

EXHIBIT 3

(12) **United States Patent**
Nakahata et al.(10) **Patent No.:** US 7,450,206 B2
(45) **Date of Patent:** Nov. 11, 2008(54) **LIQUID CRYSTAL DISPLAY DEVICE AND METHOD OF FABRICATING THE SAME**(75) Inventors: **Yuji Nakahata**, Kawasaki (JP); **Yoji Taniguchi**, Kawasaki (JP); **Tetsuya Fujikawa**, Kawasaki (JP)(73) Assignee: **Sharp Kabushiki Kaisha**, Osaka (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(65) **Prior Publication Data**

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Related U.S. Application Data

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(30) **Foreign Application Priority Data**Oct. 2, 2001 (JP) 2001-306906
May 10, 2002 (JP) 2002-136128(51) **Int. Cl.****G02F 1/1337** (2006.01)
G02F 1/1343 (2006.01)(52) **U.S. Cl.** 349/129; 349/39(58) **Field of Classification Search** 349/143,
349/129, 39, 38

See application file for complete search history.

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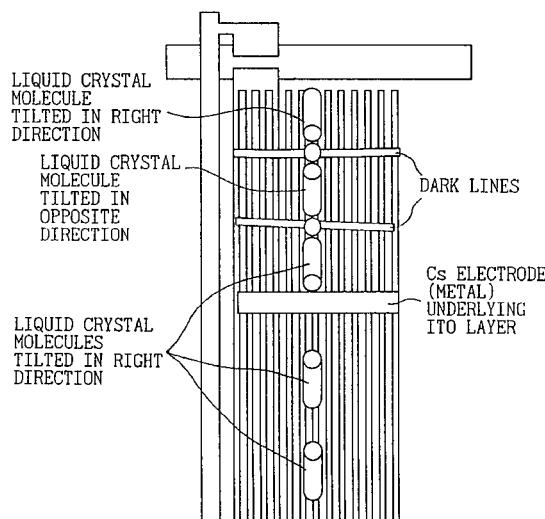
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Primary Examiner—James A Dudek(74) *Attorney, Agent, or Firm*—Greer, Burns & Crain, Ltd.(57) **ABSTRACT**

A liquid crystal display device including a pair of substrates with a liquid crystal layer sandwiched between the pair of substrates. The liquid crystal layer includes a photopolymerizable component mixed therein, and there is a pixel electrode formed on one of the substrates. The pixel electrode includes at least two pixel slit areas separated by a liquid crystal domain boundary area, wherein each of the pixel slit areas includes a plurality of generally parallel slits therein. Further, an additional electrode, having the same potential as the pixel electrode, is formed in at least a portion of the liquid crystal domain boundary area without extending into any of the pixel slit areas.

