

SEL EXHIBIT NO. 2007

CMI CORP. v. PATENT OF YOSHIHARU HIRAKATA and
SHUNPEI YAMAZAKI

IPR 2013-00068



US005995189A

United States Patent [19] Zhang

[11] Patent Number: 5,995,189
[45] Date of Patent: Nov. 30, 1999

[54] LIQUID-CRYSTAL DISPLAY DEVICE
[75] Inventor: Hongyong Zhang, Kanagawa, Japan
[73] Assignee: Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

5,621,553 4/1997 Nishiguchi et al. 349/153
5,684,555 11/1997 Shiba et al. 349/149
5,745,208 4/1998 Grupp et al. 349/153

Primary Examiner—Tiep H. Nguyen
Attorney, Agent, or Firm—Fish & Richardson

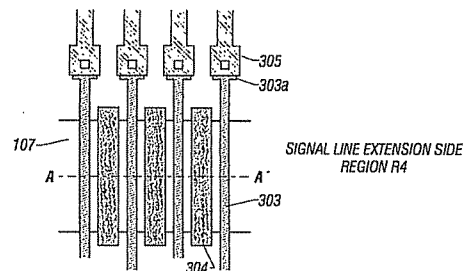
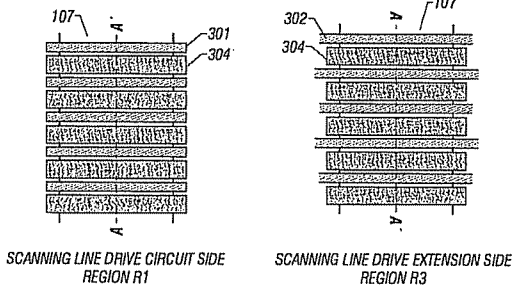
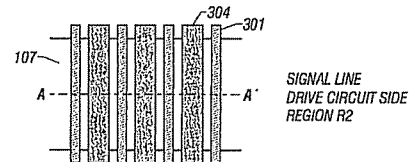
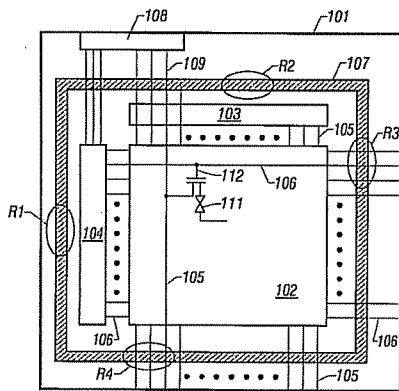
[21] Appl. No.: 08/768,066
[22] Filed: Dec. 16, 1996
[30] Foreign Application Priority Data
Dec. 21, 1995 [JP] Japan 7-350229
[51] Int. Cl.⁶ G02F 1/1339; G02F 1/1345;
G02F 1/1333
[52] U.S. Cl. 349/153; 349/151; 349/122;
345/206
[58] Field of Search 349/153, 151,
349/122, 152; 345/206

[57] ABSTRACT

The present invention related to unifying steps of sealing material so that the yield and the reliability of a liquid-crystal display device become high. A starting film of scanning lines is patterned so that prismatic dummy wirings 301 for the first layer which are not electrically connected are formed in regions R1 and R2, and wirings 302 extending from the pixel section are formed in a region R3, and wirings 303 having connection end portions 303a are formed in a region R4. After an interlayer insulation film is formed on those surface, the starting film of the signal lines is patterned so that the dummy wirings 304 for the second layer are formed to embed the gaps between the wirings 301 to 303, and also the wirings 305 and the wirings 303 which extend from the pixel portion are connected to each other. As a result, the cross-sectional structure along the line A-A' of the sealing material formation region 107 can be unified.

[56] References Cited
U.S. PATENT DOCUMENTS
5,148,301 9/1992 Sawatsubashi et al. 349/153
5,179,460 1/1993 Hinata et al. 349/149
5,396,356 3/1995 Fukuchi 349/153

