

**(12) United States Patent
Parker**

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(54) **LIGHT EMITTING PANEL ASSEMBLIES**
(75) Inventor: **Jeffery R. Parker**, Richfield, OH (US)
(73) Assignee: **Solid State Opto Limited** (VG)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 125 days.

This patent is subject to a terminal disclaimer.

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(65) **Prior Publication Data**
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Related U.S. Application Data

(60) Division of application No. 10/784,527, filed on Feb. 23, 2004, now Pat. No. 7,160,015, and a division of application No. 09/256,275, filed on Feb. 23, 1999, now Pat. No. 6,712,481, which is a continuation-in-part of application No. 08/778,089, filed on Jan. 2, 1997, now Pat. No. 6,079,838, which is a division of application No. 08/495,176, filed on Jun. 27, 1995, now Pat. No. 5,613,751.

(51) **Int. Cl.**
F21V 7/04 (2006.01)
(52) **U.S. Cl.** **362/619; 362/612**
(58) **Field of Classification Search** **362/600-625**
See application file for complete search history.

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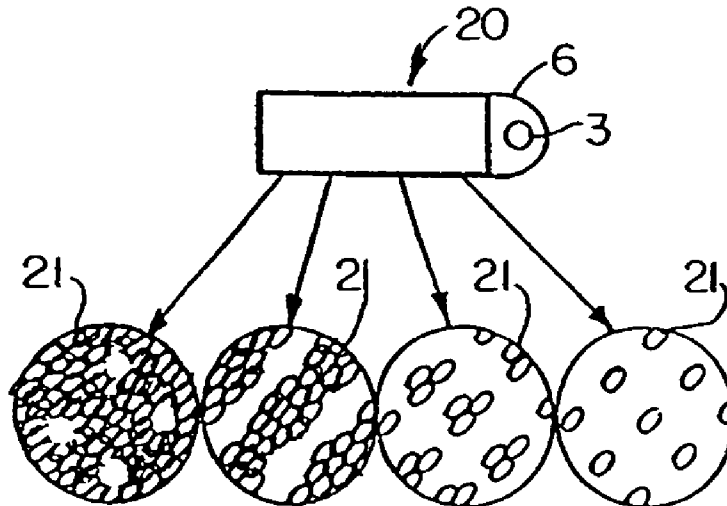
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Primary Examiner—Sandra O'Shea
Assistant Examiner—Anabel Ton
(74) *Attorney, Agent, or Firm*—Renner, Otto, Boisselle & Sklar, LLP

