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# United States Patent [19]

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Hatano et al.

[45] Date of Patent: **Feb. 25, 1992**

[54] **METHOD FOR DRIVING A MULTI-LAYERED-TYPE LIQUID CRYSTAL DISPLAY DEVICE**

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WO8903542 4/1989 PCT Int'l Appl. .

[75] Inventors: **Akitsugu Hatano; Yutaka Ishii**, both of Nara, Japan

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[73] Assignee: **Sharp Kabushiki Kaisha**, Osaka, Japan

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[21] Appl. No.: **439,876**

[22] Filed: **Nov. 21, 1989**

### [30] Foreign Application Priority Data

Nov. 21, 1988 [JP] Japan ..... 63-294373

[51] Int. Cl.<sup>5</sup> ..... **G02F 1/13**

[52] U.S. Cl. .... **359/53; 359/85; 359/93**

[58] Field of Search ..... 350/335, 347 E, 347 R, 350/332

*Primary Examiner*—Rolf Hille  
*Assistant Examiner*—Tan Ho

### [57] ABSTRACT

### [56] References Cited

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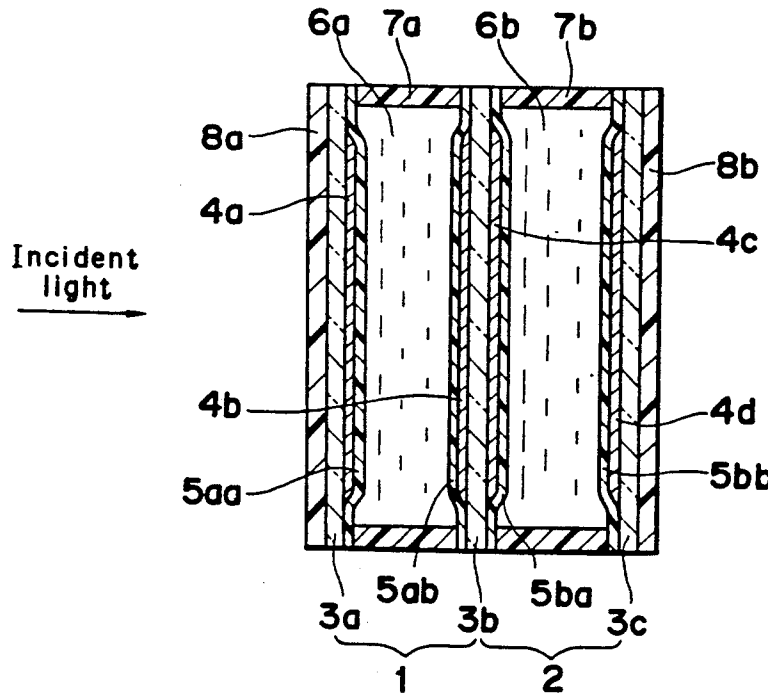
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A method for driving a multi-layered-type liquid crystal display device is disclosed. The liquid crystal display device includes a plurality of cell layers, and each cell layer contains liquid crystal molecules twisted between two transparent substrates so as to have a relatively large birefringence and having a light transmittance changing responsive to a voltage applied thereto. Voltages to be applied to respective cell layers are determined so as to pass a predetermined color light in combination of the light transmittances of individual cell layers. Further, these cell layers are driven by those voltages determined to display an image having the predetermined color light on the liquid crystal display device.

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**11 Claims, 8 Drawing Sheets**



