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# United States Patent [19]

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**Konno et al.**

[45] Date of Patent: **Jan. 6, 1998**

- [54] **LIGHT-DIFFUSING SHEET MEMBER**
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- [73] Assignee: **Keiwa Shoko Kabushiki Kaisha, Osaka, Japan**
- [21] Appl. No.: **658,314**
- [22] Filed: **Jun. 5, 1996**

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### Related U.S. Application Data

[63] Continuation of Ser. No. 954,304, Sep. 30, 1992, abandoned.

### Foreign Application Priority Data

Jun. 22, 1919	[JP]	Japan .....	4-042936 U
Oct. 9, 1991	[JP]	Japan .....	3-082008 U
Jan. 13, 1992	[JP]	Japan .....	4-000679 U

- [51] Int. Cl.<sup>6</sup> ..... **G02B 5/02**
- [52] U.S. Cl. .... **359/599; 359/452**
- [58] Field of Search ..... **359/599, 452, 359/453, 455, 456, 460; 354/452**

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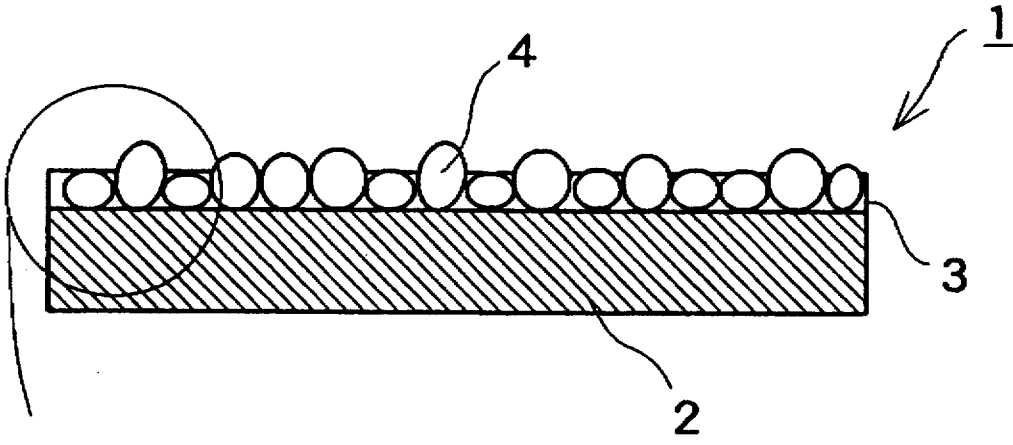
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*Primary Examiner*—Jon W. Henry  
*Attorney, Agent, or Firm*—Marshall, O'Toole, Gerstein, Murray & Borun

### ABSTRACT

[57] A light diffusing sheet member used as a diffusing plate of a liquid crystal display by which light transmitted from a light source is uniformly diffused so that the luminance of a screen of a light diffusing plate liquid crystal display portion is sufficient and a user can easily look at characters, graphics and the like displayed on the screen from different angles. A light diffusing sheet member comprises a base material sheet and a light diffusing layer applied on the top face of the base material sheet, and beads mixed therein. The beads have different sizes, and include particles buried in a synthetic resin and particles which at least partially project from the synthetic resin.

