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United States Patent [19]

Sasuga et al.

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[54] **LIQUID CRYSTAL DISPLAY DEVICE WITH SHIELD CASING CONNECTED TO FRAME HOLDING THE DISPLAY ABOVE LOWER CASING HOLDING LIGHT SOURCE**

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[30] **Foreign Application Priority Data**

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[51] Int. Cl.⁶ **G02F 1/1333; G02F 1/1335**

[52] U.S. Cl. **359/83; 359/50**

[58] Field of Search **359/50, 48, 83**

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,050,160 8/1962 Chesser 189/36
4,294,517 10/1981 Jakubek 359/50

4,367,467 1/1983 Emile, Jr. 359/83
4,390,103 6/1983 Husbard 211/182
4,486,077 12/1984 Torresdal 359/83
4,755,035 7/1988 Kopish et al. 359/48
4,772,100 9/1988 Suenaga 359/83
4,878,738 11/1989 Hanami 359/83
5,146,354 9/1992 Plesinger 359/83

FOREIGN PATENT DOCUMENTS

1-219823 9/1989 Japan 359/48

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[57] **ABSTRACT**

A liquid crystal display device which includes a shield casing made of a metal plate and having fixing pawls and fixing hooks, an middle frame for holding a liquid crystal display, and a lower casing for packaging back lights. The fixing pawls of said shield casing are bent in corresponding recesses formed in the middle frame. Also, the fixing hooks of said shield casing are fitted on corresponding projections formed on the lower casing.

