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(12) **United States Patent**  
**Parker et al.**

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(54) **LIGHT EMITTING PANEL ASSEMBLIES**

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(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 0 days.

(21) Appl. No.: **09/256,275**

(22) Filed: **Feb. 23, 1999**

(65) **Prior Publication Data**

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**Related U.S. Application Data**

(60) Continuation-in-part of application No. 08/778,089, filed on Jan. 2, 1999, 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.**<sup>7</sup> ..... **F21V 7/04**

(52) **U.S. Cl.** ..... **362/31; 362/330; 362/332; 362/339**

(58) **Field of Search** ..... **362/26, 31, 330, 362/339, 332, 335-337**

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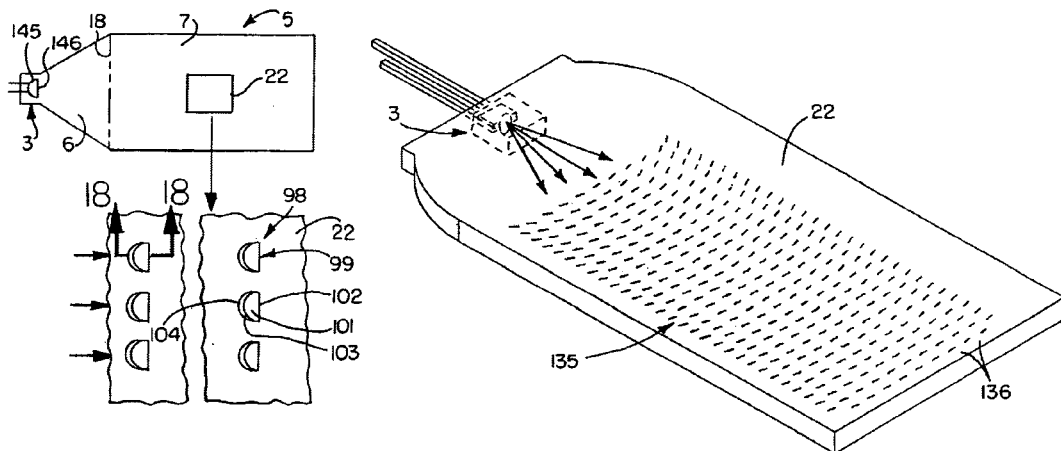
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(57) **ABSTRACT**

Light emitting panel assemblies include a light emitting panel member having a uniform or variable pattern of light extracting deformities of well defined shapes in or on one or more surface areas of the light emitting panel member. The size and shape as well as the depth and angular orientation and position or location of the light extracting deformities may vary along the length and/or width of a panel surface area to obtain a desired light output distribution from the panel surface area. Also, at least some of the deformities may have planar surfaces in parallel spaced relation to a panel surface area. A focused light source may be insert molded or cast within a light transition area of the light emitting panel member to focus the light on an input surface of the light transition area with predetermined ray angles to fit a particular application. Molded supports may be provided on the panel member for supporting other parts or components in spaced relation therefrom. In another embodiment of the invention, an array of light sources may be mounted on a printed circuit board for directing light through a diffuser or lens mounted in spaced relation to the light sources for use in phototherapy treatment or the like.