23 Claims, 12 Drawing Sheets



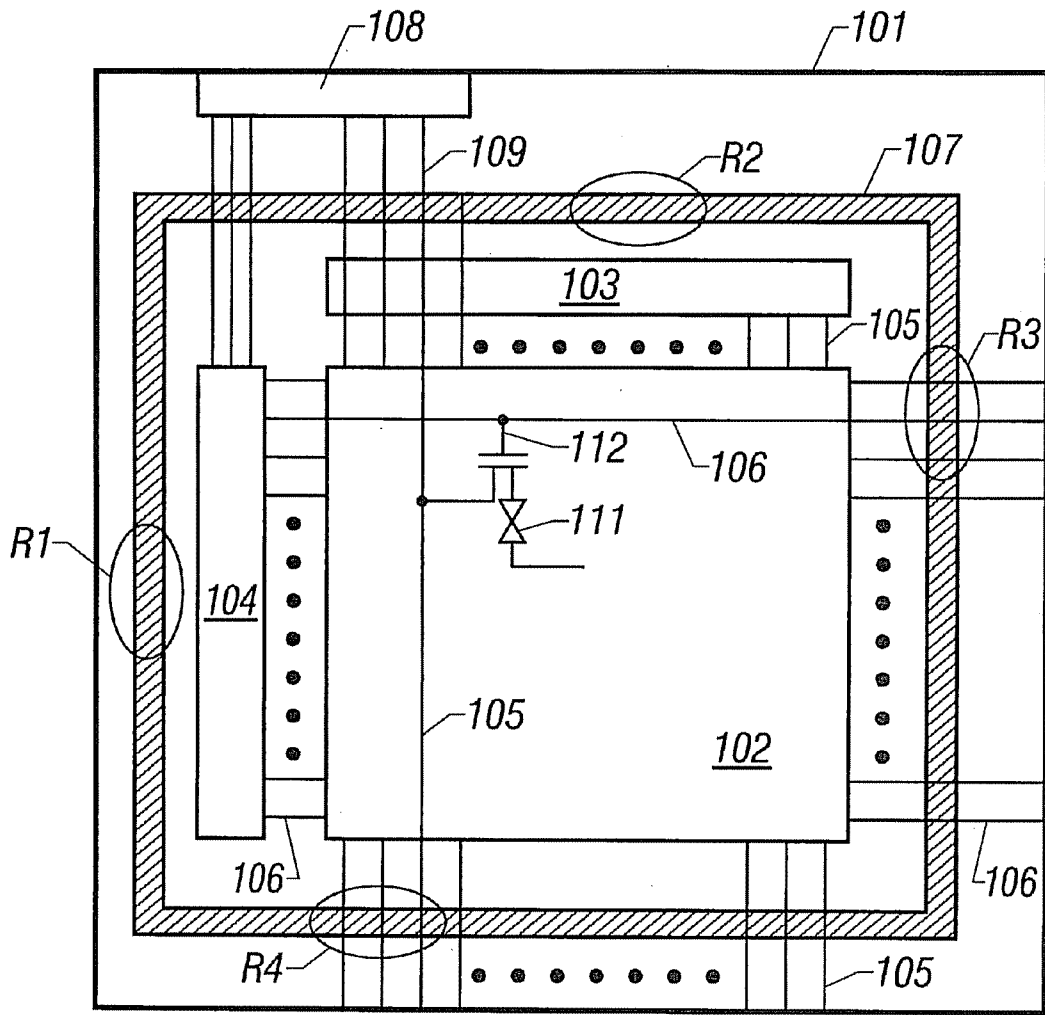


FIG. 1

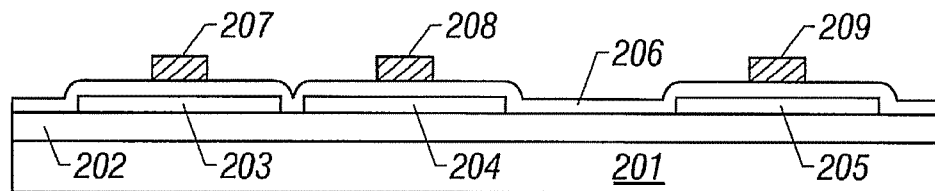


FIG. 2A

DRIVER CIRCUIT TFT ← → PIXEL TFT

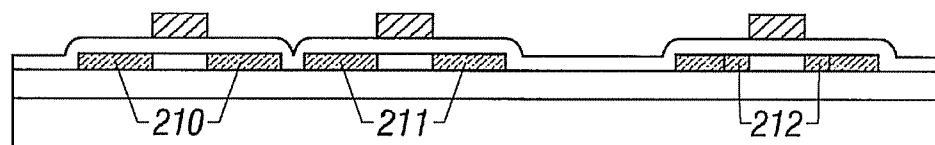


FIG. 2B

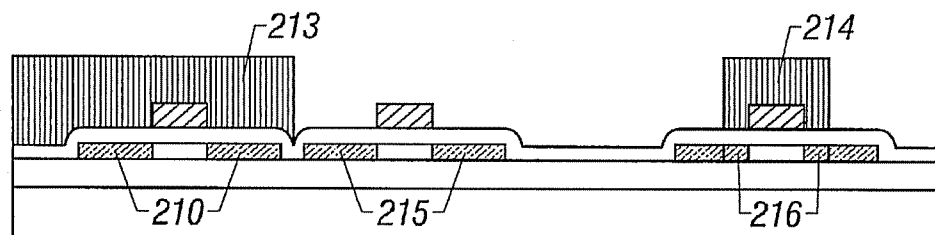


FIG. 2C

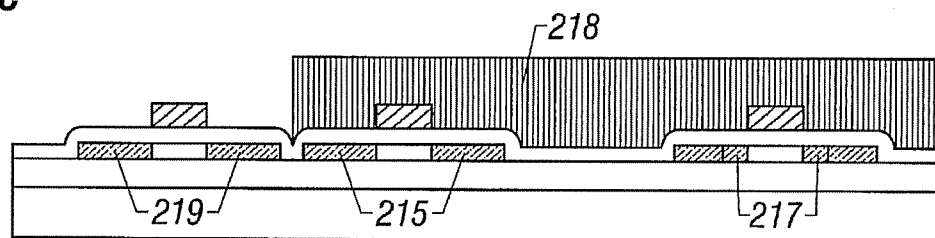


FIG. 2D

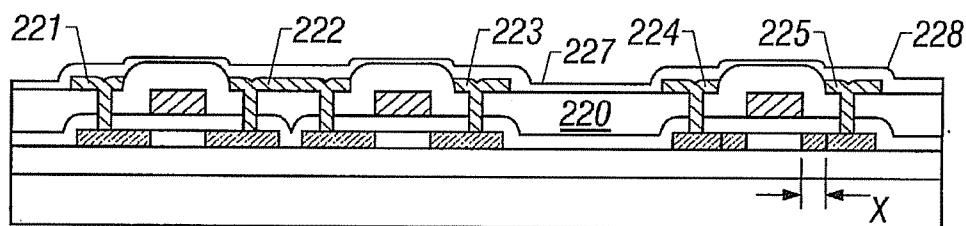
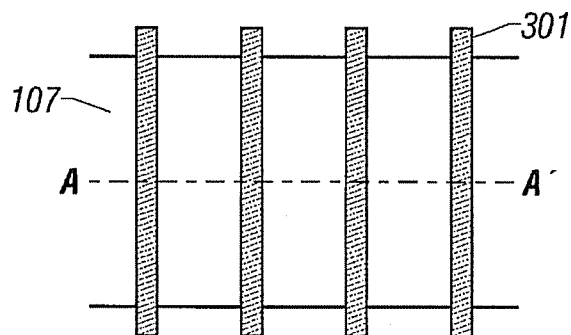