7 Claims, 37 Drawing Sheets

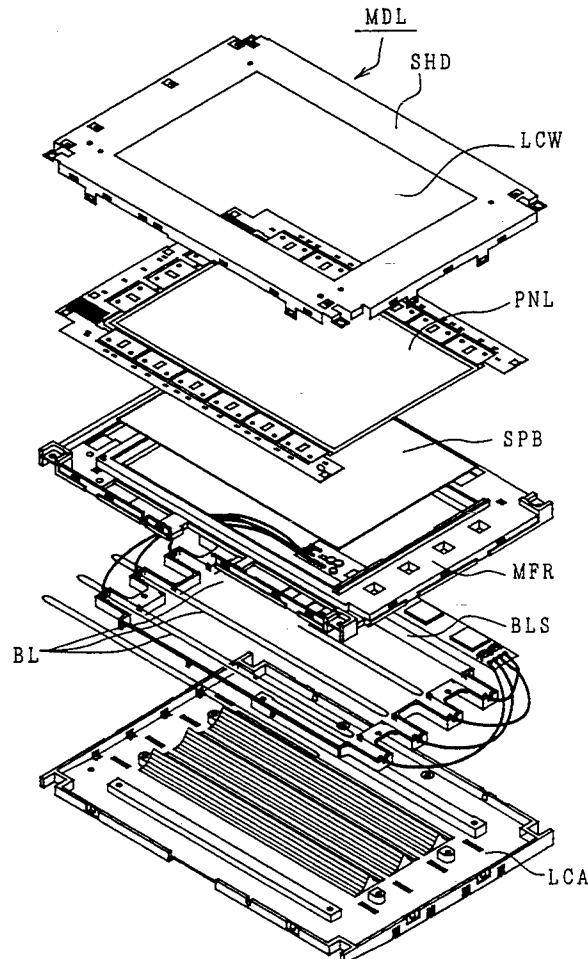


FIG. 1

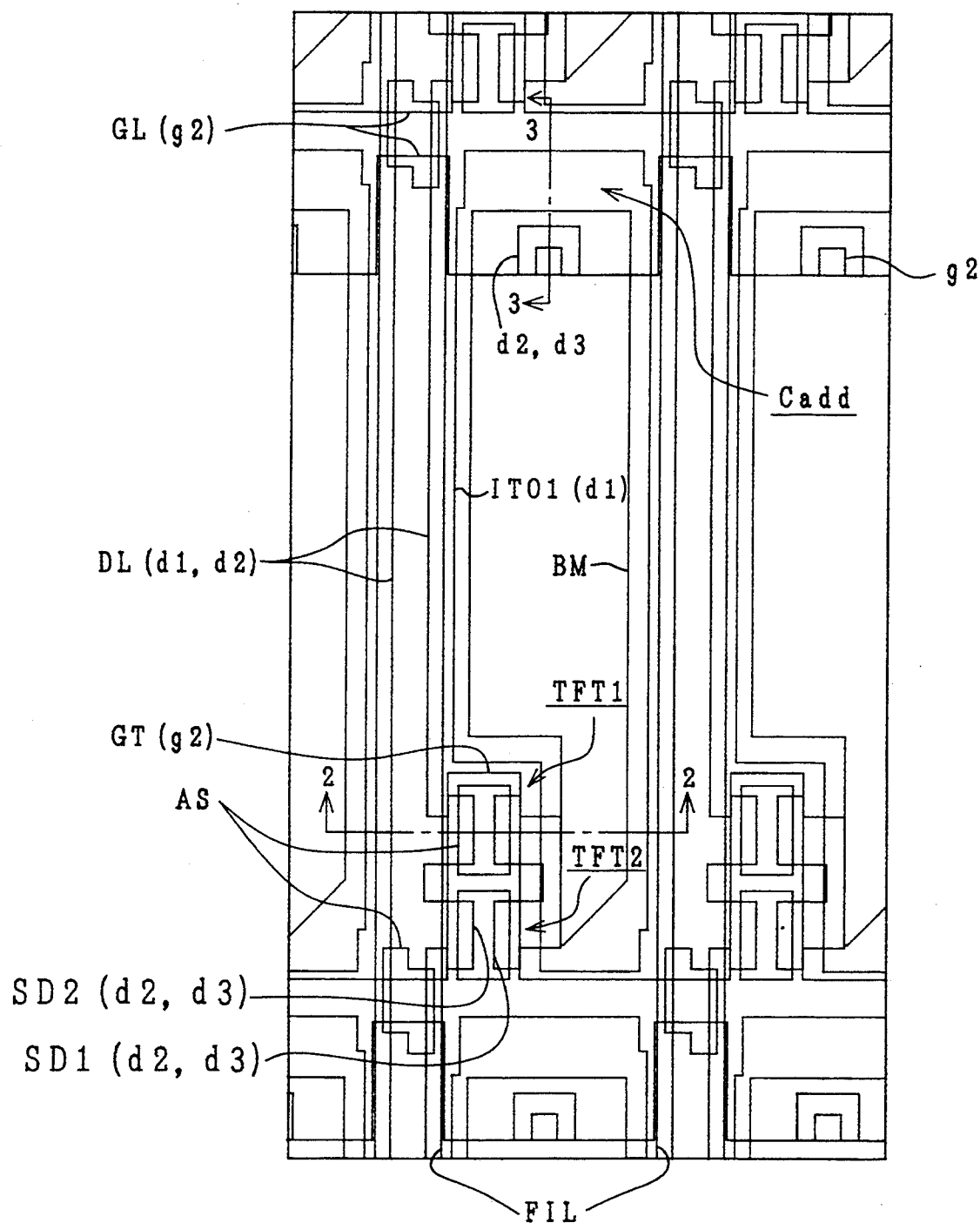


