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United States Patent [19]

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Nakamura et al.

[45] Date of Patent: **Nov. 14, 1995**

[54] **PRISM PLATE FOR EFFICIENTLY EMITTING LIGHT FLUX WITHIN A PREDETERMINED RANGE, AND LIQUID CRYSTAL INDICATOR AND INDICATOR ILLUMINATION METHOD USING THE SAME**

5,211,463	5/1993	Kalmanash	362/26
5,220,377	6/1993	Suzuki et al.	355/27
5,271,077	12/1993	Brockman et al.	385/31
5,337,381	8/1994	Biswas et al.	385/36
5,339,382	8/1994	Whitehead	385/146
5,353,133	10/1994	Bernkopf	359/41
5,363,458	11/1994	Pan et al.	385/31

[75] Inventors: **Shigeru Nakamura**, Tachikawa; **Akira Arimoto**, Kodaira; **Kenkichi Suzuki**, **Katsuhiko Shibata**, both of Mobara, all of Japan

Primary Examiner—Brian Healy
Attorney, Agent, or Firm—Evenson, McKeown, Edwards & Lenahan

[73] Assignee: **Hitachi, Ltd.**, Japan

[21] Appl. No.: **117,789**

[57] ABSTRACT

[22] Filed: **Sep. 8, 1993**

An information indicator suitable for information processors such as personal computers, word processors and the like includes a light source, a scattering plate which scatters light from the light source, an indicator plate irradiated with scattered light from the scattering plate, and a prism plate operatively arranged with respect to the scattering plate and the indicator plate and having a prism-like protuberance structure formed at a side thereof. The prism plate is so disposed that the prism-like protuberance structure faces the scattering plate, and the angle 2θ constituting the prism-like protuberance structure is defined by the formula, $2\theta > \frac{2}{3} \times (\frac{\pi}{2} + 2 \times \arcsin(n/n'))$, in this inequality, n is the refractive index of said prism plate medium, and n' is the refractive index of a material in which the prism plate is arranged.

[30] Foreign Application Priority Data

Sep. 16, 1992 [JP] Japan 4-246178

[51] Int. Cl.⁶ **G02B 6/34**; F21V 9/04

[52] U.S. Cl. **385/36**; 385/37; 385/147; 385/901; 362/26; 362/31; 362/32; 362/302; 362/309; 359/48; 359/49; 359/40; 359/69; 359/70; 359/834

[58] Field of Search 385/901, 902, 385/146, 147, 133, 31, 36, 37; 362/31, 32, 26, 27, 302, 309; 359/48, 49, 42, 50, 40, 69, 70