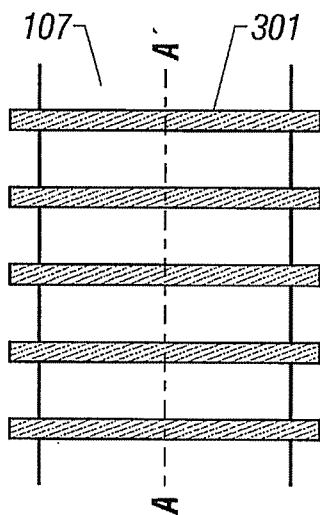


FIG. 2E

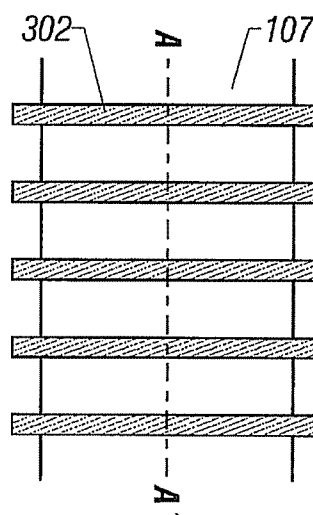
DRIVER CIRCUIT TFT ← → PIXEL TFT



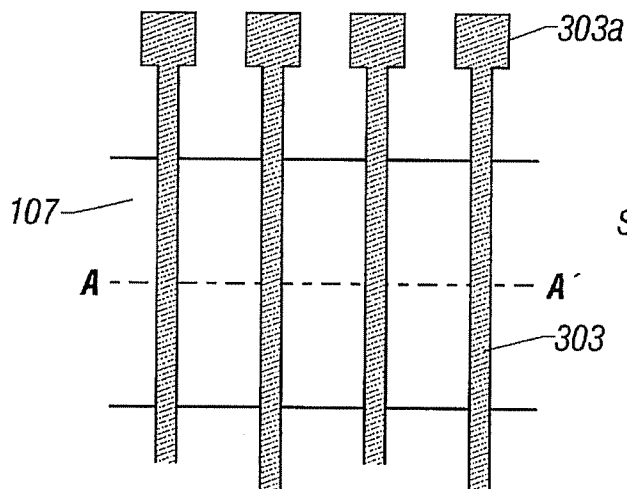
SIGNAL LINE
DRIVE CIRCUIT SIDE
REGION R2



SIGNAL LINE DRIVE CIRCUIT SIDE
REGION R1



SIGNAL LINE EXTENSION SIDE
REGION R3



SIGNAL LINE EXTENSION SIDE
REGION R4

FIG. 3

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.