

United States Patent [19]**Watanabe et al.**[11] **Patent Number:** **5,504,601**[45] **Date of Patent:** **Apr. 2, 1996**

[54] **LIQUID CRYSTAL DISPLAY APPARATUS
WITH GAP ADJUSTING LAYERS LOCATED
BETWEEN THE DISPLAY REGION AND
DRIVER CIRCUITS**

[75] Inventors: **Yoshihiro Watanabe**, Yokohama;
Hiroki Nakamura, Chigasaki; **Takako
Sugawara**, Kawasaki, all of Japan

[73] Assignee: **Kabushiki Kaisha Toshiba**, Kawasaki,
Japan

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[52] U.S. Cl. **359/59; 359/80; 359/81**

[58] Field of Search **359/81, 82, 83,
359/59, 80**

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Primary Examiner—Anita Pellman Gross

Assistant Examiner—Walter J. Malinowski

Attorney, Agent, or Firm—Oblon, Spivak, McClelland,
Maier & Neustadt

[57] **ABSTRACT**

An object is to provide a liquid crystal display apparatus with an equal gap between two substrates so as to improve display image quality and display contrast. To accomplish this object, substrate gap adjusting region **33** or substrate gap adjusting layers **21, 22, 25, 27, 29**, and **31** are formed so that the substrate gap in a region extending from a display region having pixel electrodes **7** to a driver circuit **11** is kept equal to the substrate gap in a region extending from the display region to a driver circuit **15**. Thus, the gap between the two opposed substrates forming liquid crystal cells can be kept equal in any position.