**4 Claims, 5 Drawing Sheets**



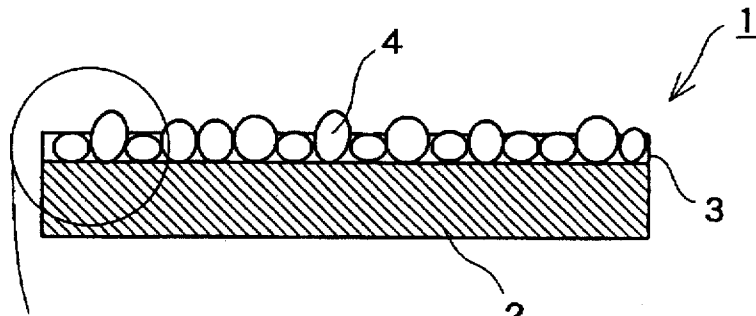


Fig. 1A

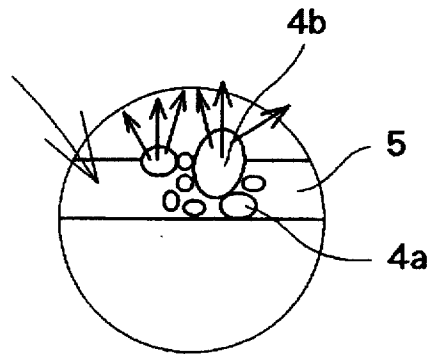


Fig. 1B

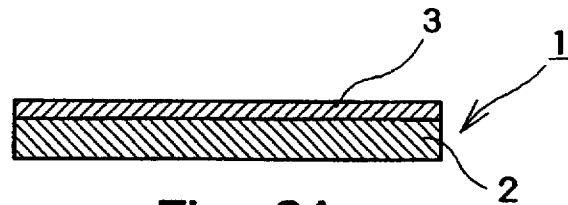


Fig. 2A

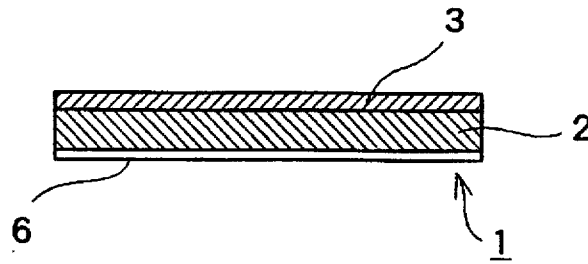


Fig. 2B

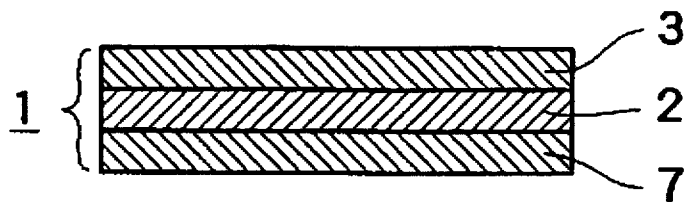


