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Kikuchi et al.

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(45) **Date of Patent: Sep. 23, 2003**

(54) **FIBER COLLIMATOR ARRAY**

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(51) **Int. Cl.**[7] **G02B 6/32**

(52) **U.S. Cl.** **385/33**; 385/31; 385/34; 385/35

(58) **Field of Search** 385/31, 33–35, 385/39, 51, 78, 80, 85, 89, 93

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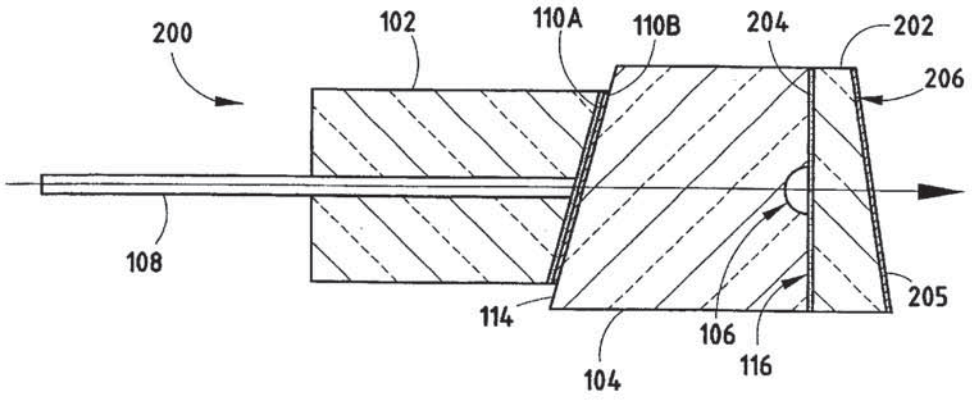
(57) **ABSTRACT**

An optical fiber collimator array includes an optical fiber array block and a microlens array substrate. The optical fiber array block includes an angled surface and is configured to receive and retain a plurality of individual optical fibers, which carry optical signals. The microlens array substrate includes a plurality of microlenses integrated along a microlens surface and a sloped surface opposite the microlens surface. The microlens surface is coupled to the angled surface such that the optical signals from the individual optical fibers are each collimated by a different one of the integrated microlenses.

24 Claims, 5 Drawing Sheets



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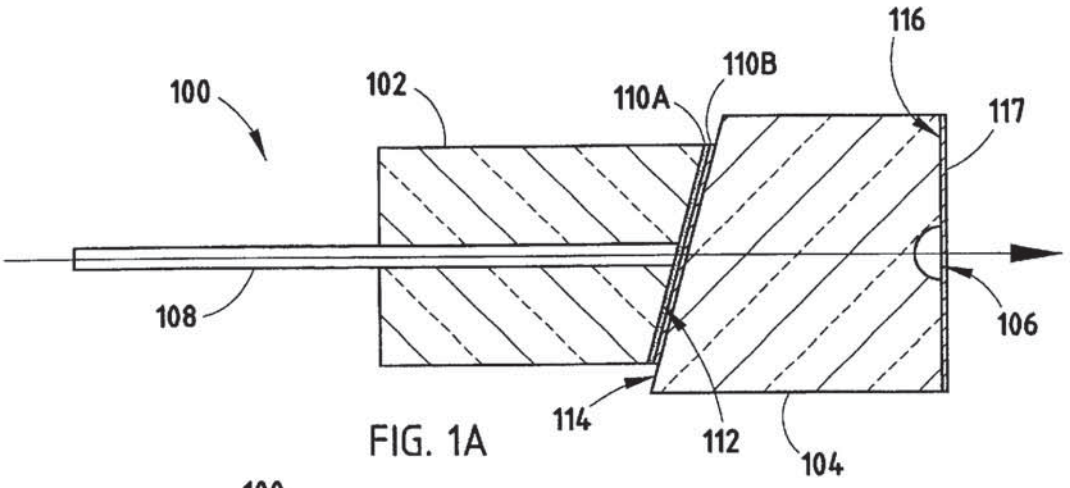