8 Claims, 10 Drawing Sheets

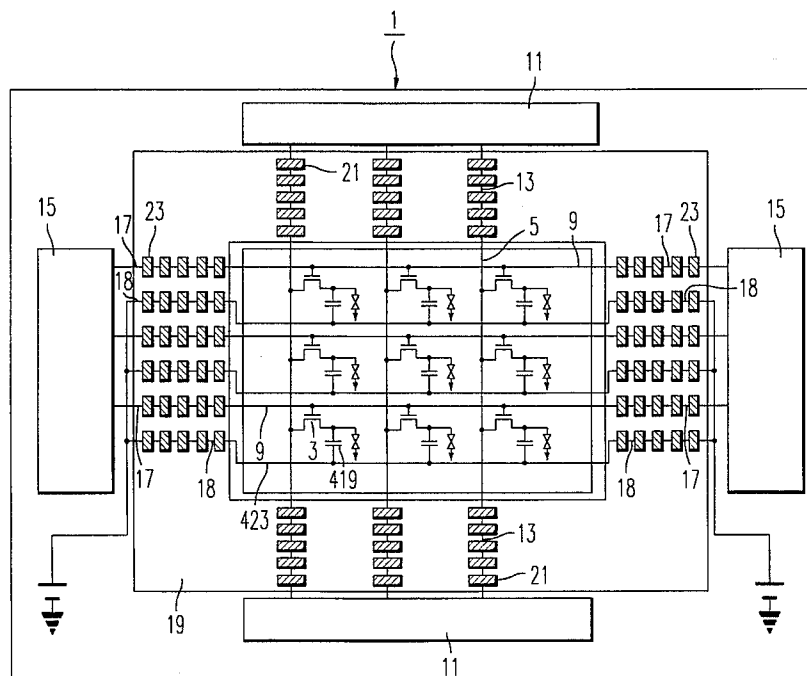
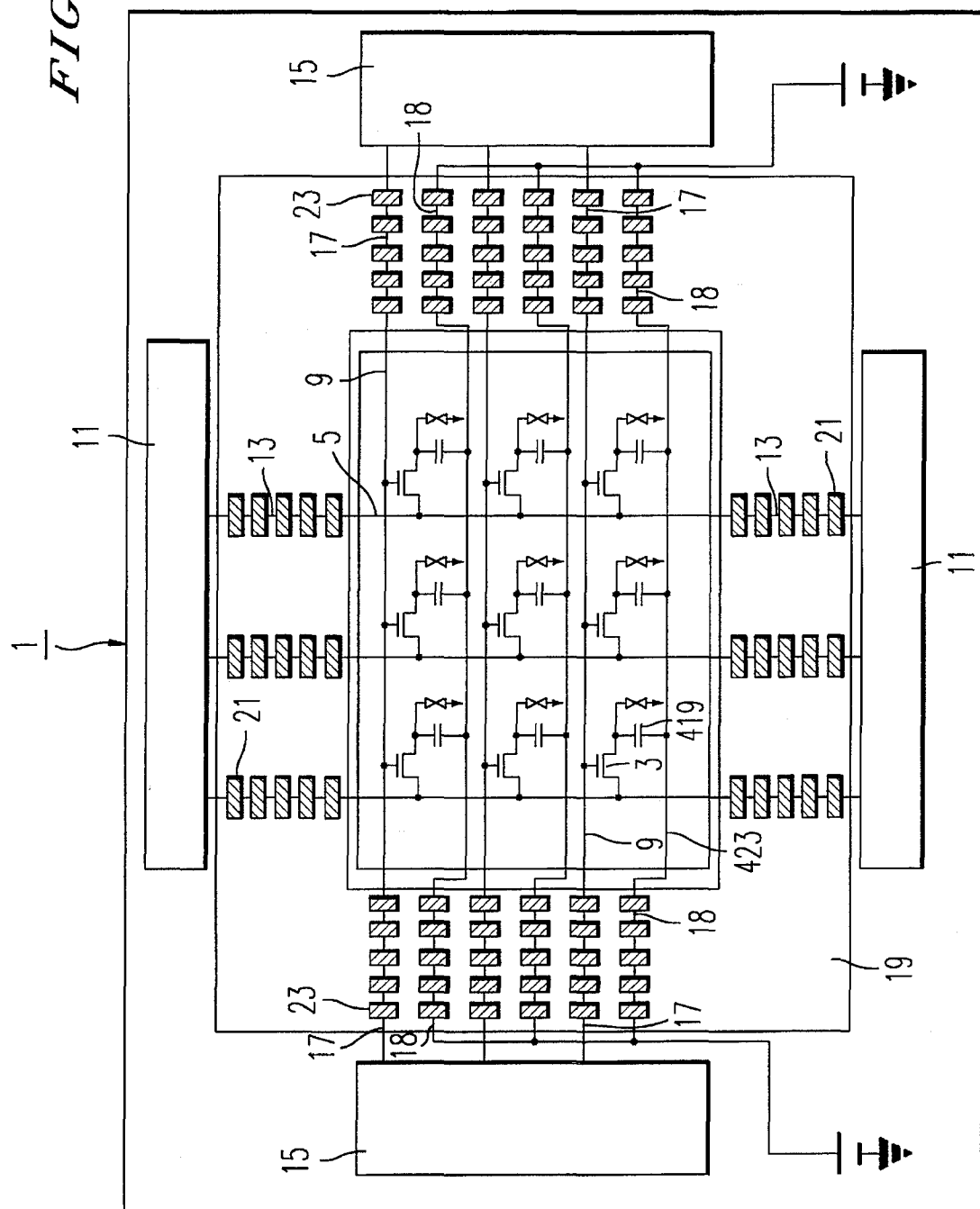