[56] References Cited

U.S. PATENT DOCUMENTS

5,050,946 9/1991 Hathaway et al. 385/33

7 Claims, 4 Drawing Sheets

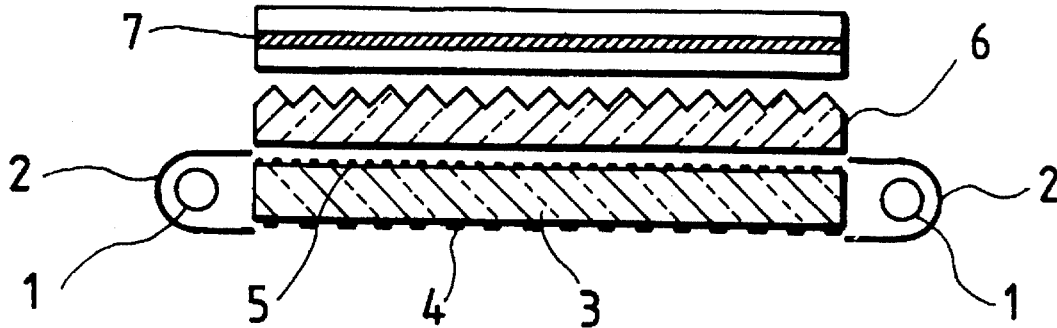


FIG. 1

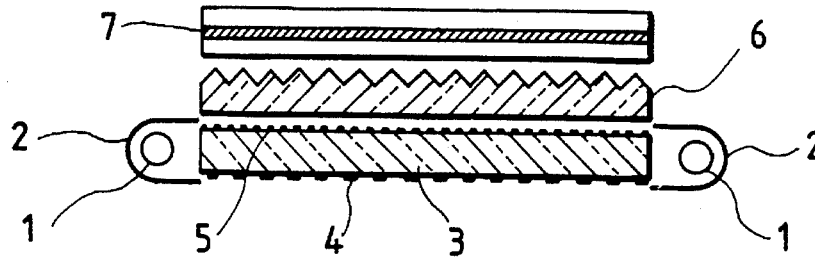


FIG. 2

