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# United States Patent [19]

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Ames

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[54] **METHOD PROVIDING OPTIMUM OPTICAL TRAINS ALIGNMENT IN A PASSIVE MULTI-CHANNEL FIBER OPTIC ROTARY JOINT**

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[51] Int. Cl.<sup>5</sup> ..... **G02B 6/26**

[52] U.S. Cl. .... **385/26; 385/34; 385/36; 359/900**

[58] Field of Search ..... **385/25, 26, 34, 36; 359/900; 29/833, 868, 869**

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[57] **ABSTRACT**

A method is disclosed for use in the fabrication of a passive multi-channel optical fiber rotary joint having an axis of rotation and of the type in which optical fiber communication channels are coupled via bilaterally symmetrically disposed miniature-collimation-lenses as collimated beams to one and the other sides of an image-derotation-prism-and-prism-rotational-drive-subassembly prism which rotates at a predetermined ratio of the relative rotation of the sides of the rotary joint to derotate optical propagation paths across the transverse rotary interface associated with the respective ones of the miniature collimation lenses. Each channel at each side of the rotary joint includes a fiber and lens junction at which a ferrule encased fiber termination couples to the axially outwardly disposed face of the miniature collimation lens. A lens array holding piece serves as the mount for this junction. Each array piece is provided with a locality of axial engagement at the adjacent side of the image derotation prism of the image-derotation-prism-and-prism-rotational-drive subassembly.

11 Claims, 4 Drawing Sheets

