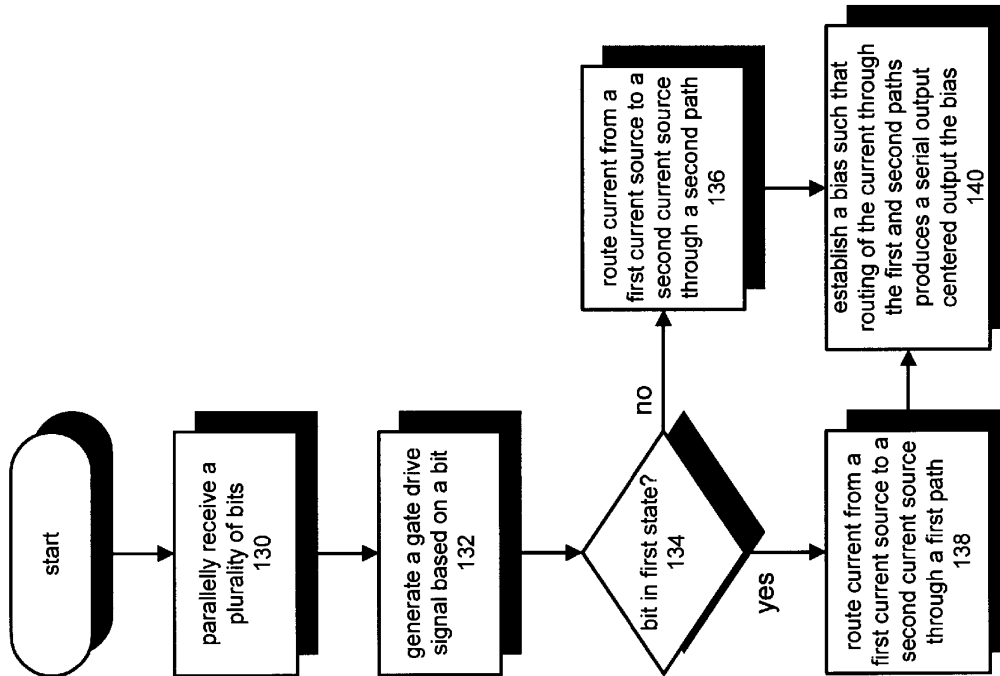


FIG. 3



**FIG. 4**

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