



[54] SURFACE LIGHT SOURCE DEVICE AND LIQUID CRYSTAL DISPLAY DEVICE, PORTABLE TELEPHONE AND INFORMATION TERMINAL EMPLOYING THE SURFACE LIGHT SOURCE DEVICE

[75] Inventors: Masayuki Shinohara; Shigeru Aoyama, both of Kyoto, Japan

[73] Assignee: Omron Corporation, Kyoto, Japan

[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] Appl. No.: 09/091,429

[22] PCT Filed: Oct. 27, 1997

[86] PCT No.: PCT/JP97/03892

§ 371 Date: Jun. 25, 1998

§ 102(e) Date: Jun. 25, 1998

[87] PCT Pub. No.: WO98/19105

PCT Pub. Date: May 7, 1998

[30] Foreign Application Priority Data

Oct. 25, 1996 [JP] Japan 8-301073

[51] Int. Cl.⁷ G02B 6/10

[52] U.S. Cl. 385/129

[58] Field of Search 385/129, 130, 385/132, 147; 257/232, 233, 432; 369/109, 110, 112, 44.11; 438/69, 71; 359/619

[56] References Cited

U.S. PATENT DOCUMENTS

5,481,515 1/1996 Kando et al. 369/44.12
5,593,913 1/1997 Akio 359/619
5,691,548 11/1997 Akio 257/232

FOREIGN PATENT DOCUMENTS

0453092	10/1993	European Pat. Off. .
47-4958	of 1972	Japan .
61-165504	10/1986	Japan .
61-240506	10/1986	Japan .
64-18508	1/1989	Japan .
64-45003	2/1989	Japan .
1-152406	10/1989	Japan .
4-6706	1/1992	Japan .
4-61302	5/1992	Japan .
5-107542	4/1993	Japan .
5-210014	8/1993	Japan .
5-216030	8/1993	Japan .
6-36001	5/1994	Japan .
6-230378	8/1994	Japan .
6230378	8/1994	Japan .
6-250025	9/1994	Japan .
7-114023	5/1995	Japan .
7-43700	9/1995	Japan .
8-203312	8/1996	Japan .
8-248421	9/1996	Japan .
8-271893	10/1996	Japan .
8-286037	11/1996	Japan .
8-2866037	11/1996	Japan .
8-146227	6/1998	Japan .

Primary Examiner—Akm E. Ullah
Attorney, Agent, or Firm—Foley & Lardner

[57] ABSTRACT

In a surface light source device using a so-called point light source, the luminance distribution is made uniform, and the luminance thereof is increased. The direction of each of a plurality of diffuse pattern elements 24a constituting a diffuse pattern 24 formed on the lower surface of an optical waveguide plate 22 (a direction along the length) is at an angle of approximately 90° to a direction along the line connecting the diffuse pattern element 24a and a point light source 30. The density ρ of the diffuse pattern elements is approximately zero in the vicinity of the point light source 30, while linearly increasing as the distance from the point light source 30 increases.