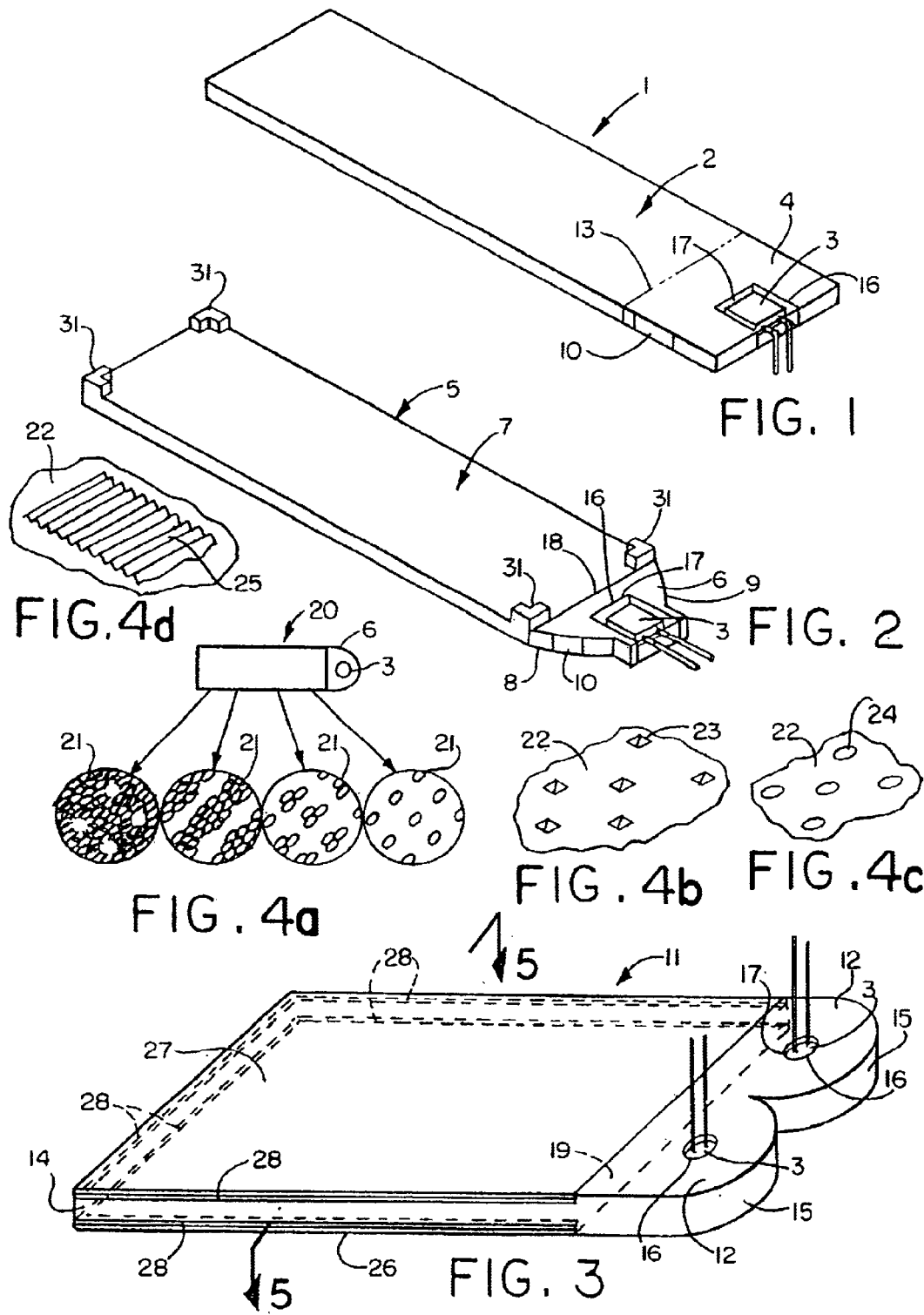
**42 Claims, 13 Drawing Sheets**

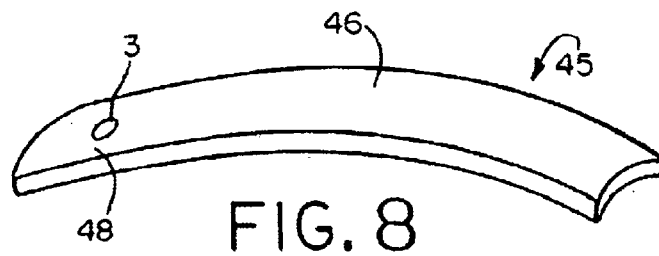