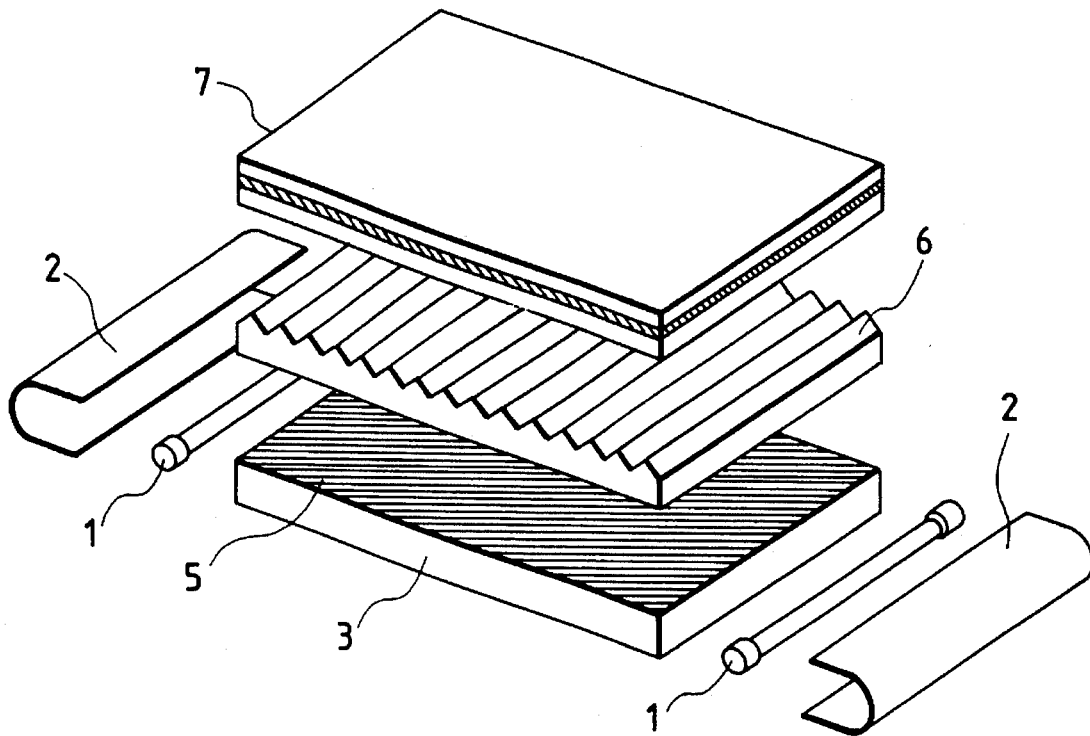


FIG. 3

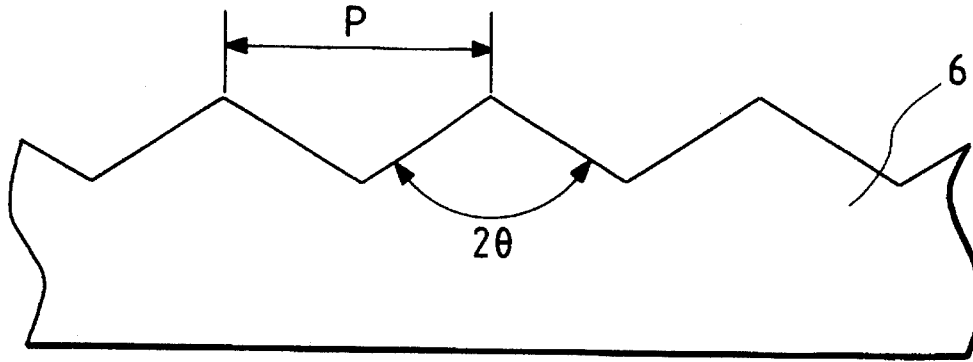


FIG. 4

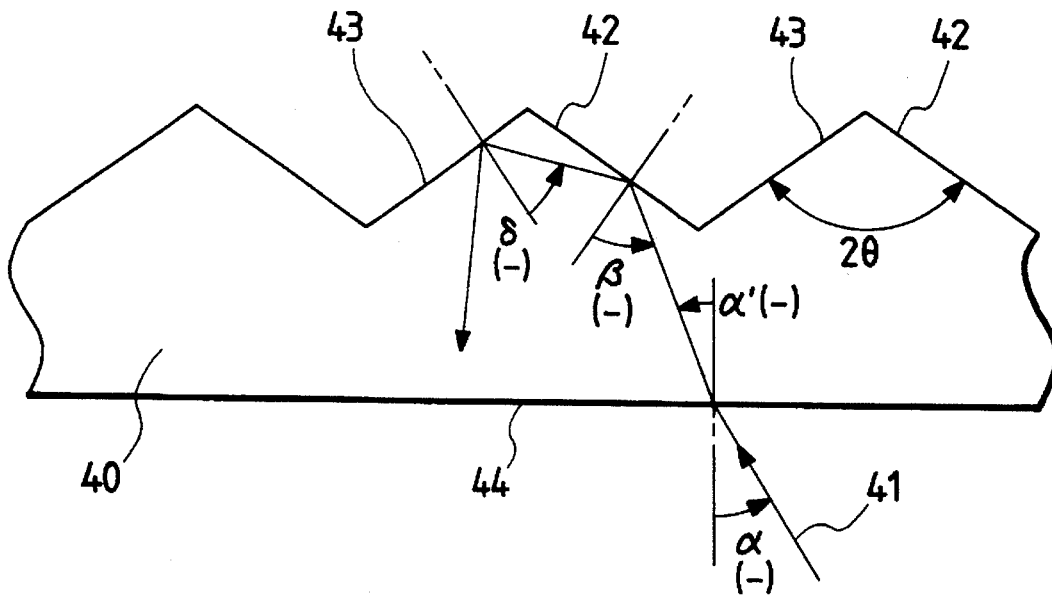


FIG. 5

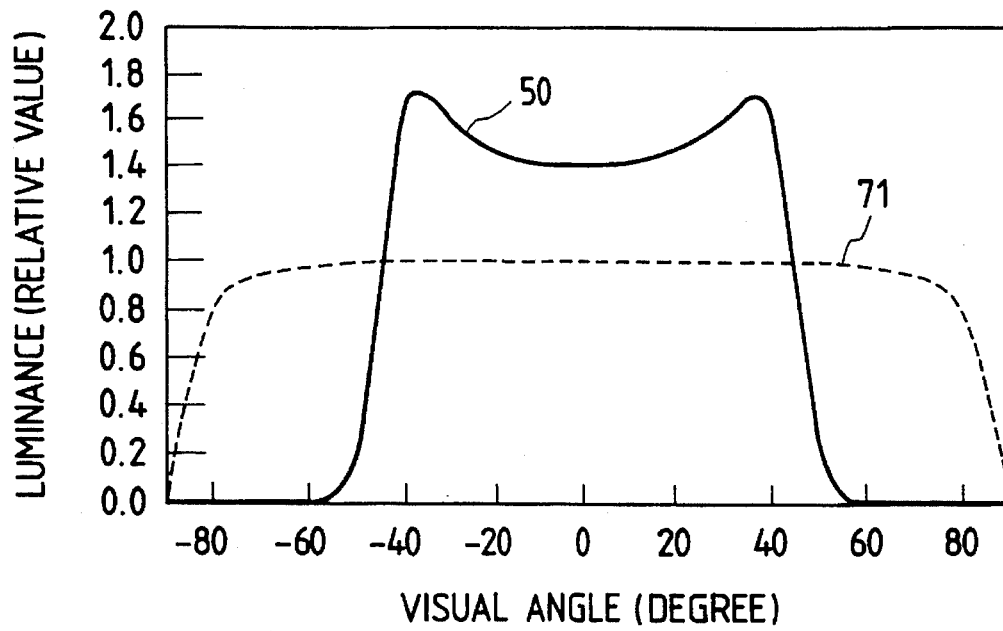


FIG. 6

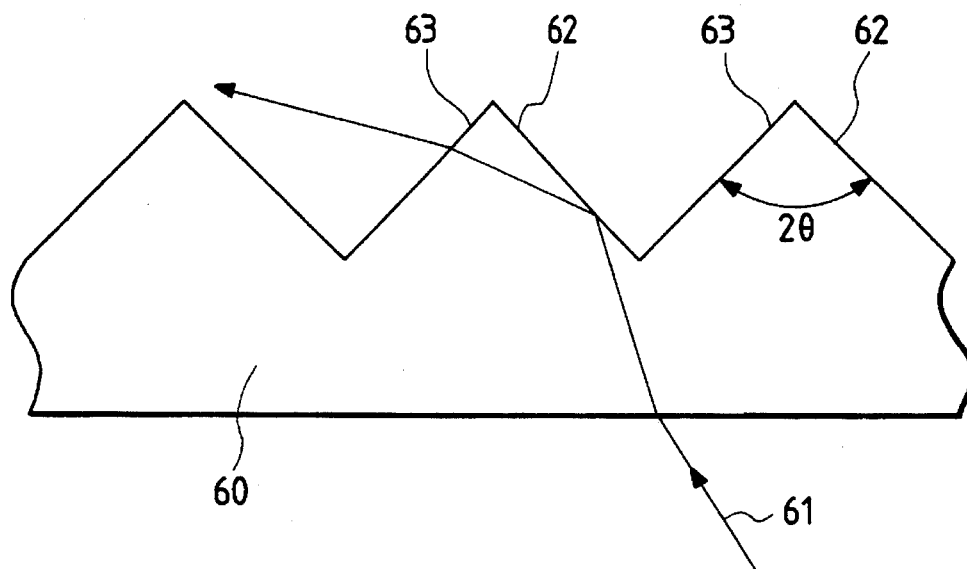