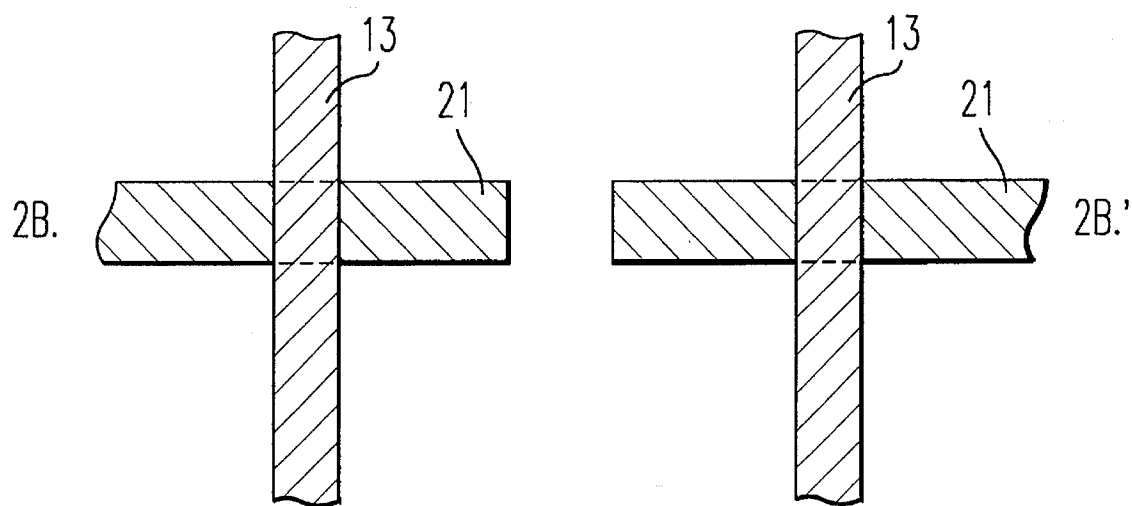
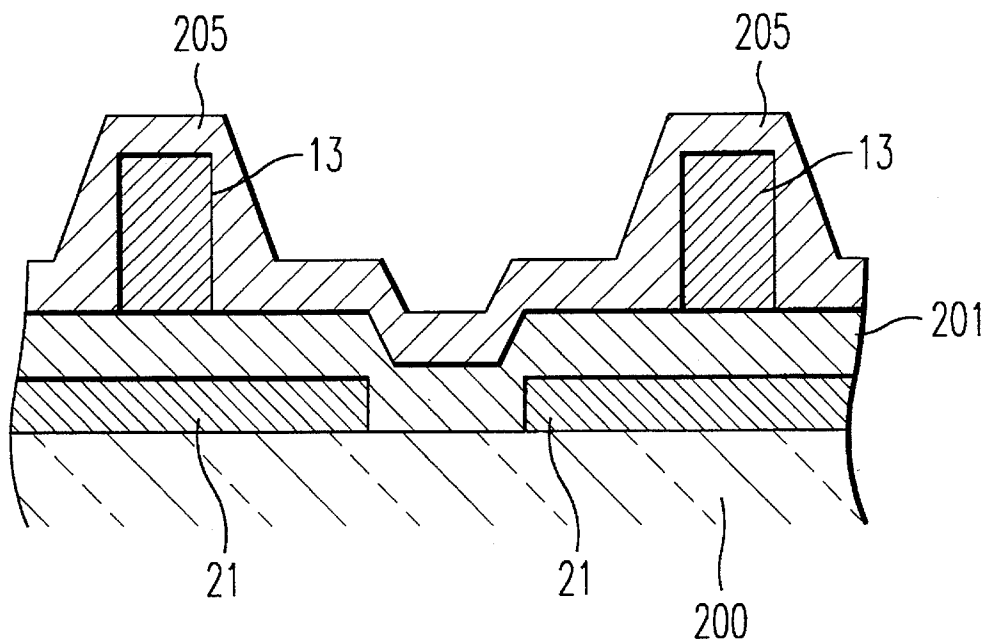
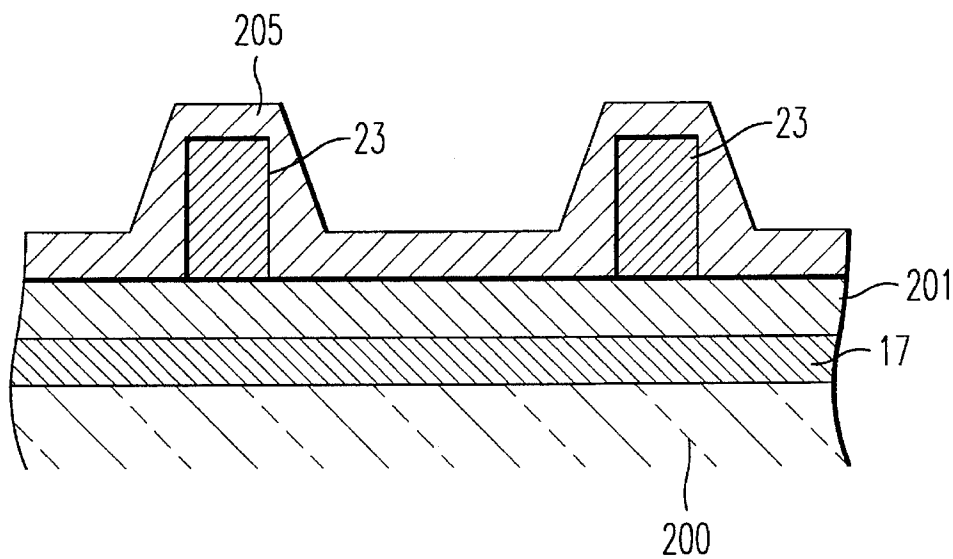