FIG. 1A

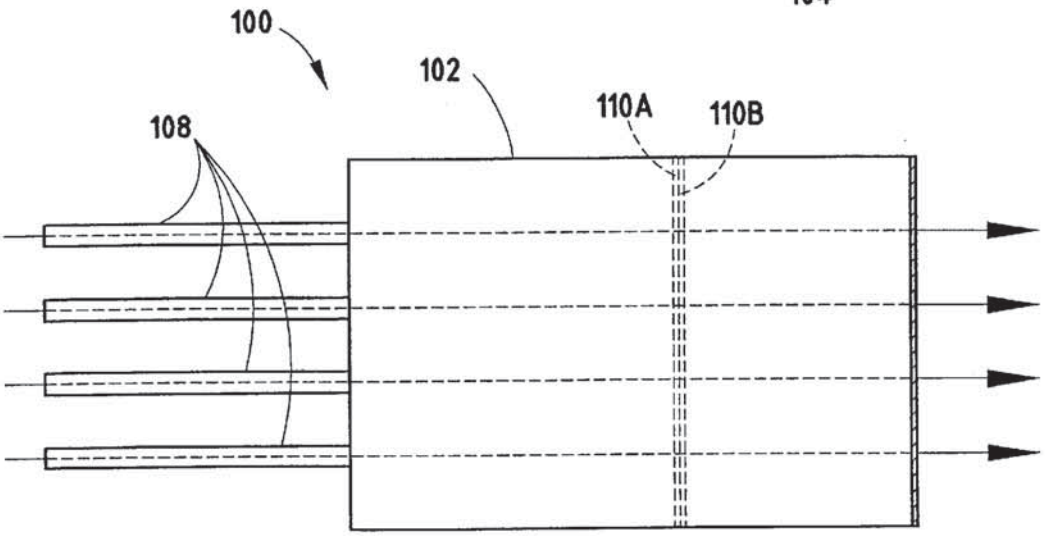

FIG. 1B

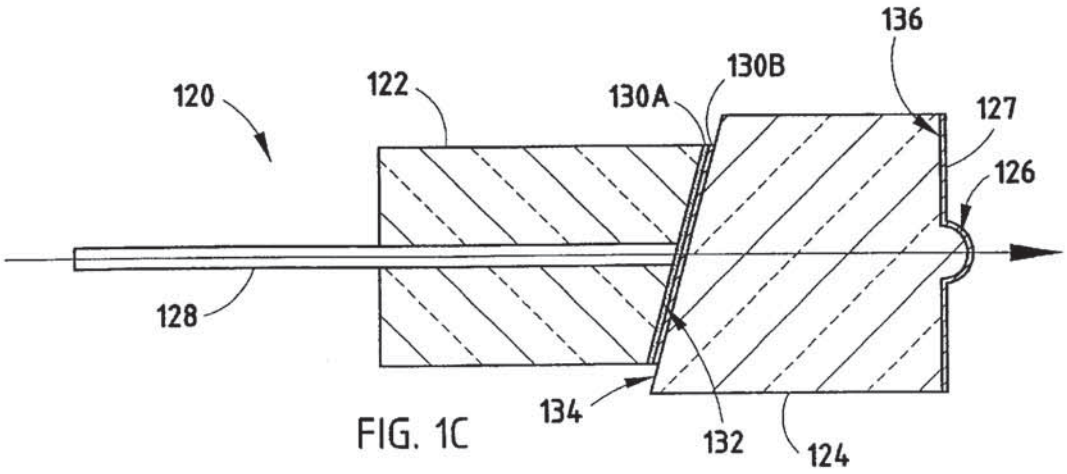

FIG. 1C

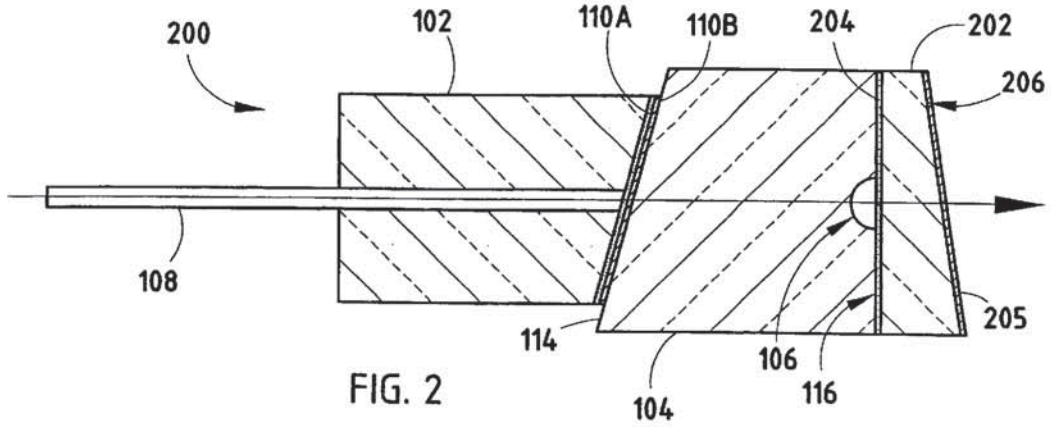