9 Claims, 43 Drawing Sheets

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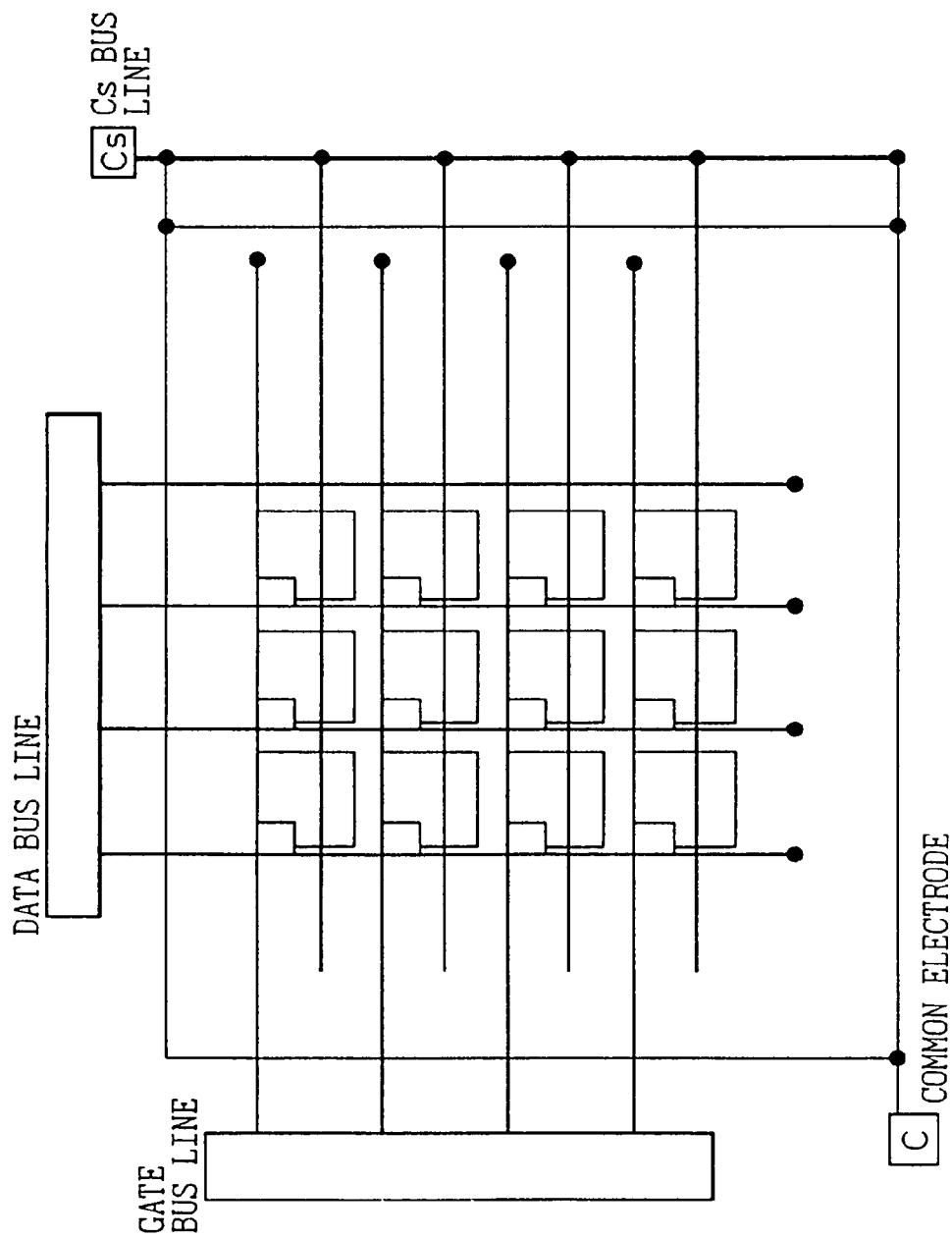
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Fig. 1



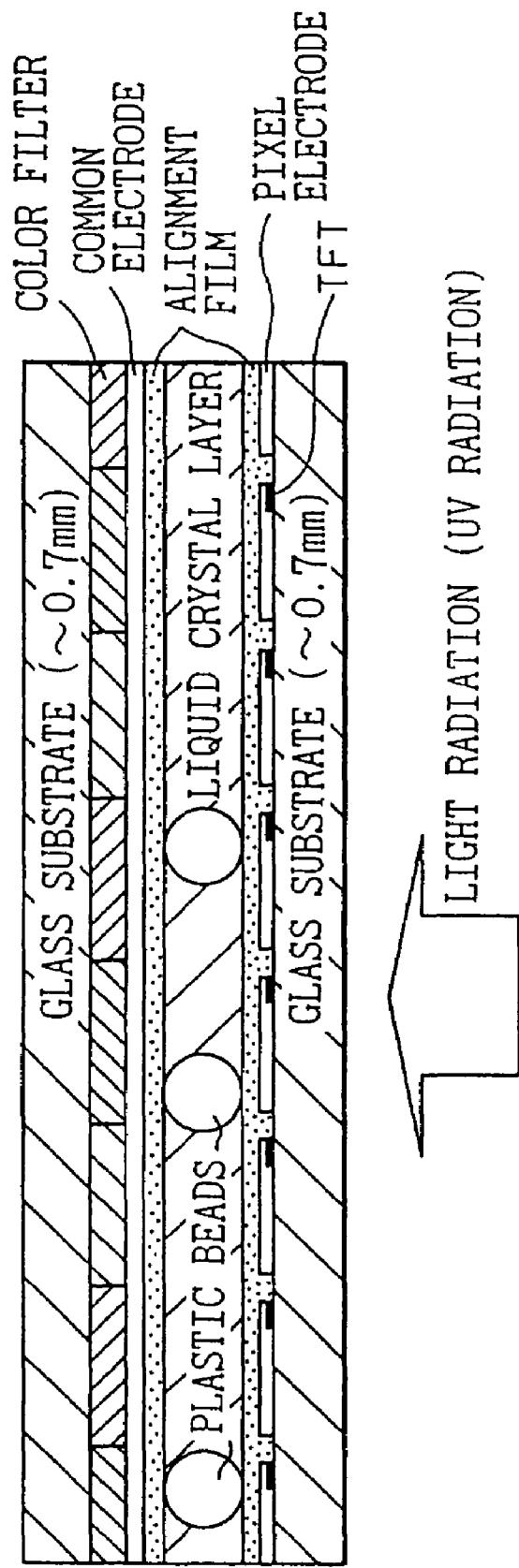
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Fig. 2



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