

Petitioner Bluehouse Global Ltd.

Ex. 1005



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(12) **United States Patent**
Morimoto et al.

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(54) **LIQUID CRYSTAL DISPLAY DEVICE**

(56) **References Cited**

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Junji Tanno, Chiba (JP)

U.S. PATENT DOCUMENTS
6,747,712 B2 * 6/2004 Noh et al. 349/39

(73) Assignees: **Hitachi Displays, Ltd.**, Chiba (JP);
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FOREIGN PATENT DOCUMENTS
JP 07-325287 12/1995
JP 2000-162627 6/2000
JP 2007-017619 1/2007

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 482 days.

* cited by examiner

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(21) Appl. No.: **12/495,899**

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(22) Filed: **Jul. 1, 2009**

(57) **ABSTRACT**

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(30) **Foreign Application Priority Data**

Jul. 1, 2008 (JP) 2008-172426

(51) **Int. Cl.**
G02F 1/134 (2006.01)

(52) **U.S. Cl.** **349/38; 349/39; 349/139**

(58) **Field of Classification Search** 349/38,
349/39, 139

See application file for complete search history.

A liquid crystal display device includes pixels A and pixels B, wherein a width BB of the pixel B is smaller than a width AA of the pixel A. A pixel electrode formed in the pixel B is smaller than a pixel electrode formed in the pixel A in area and hence, capacitance formed between the pixel electrode and a counter electrode which is formed below the pixel electrode with an insulation film sandwiched therebetween becomes small. To eliminate this difference in capacitance, a first branch electrode and a second branch electrode are formed on the pixel electrode of the pixel B thus increasing capacitance between the pixel electrode and the counter electrode. Due to such a constitution, it is possible to prevent the deterioration of image quality attributed to imbalance of capacitance.