FIG. 2

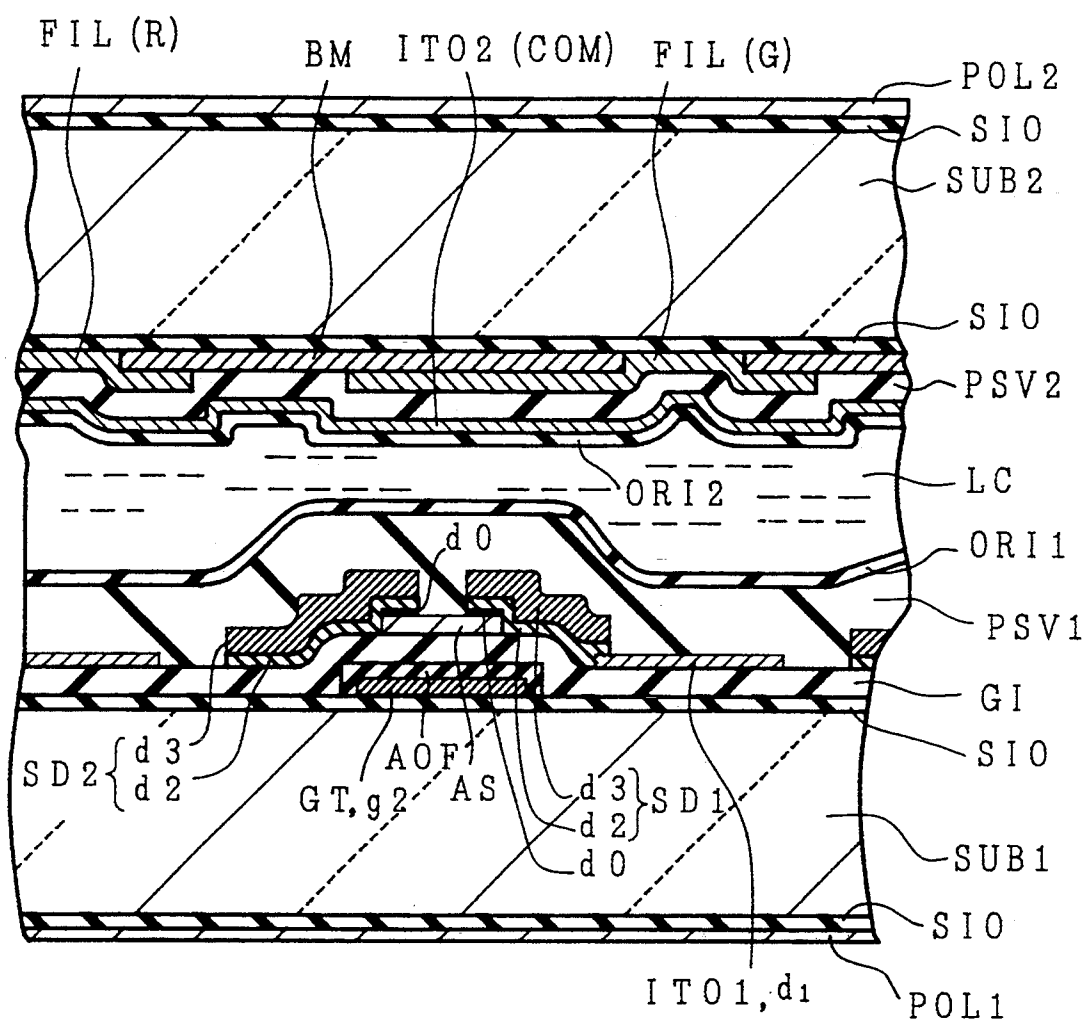


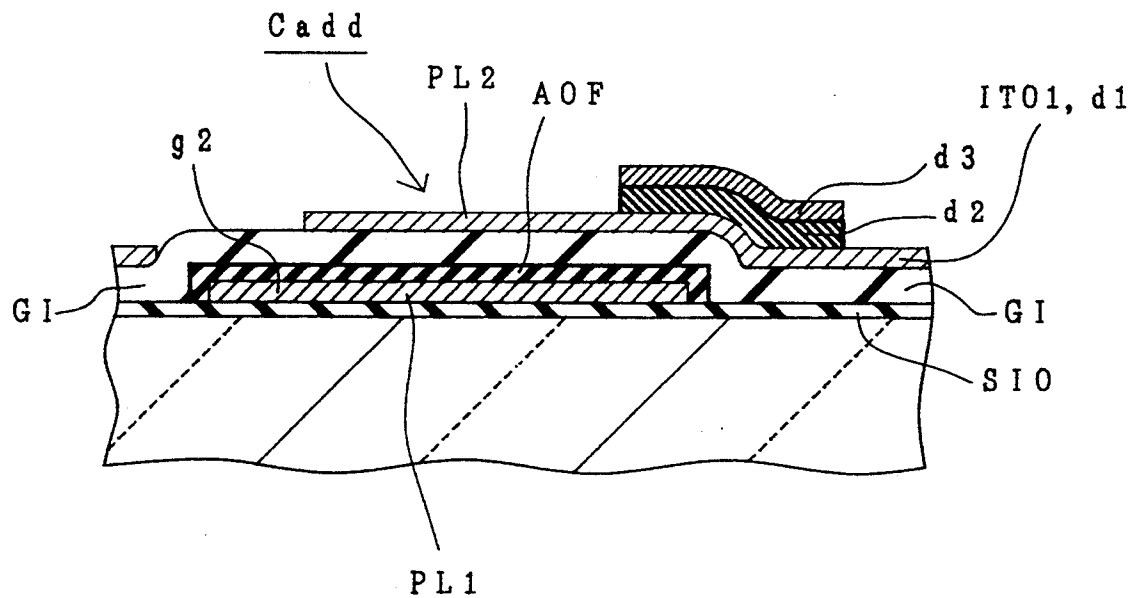