Patent Owner's Exhibit 2001

Fig. 1

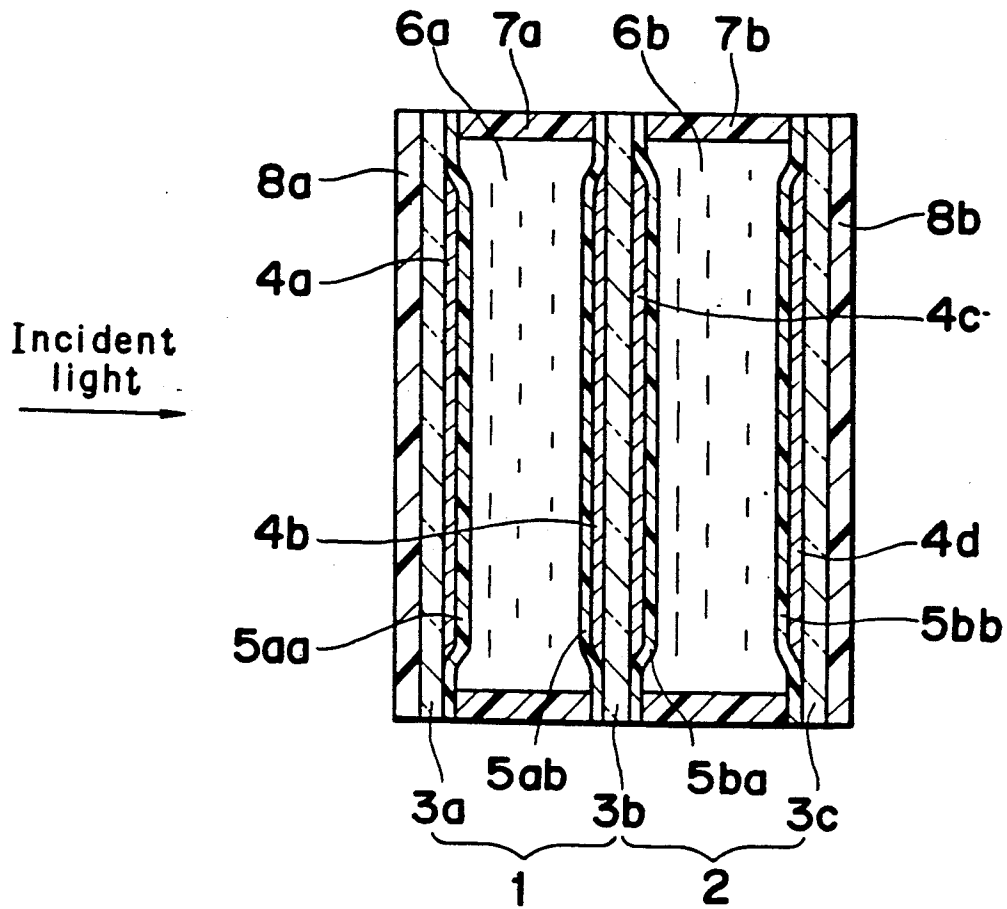


Fig. 2a

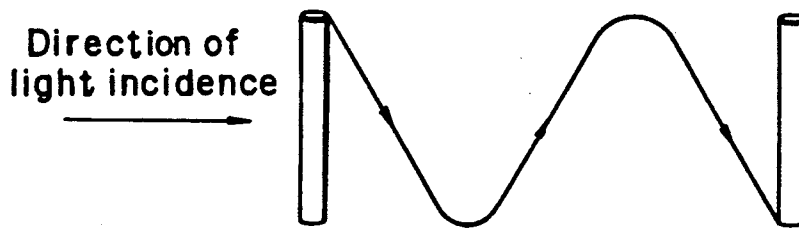
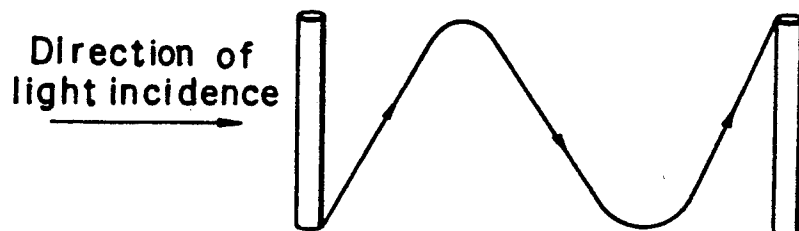


