# United States Patent [19]

**Dahlgren**

[11] **Patent Number: 4,991,922**

[45] **Date of Patent: Feb. 12, 1991**


[54] **OPTICAL FIBER COUPLER AND METHOD**


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[21] Appl. No.: **237,778**

[22] Filed: **Aug. 29, 1988**

[51] **Int. Cl.**[5] ..... **G02B 6/26; G02B 6/42**

[52] **U.S. Cl.** ..... **350/96.15**

[58] **Field of Search** ..... 350/96.15



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[57] **ABSTRACT**


In an optical fiber coupling method and coupling assembly, an optical fiber is secured in a support block which is thermally matched to the fiber material. The fibers are coupled within a homogeneous glass medium, resulting in extreme resistance to ambient chemicals, radiation, temperature and forces. A region of the block is optically worked to form a coupling surface surrounding an exposed central portion of the fiber cladding. First and second such blocks are then positioned with their coupling surfaces aligned, and are placed in optical contact with their opposing counterparts. This produces an optical splice of the fibers within a boundary-free thermally matched medium. The optically-contacted assembly, once aligned, is substantially self-securing, and, due to its homogeneity, does not introduce stresses to the fiber as the temperature of the assembly varies. Preferred forms of fiber mounting and methods of enhancing the formation and quality of optical contact are disclosed.


**17 Claims, 4 Drawing Sheets**