6 Claims, 4 Drawing Sheets

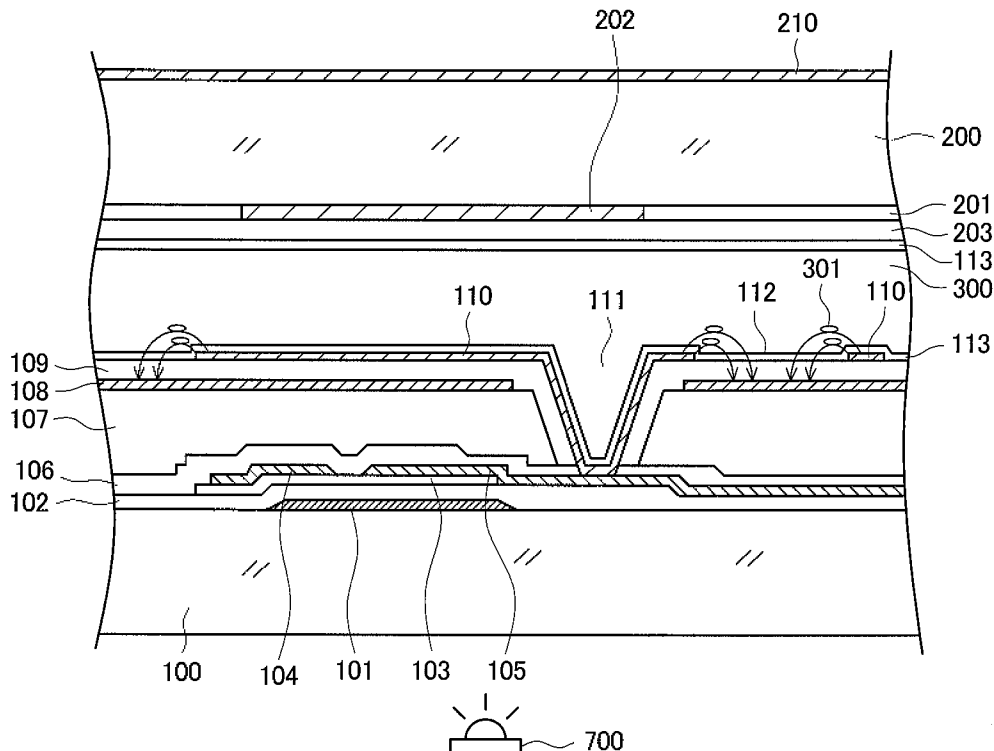


FIG. 1