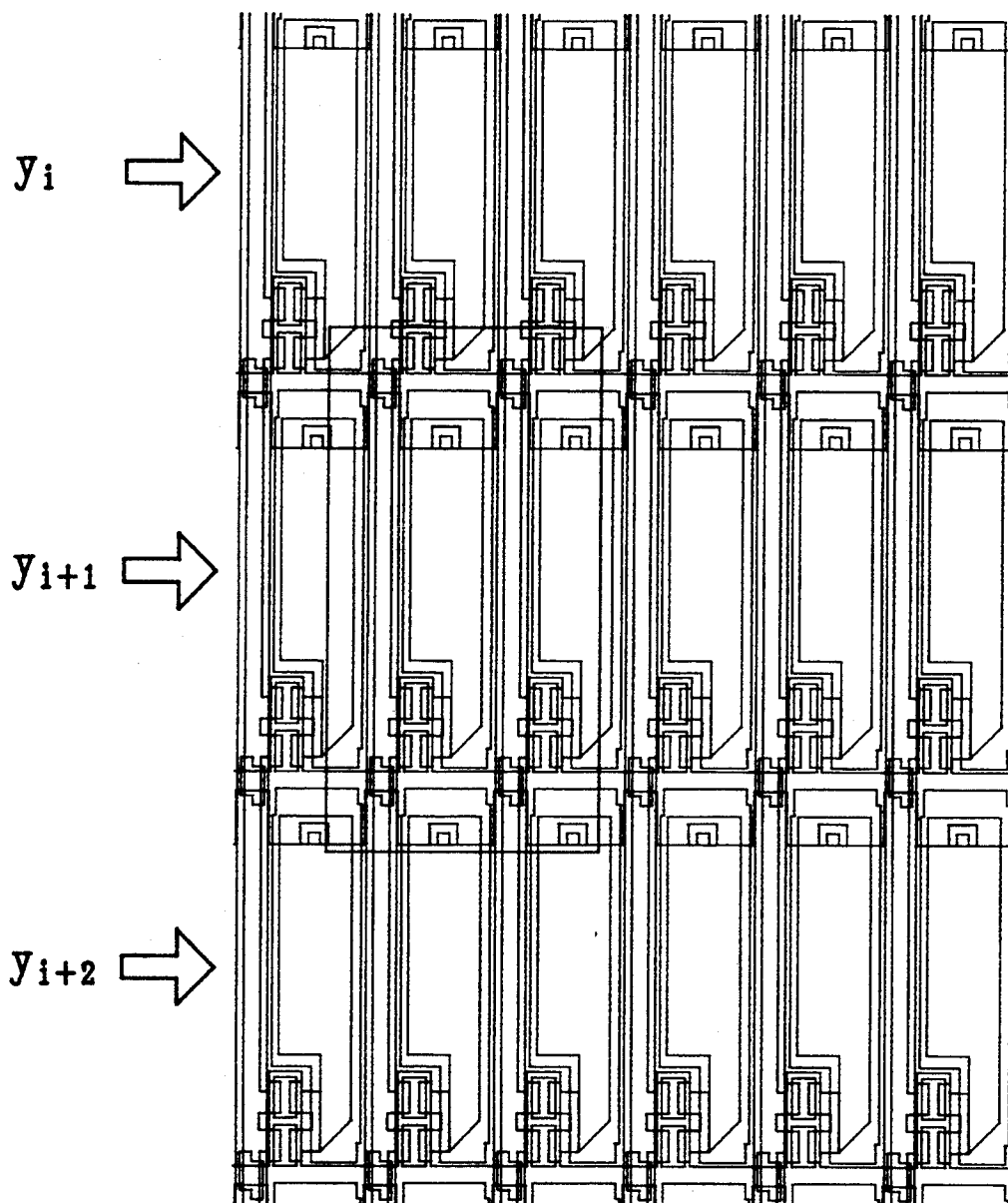
FIG. 3

FIG. 4

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