FIG. 2

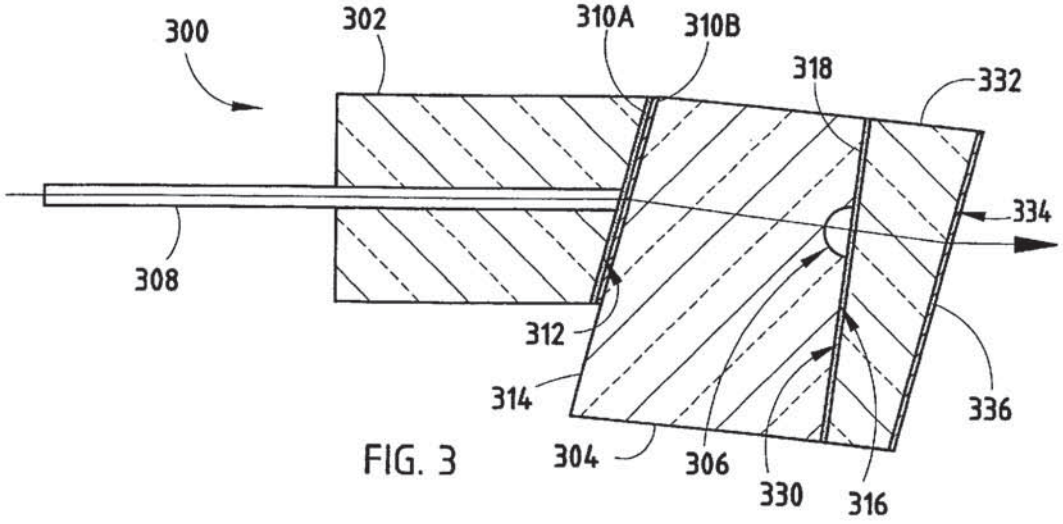

FIG. 3

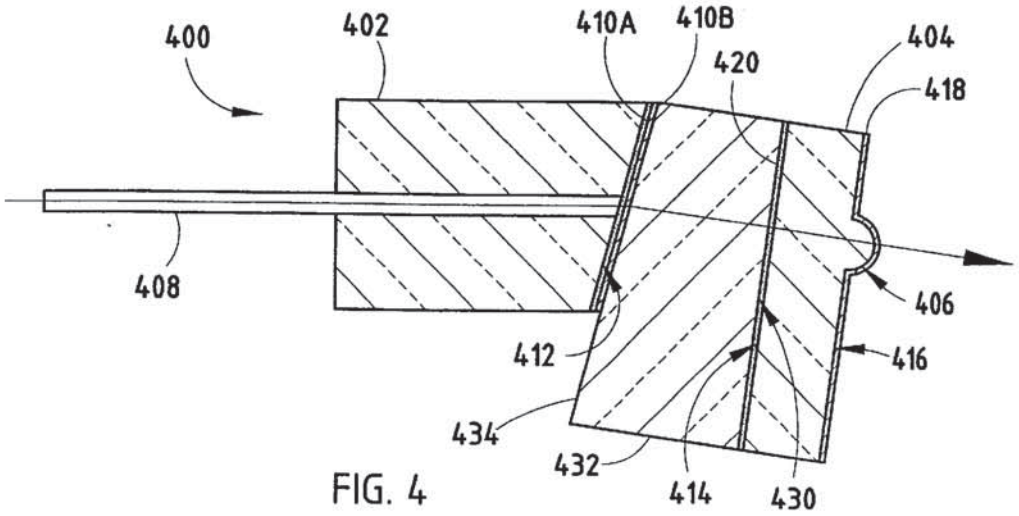

FIG. 4

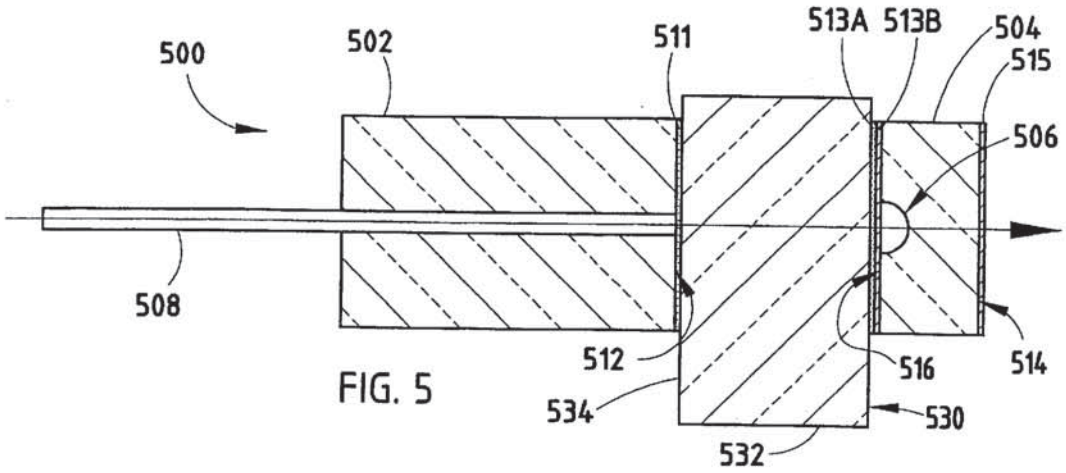

FIG. 5