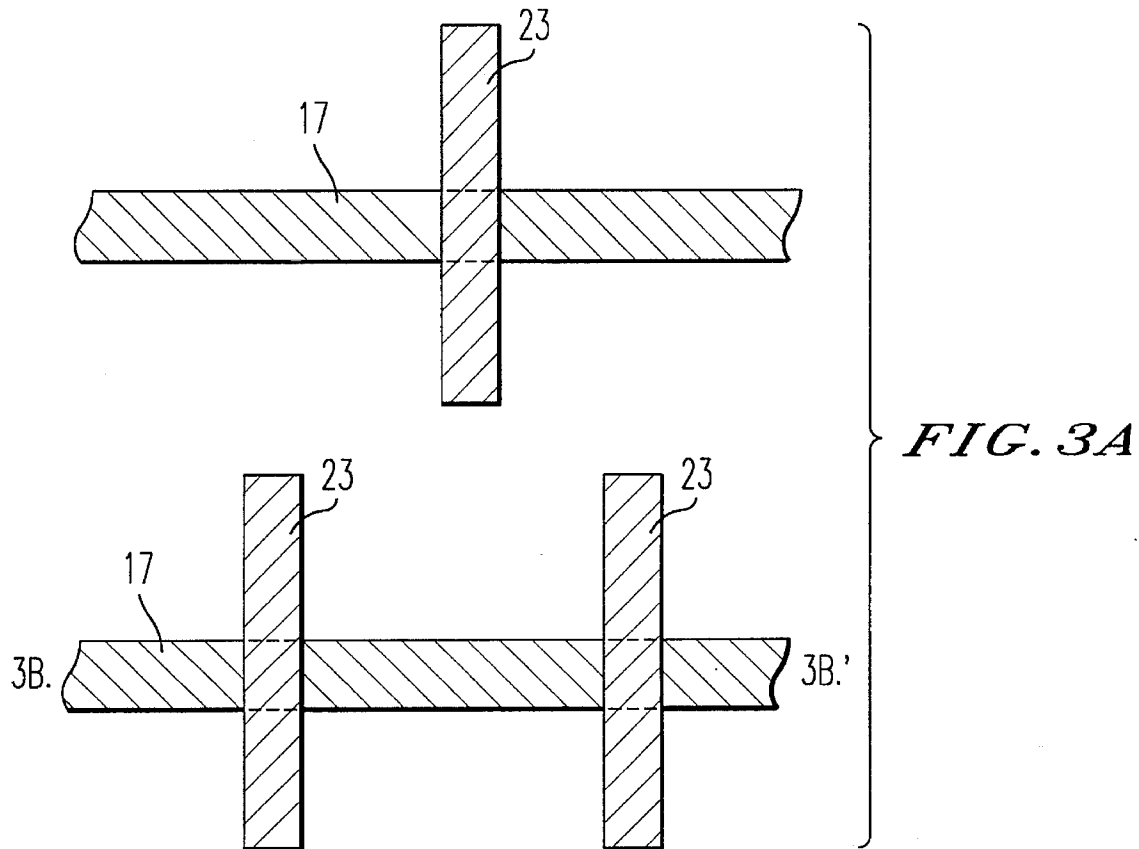
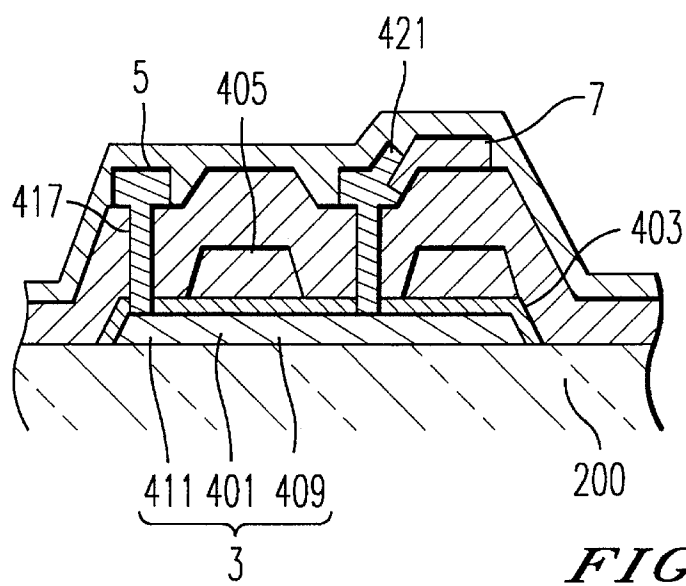
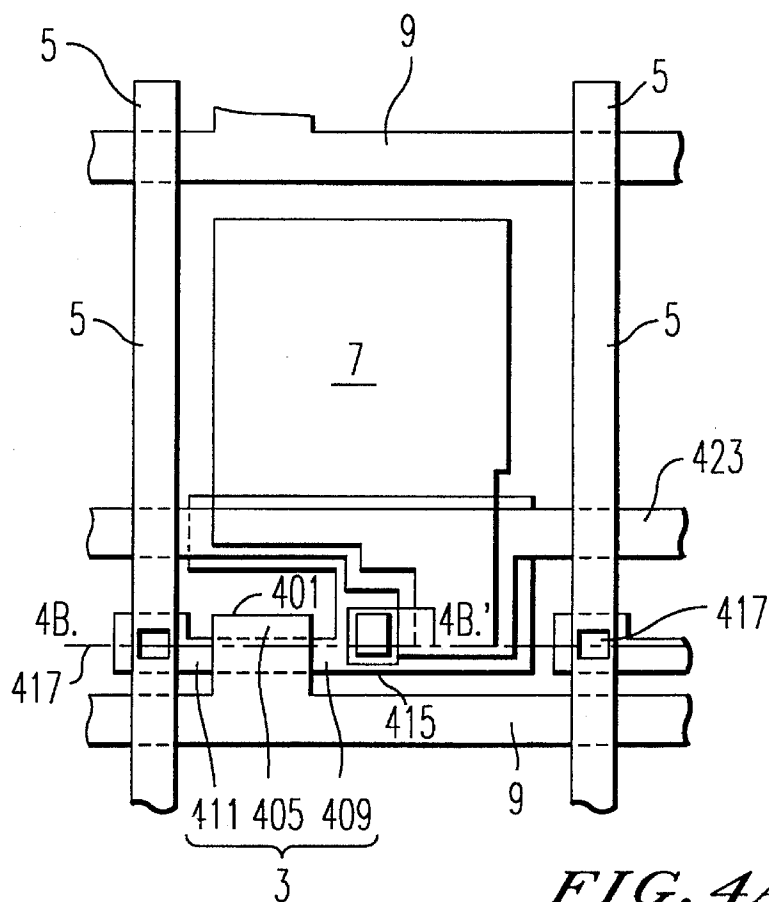


FIG. 1



*FIG. 2A**FIG. 2B*

*FIG. 3B*



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