(57) **ABSTRACT**

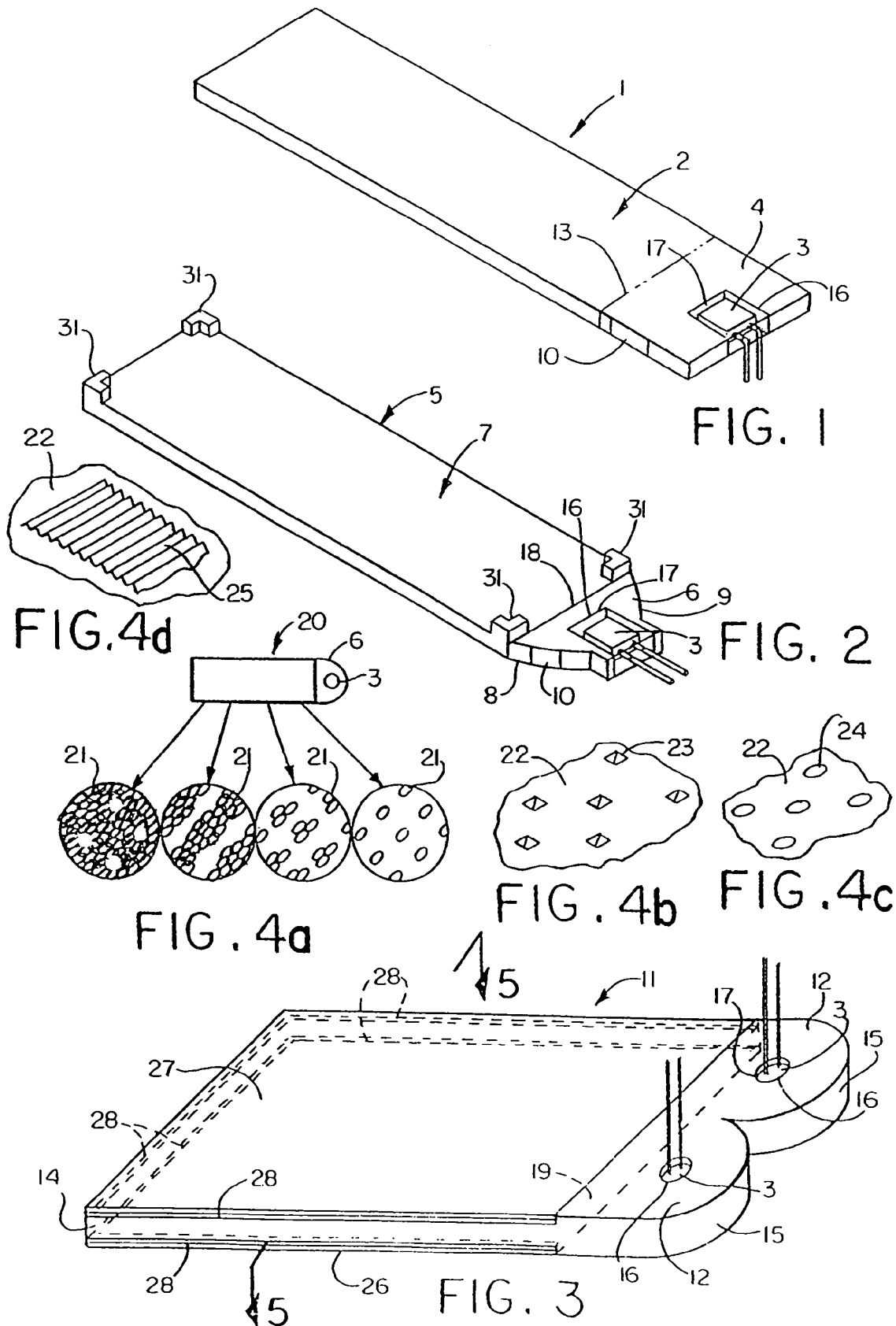
Light emitting assemblies include at least one light source and at least one film, sheet, plate or substrate having optical elements or deformities of well defined shape on at least one surface that have reflective or refractive surfaces for controlling the light output ray angle distribution of the emitted light. The film, sheet, plate or substrate may be positioned near the light emitting surface of a light emitting panel member with an air gap therebetween or over a cavity or recess in a tray through which light from a light source in the cavity or recess is emitted.