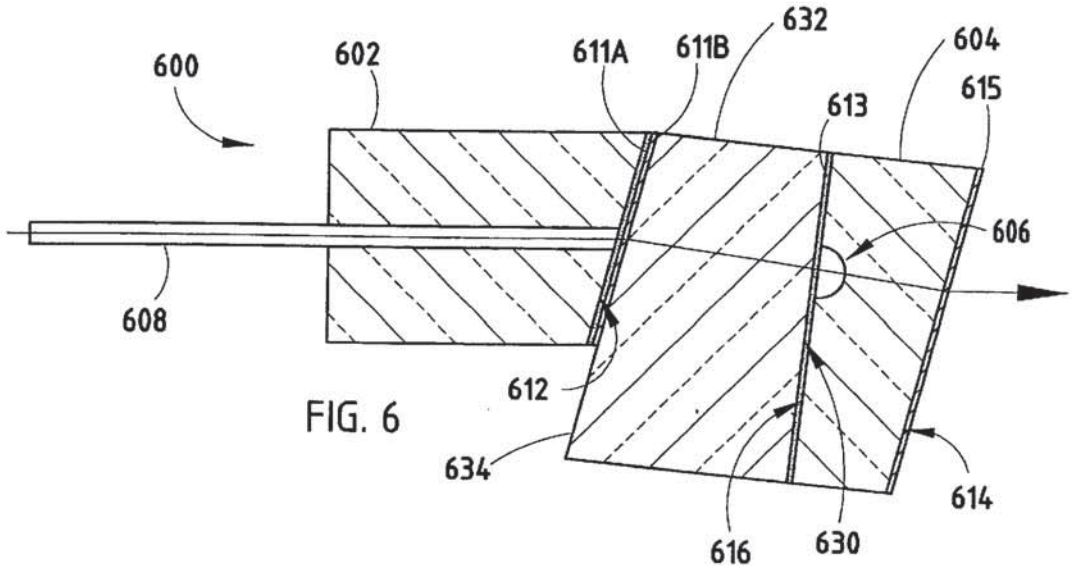

FIG. 6

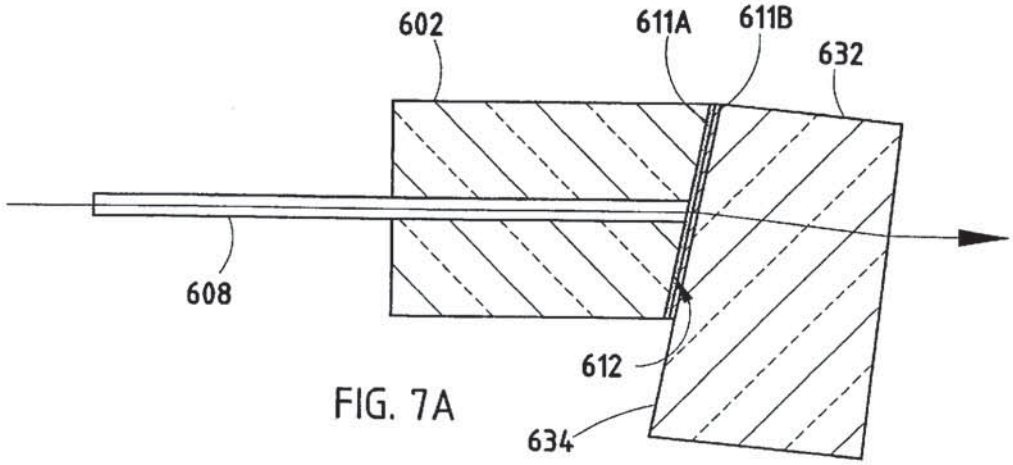

FIG. 7A

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