Fig. 2b



Patent Owner's Exhibit 2001

Fig. 3

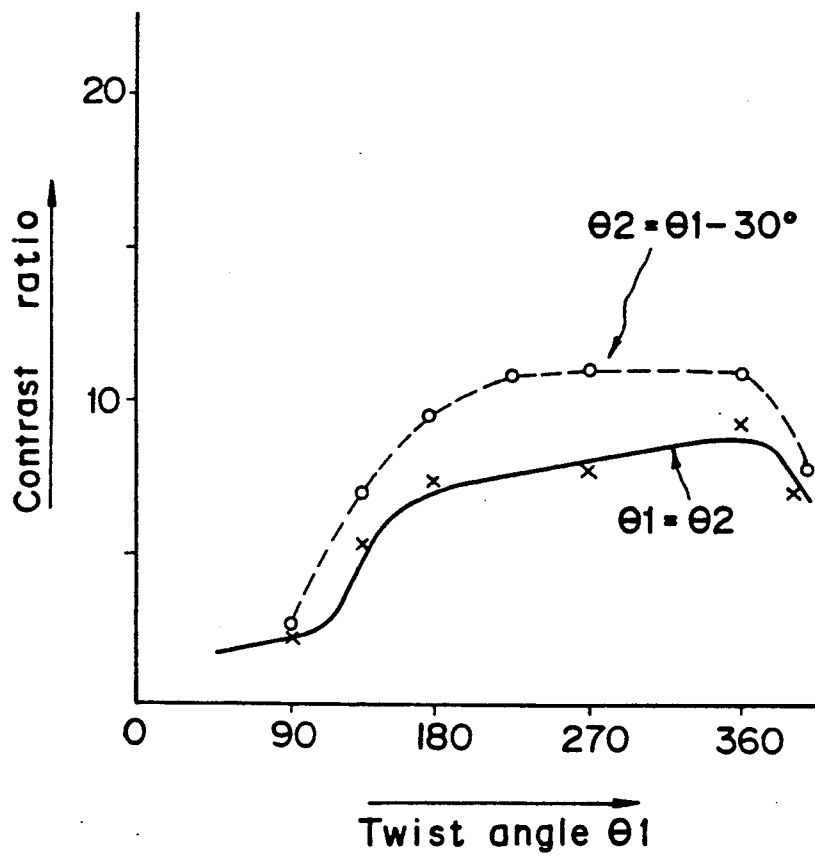


Fig. 4a

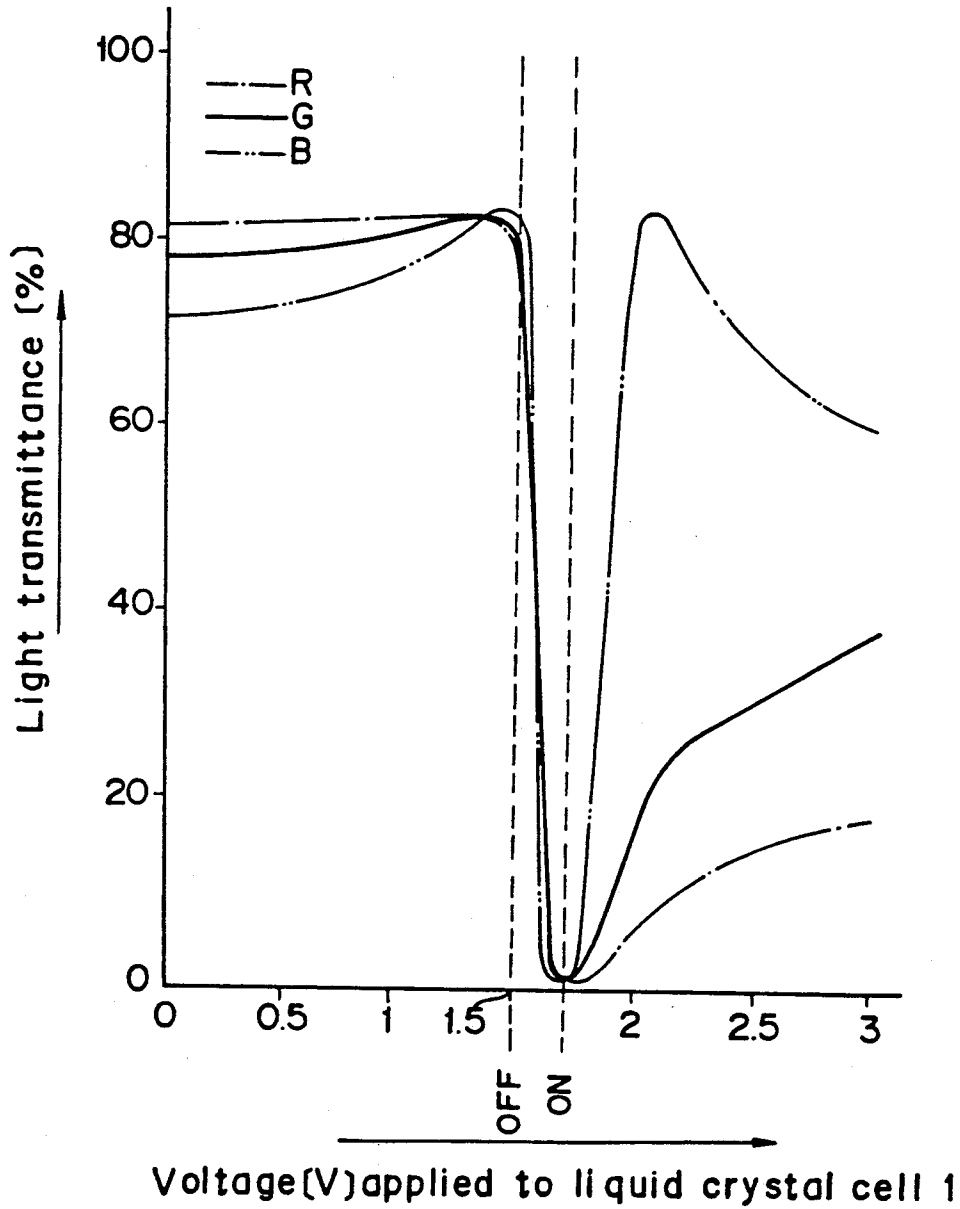