31 Claims, 33 Drawing Sheets

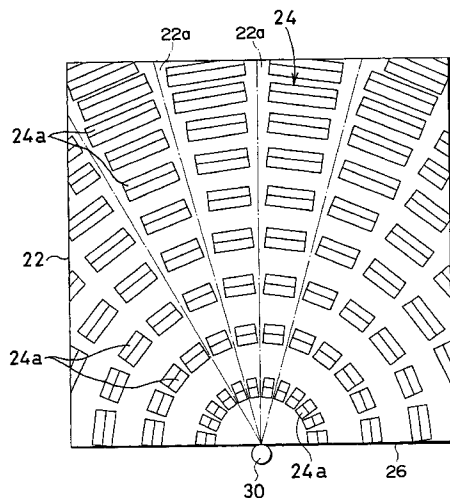


Fig. 1

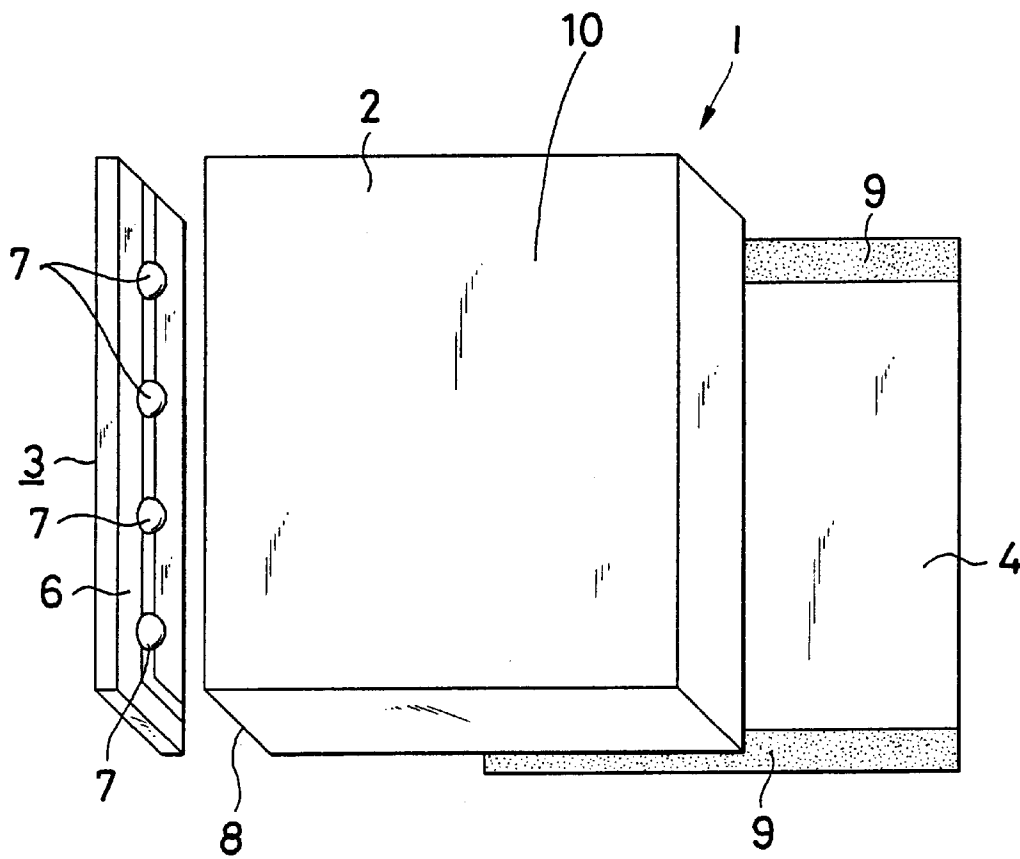


Fig. 4

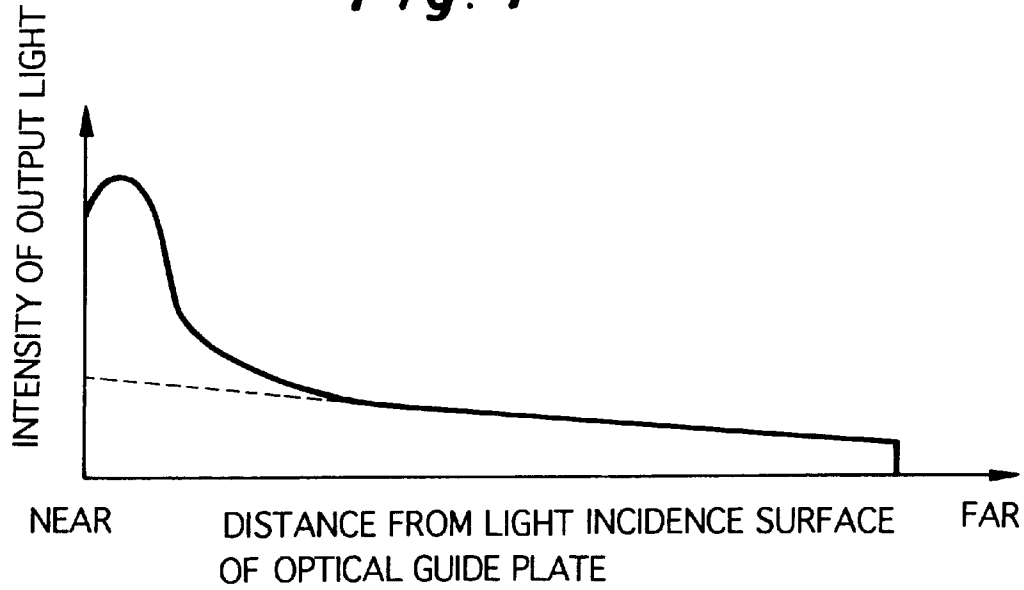


Fig. 5