Fig. 3A

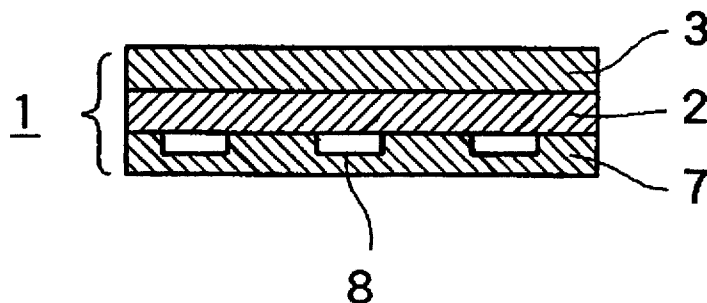


Fig. 3B

Fig. 4A

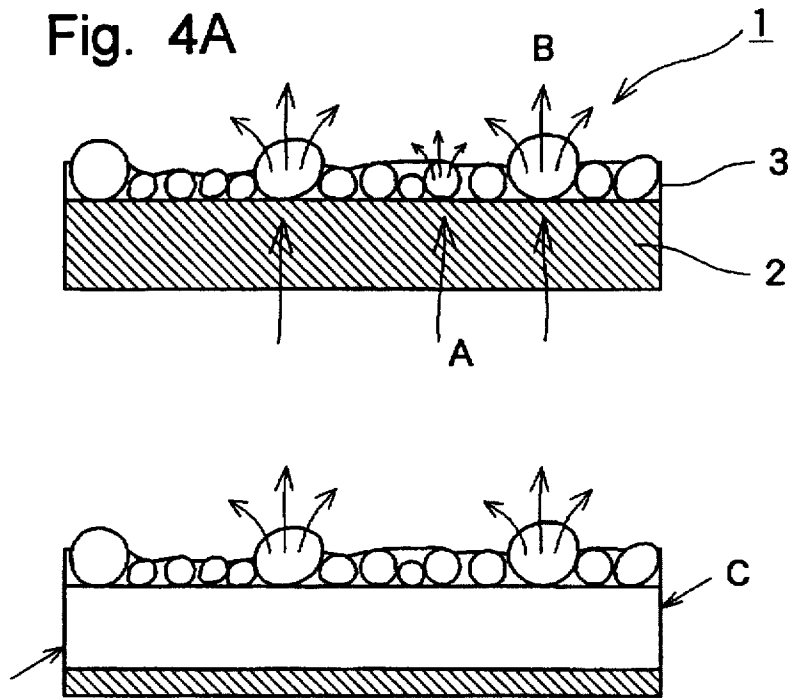


Fig. 4B

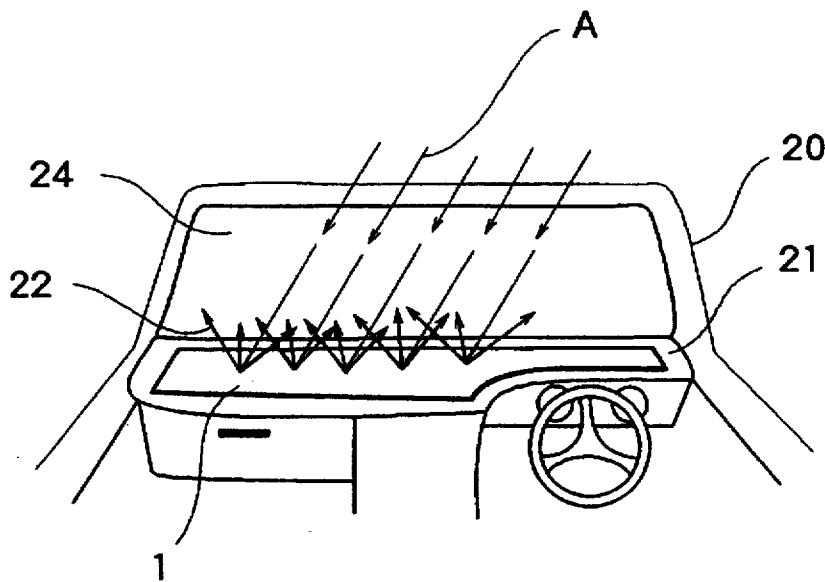


Fig. 5

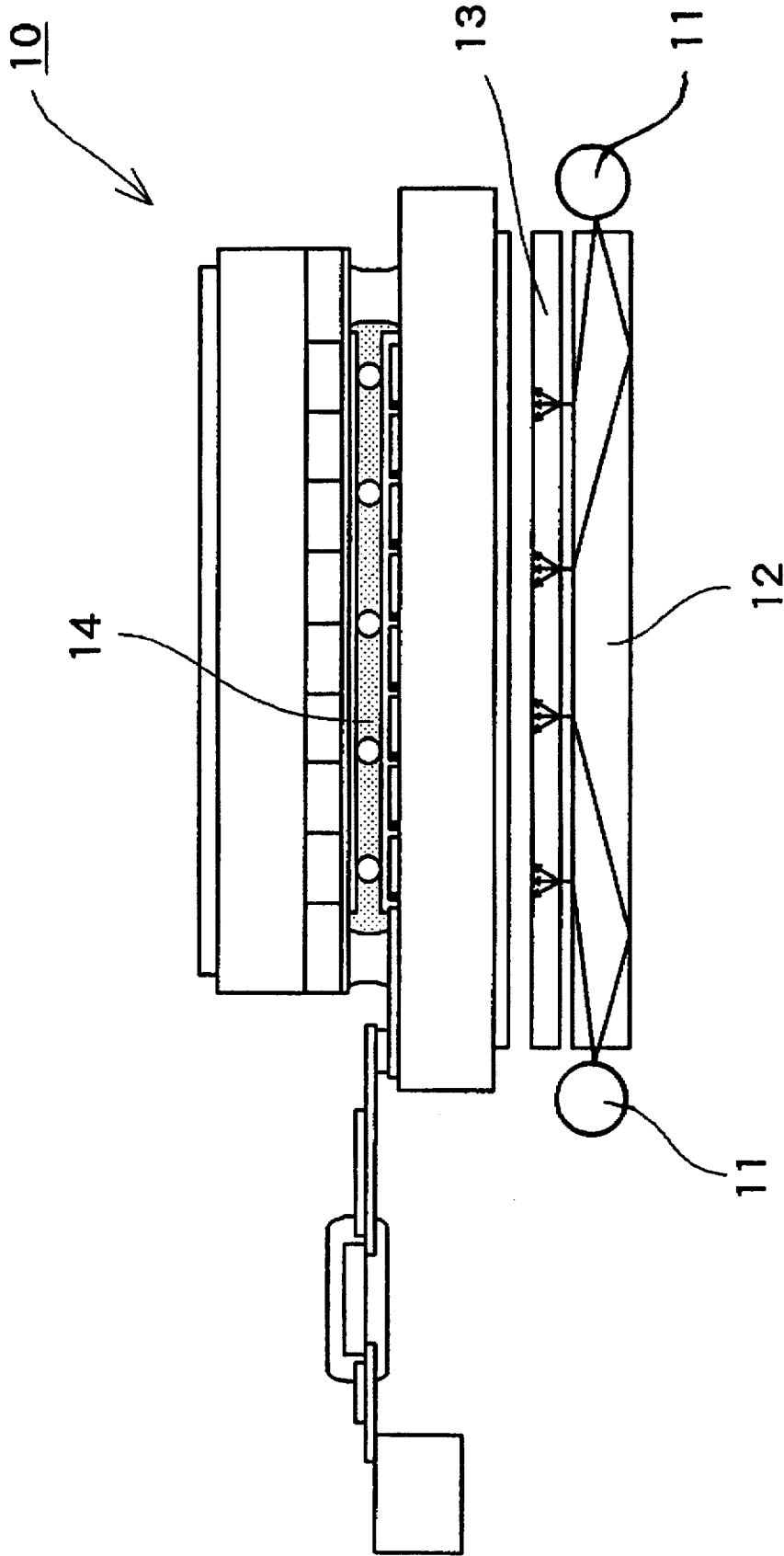


Fig.6 PRIOR ART

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