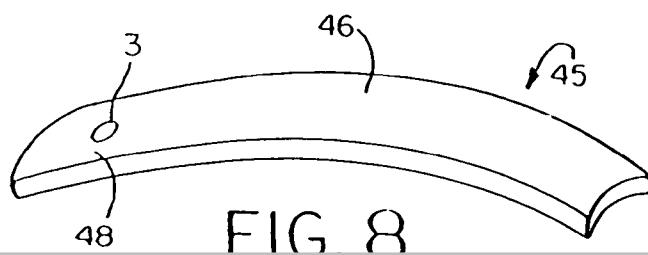
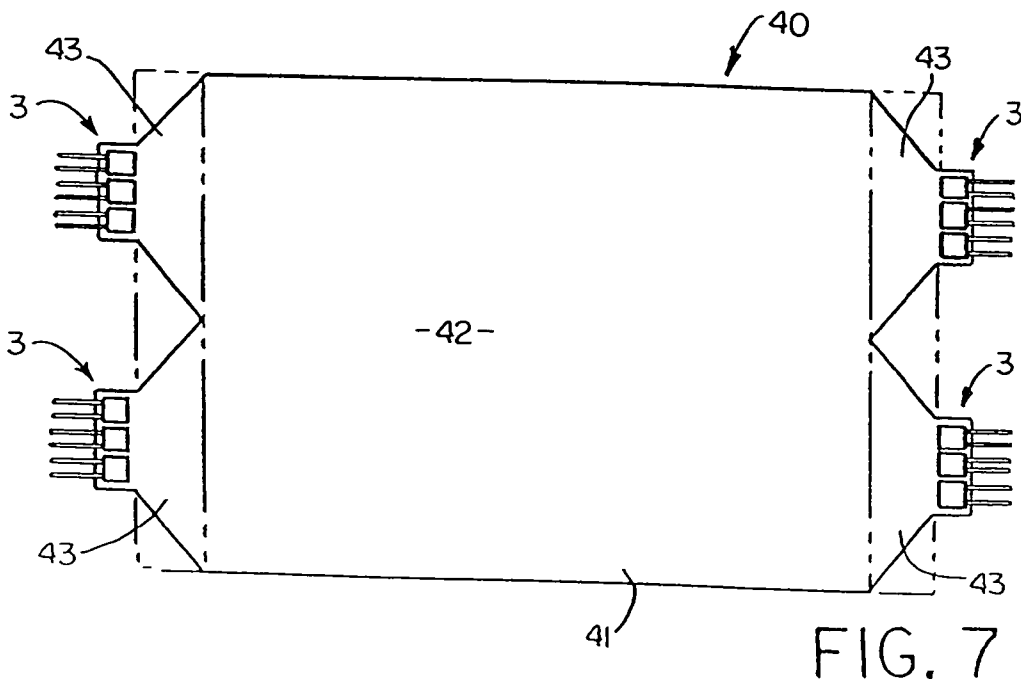
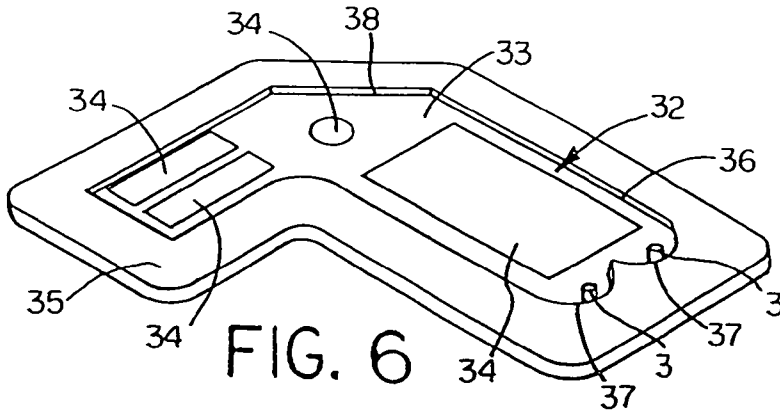
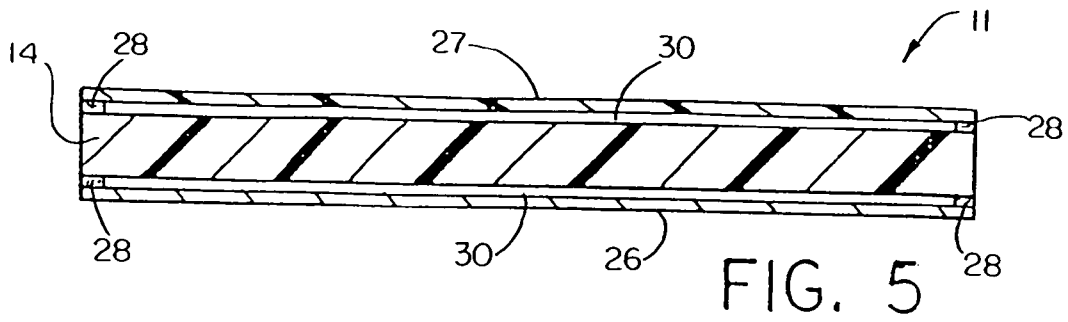
31 Claims, 4 Drawing Sheets



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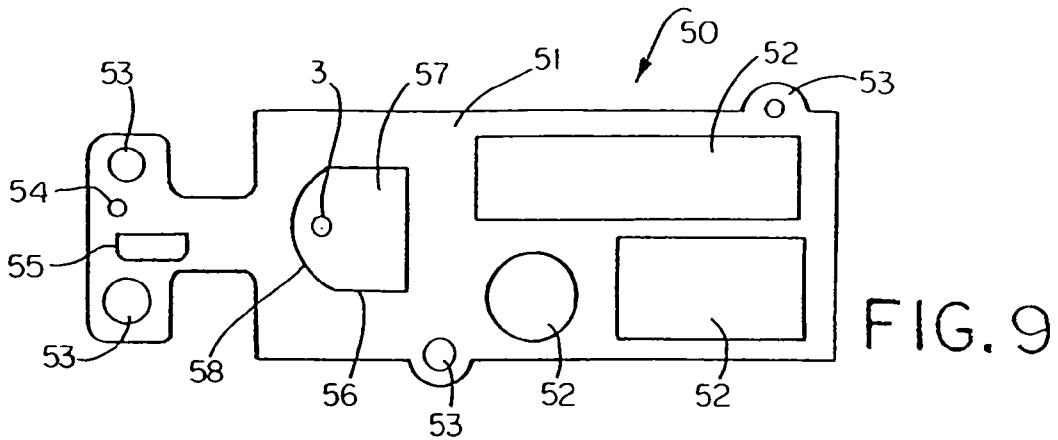