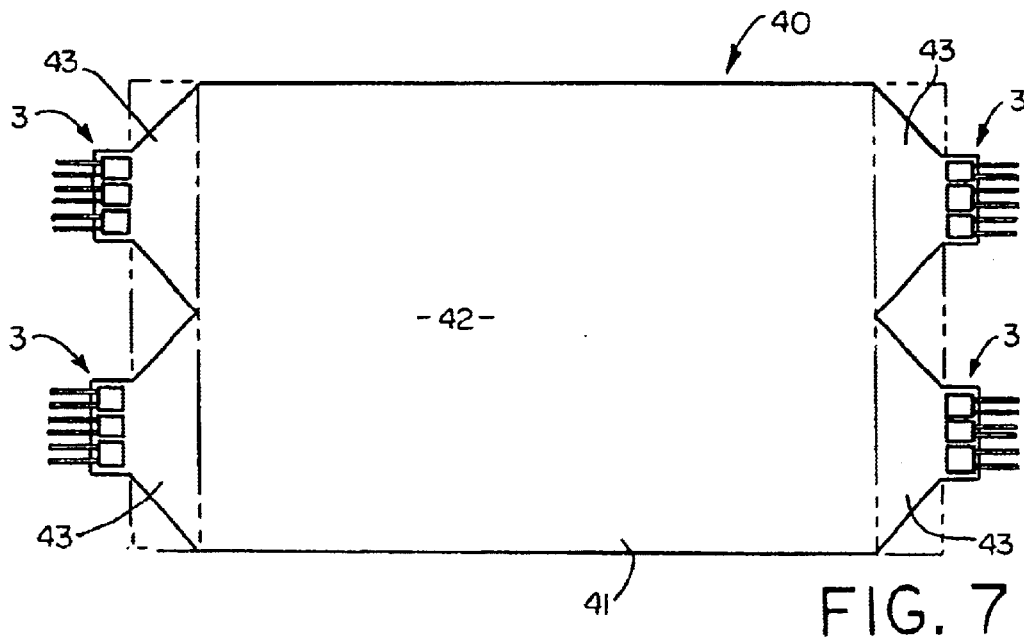
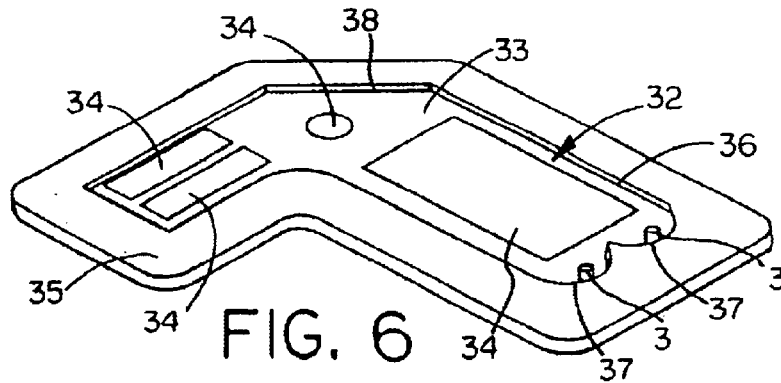
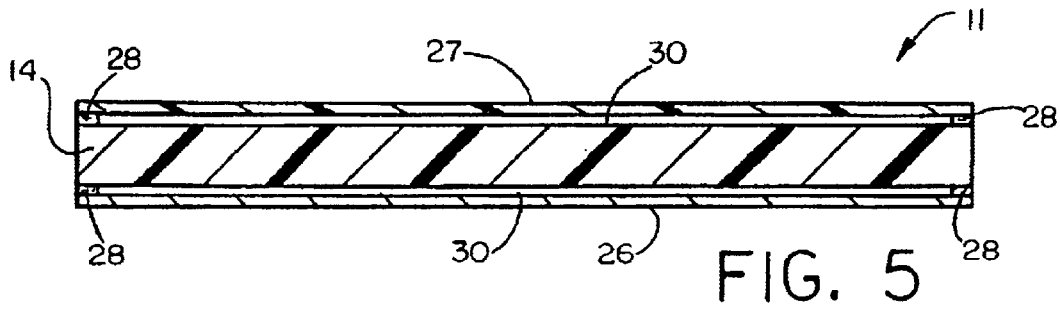