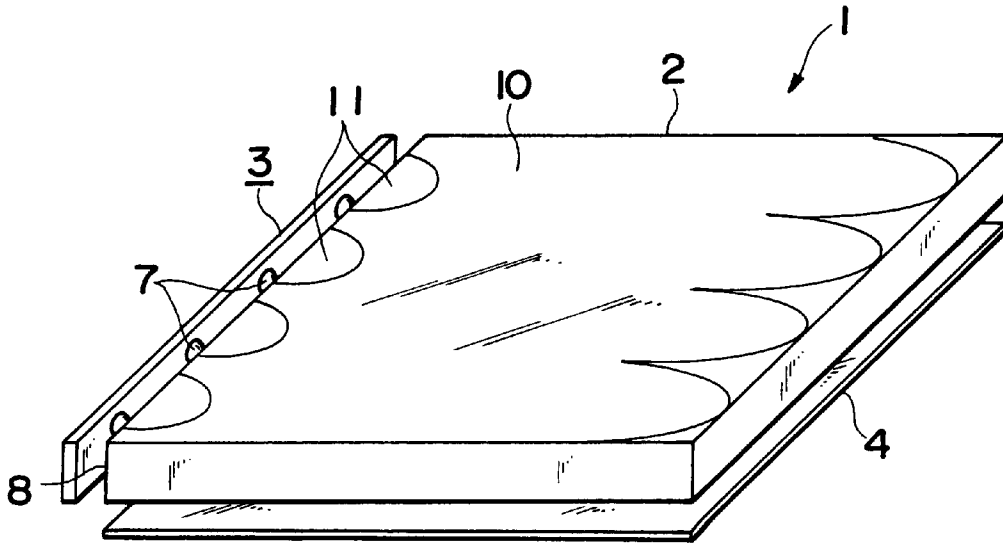


Fig. 6

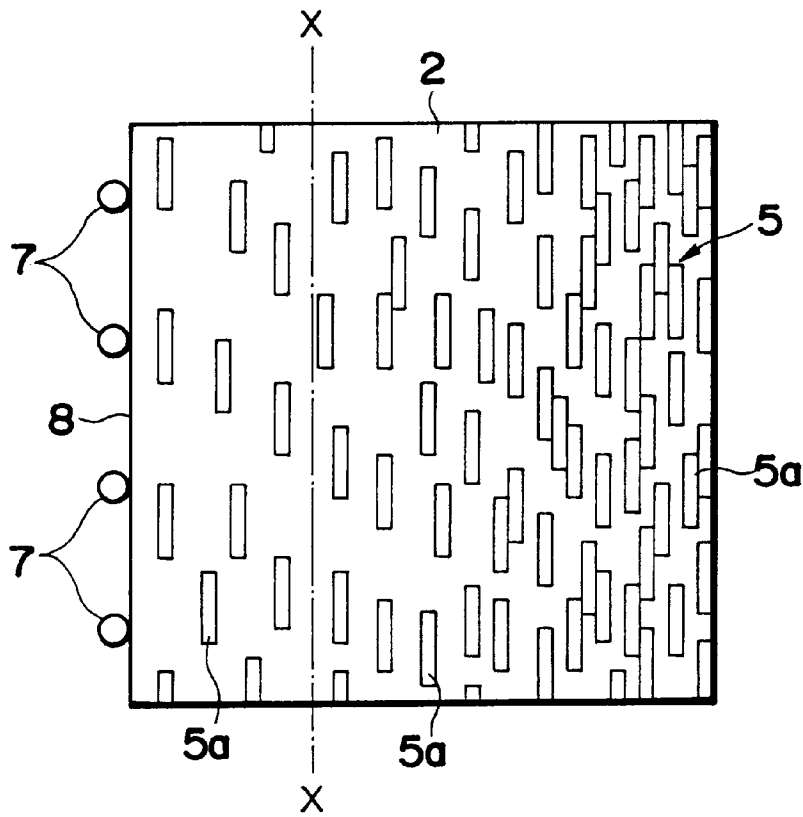
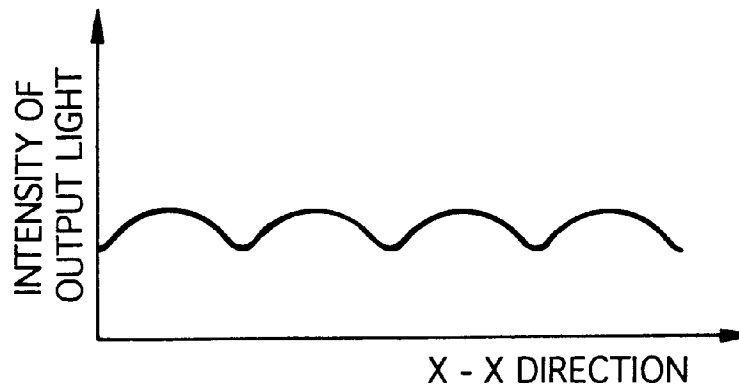


Fig. 7



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.