FIG. 9

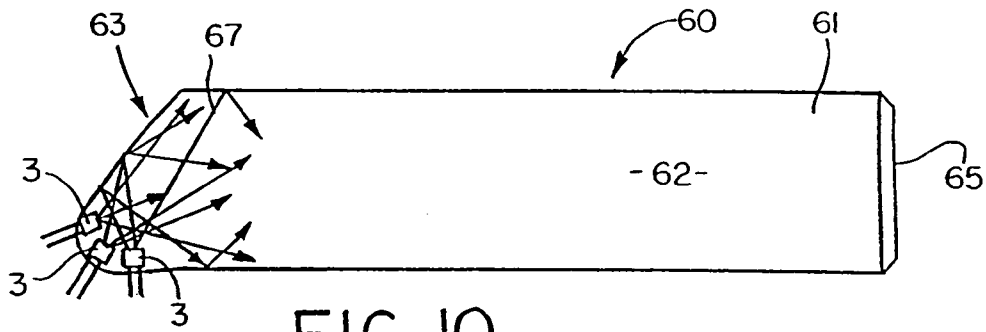


FIG. 10

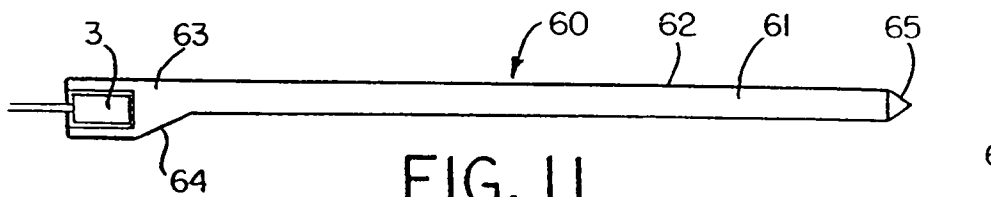


FIG. 11

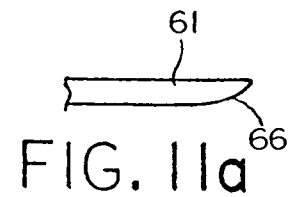


FIG. 11a

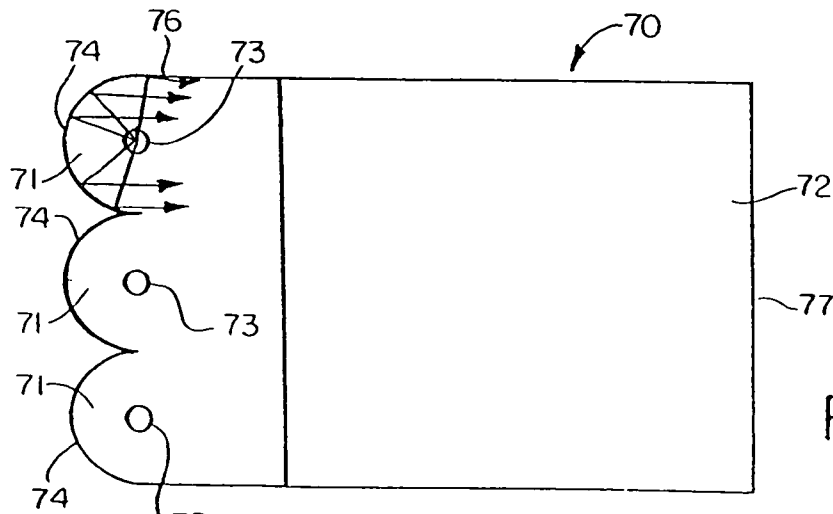


FIG. 12

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