FIG. 7

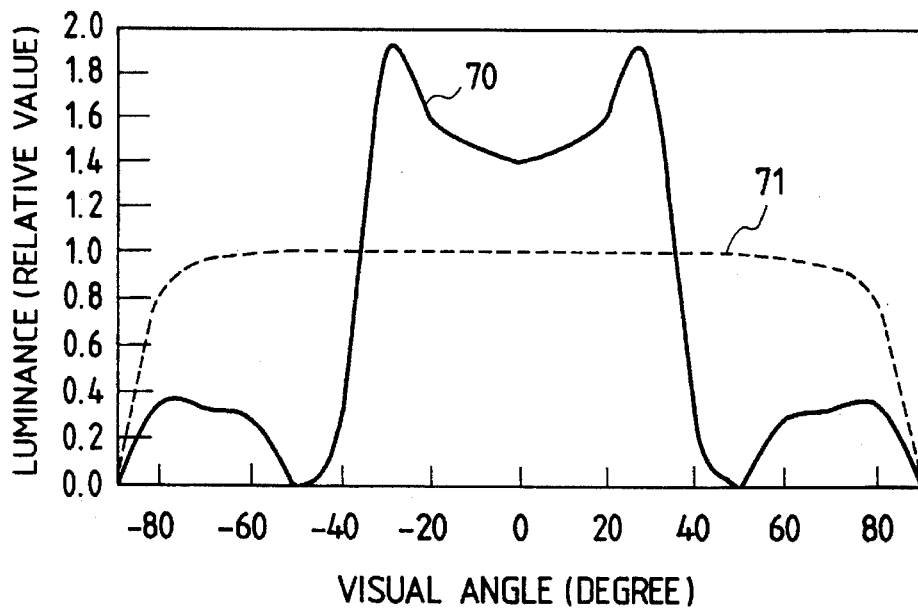


FIG. 8(a)

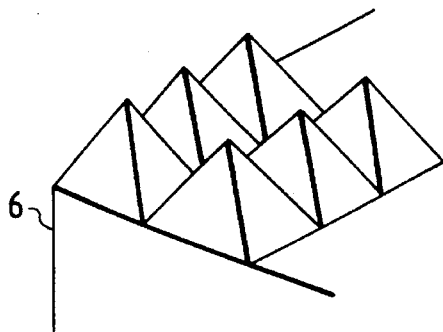
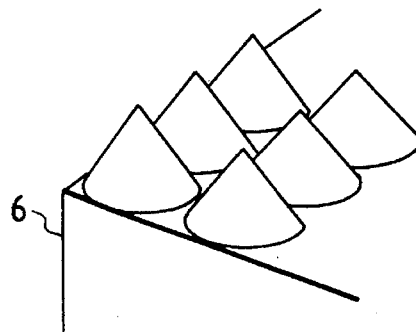


FIG. 8(b)



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