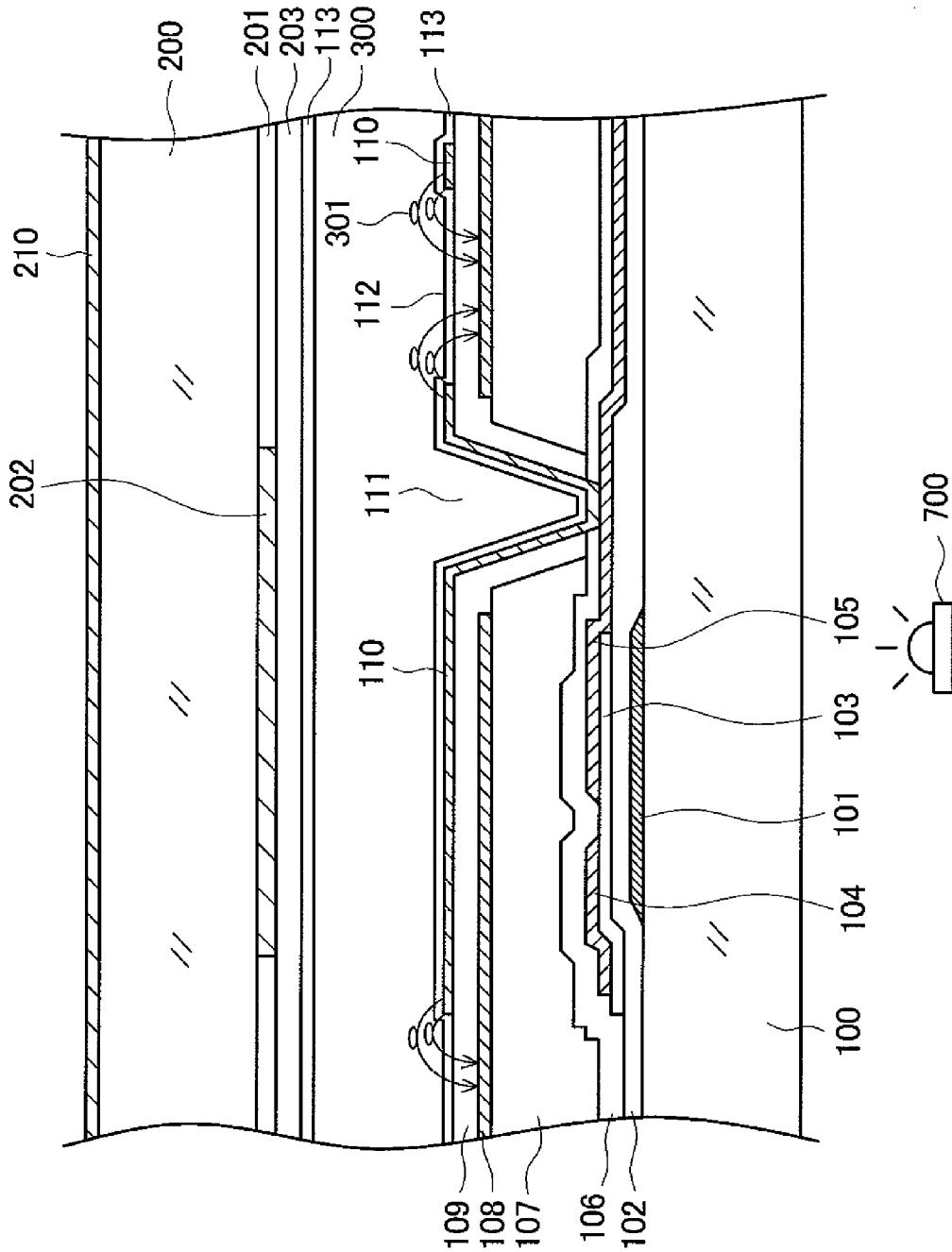


FIG. 2

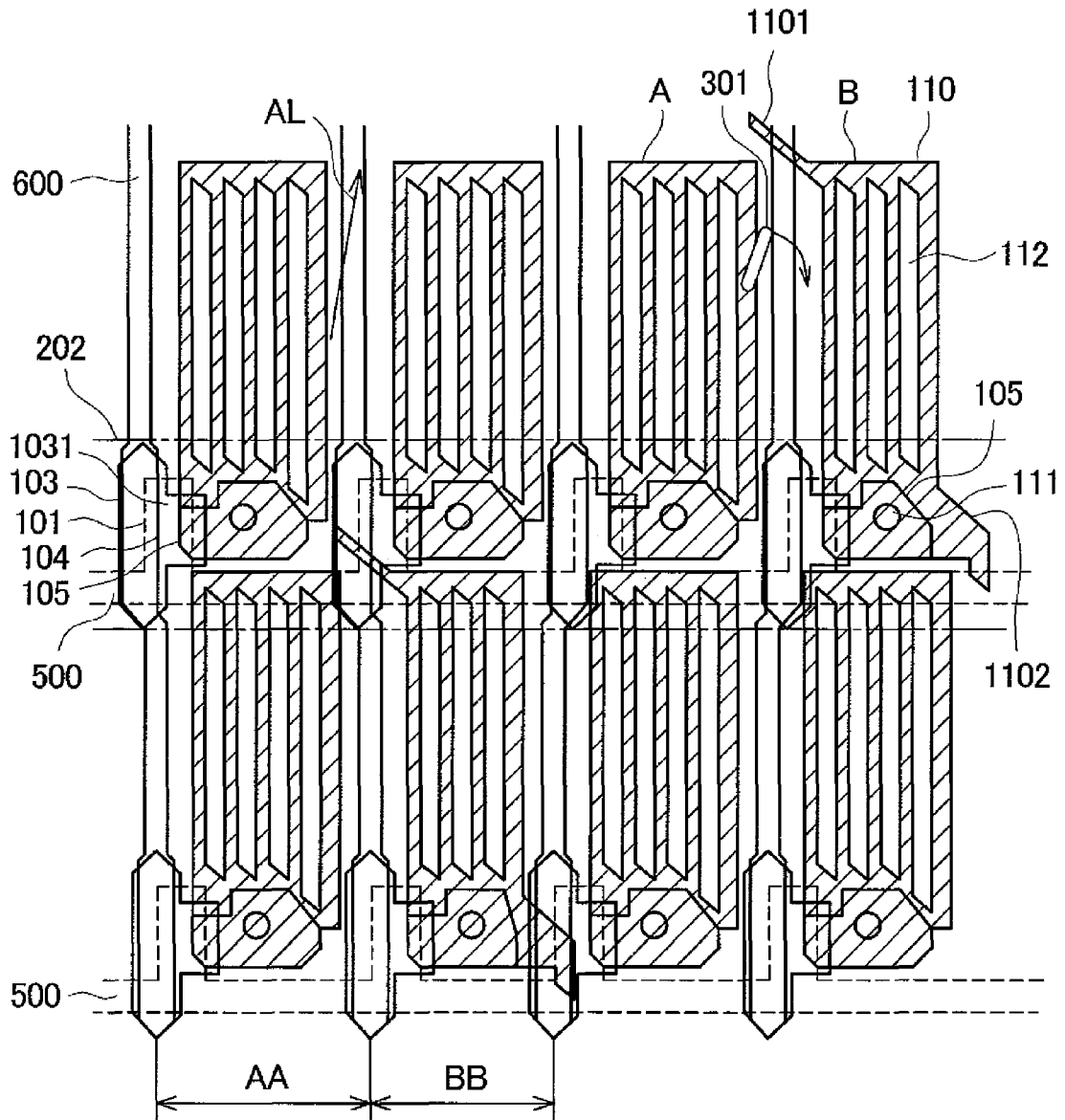