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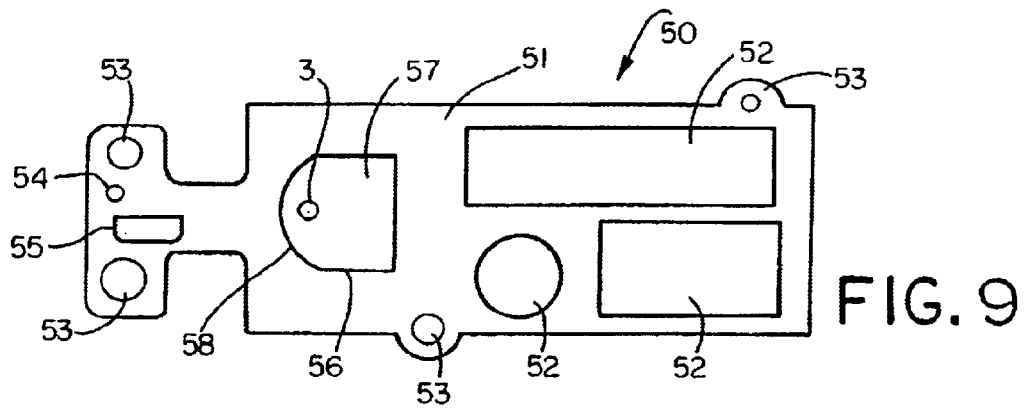


FIG. 9

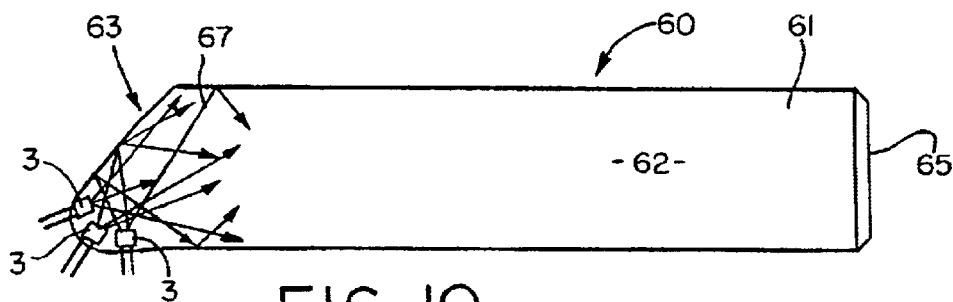


FIG. 10

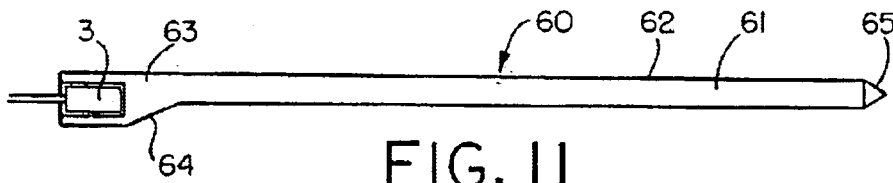


FIG. 11

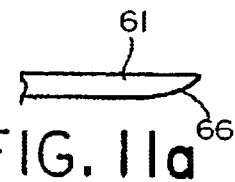


FIG. 11a

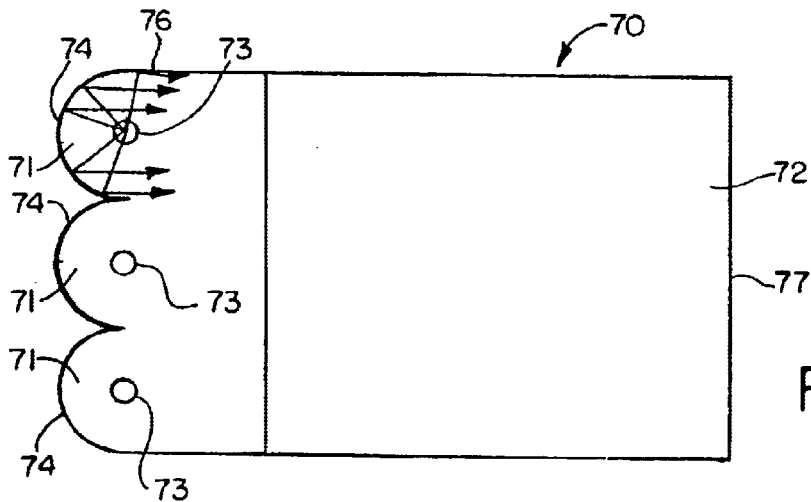


FIG. 12

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