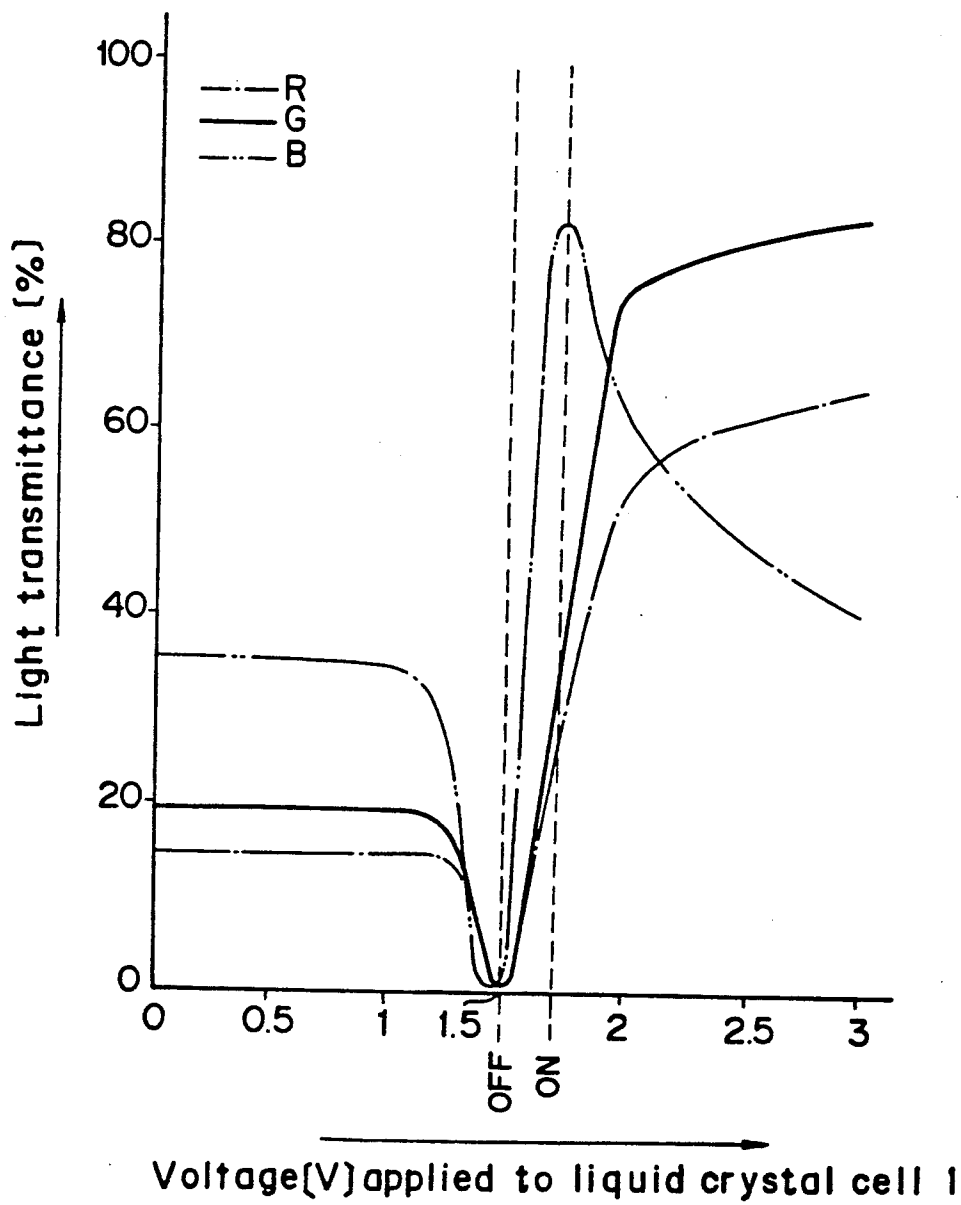


Fig. 4b



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