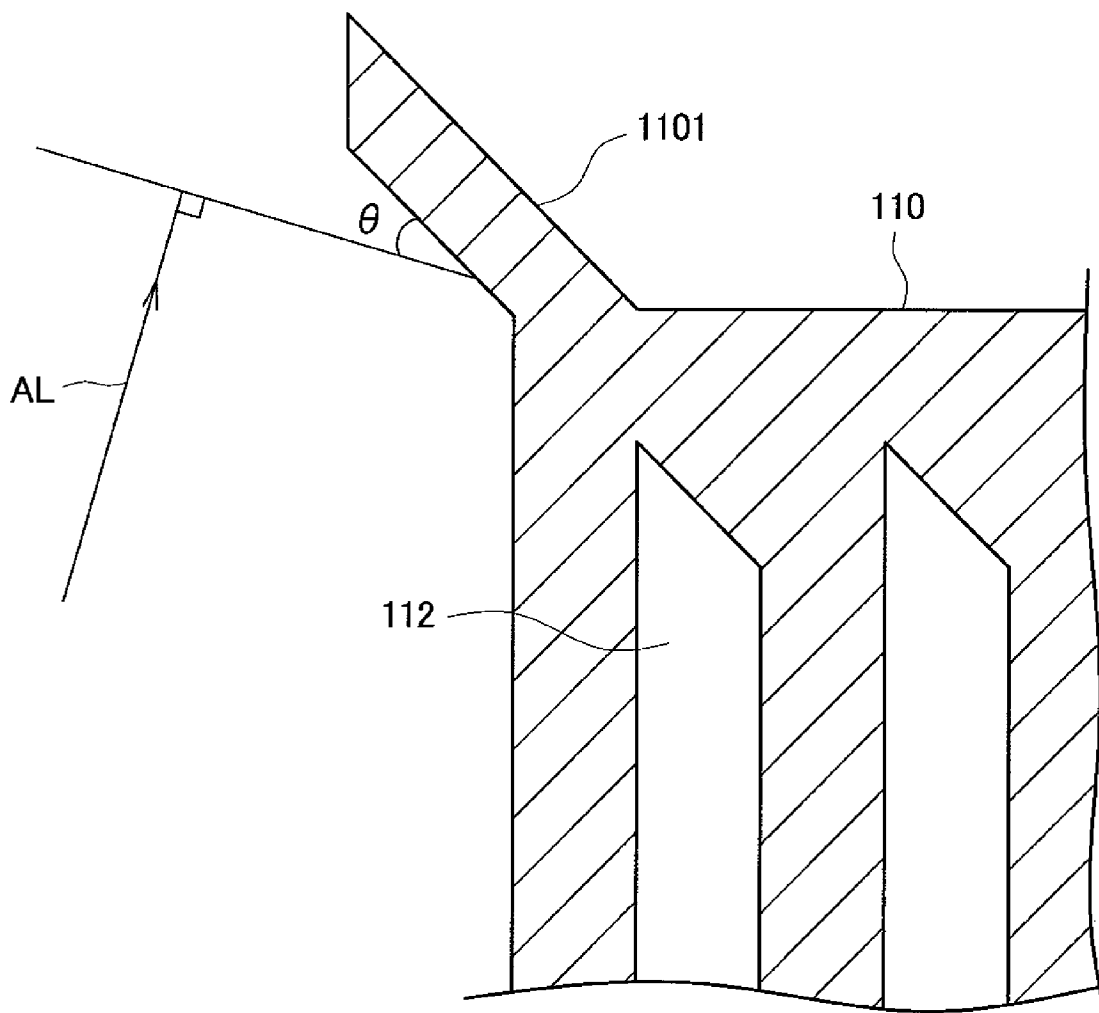


FIG. 3



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