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**United States Patent** [19]  
**Kewitsch et al.**

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- [54] **WAVELENGTH SELECTIVE OPTICAL DEVICES**
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**Related U.S. Application Data**

- [63] Continuation-in-part of Ser. No. 703,357, Aug. 26, 1996, Pat. No. 5,805,751.
- [60] Provisional application No. 60/005,915, Oct. 27, 1995.
- [51] **Int. Cl.<sup>6</sup>** ..... **G02B 6/34**
- [52] **U.S. Cl.** ..... **385/37; 385/24**
- [58] **Field of Search** ..... **385/14-16, 24, 385/27, 28, 31, 37, 39, 48**

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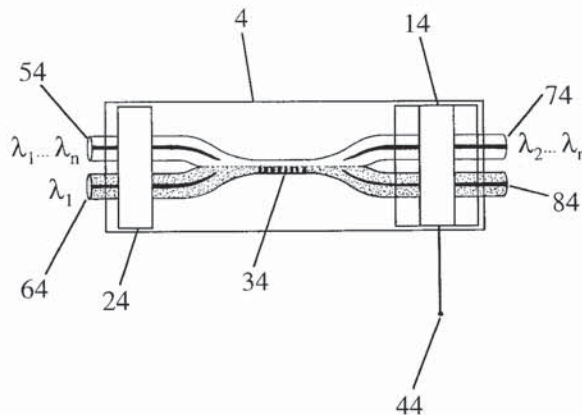
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[57] **ABSTRACT**

Wavelength selective devices and subsystems having various applications in the field of optical communications are disclosed. These devices and subsystems are composed of bi-directional grating assisted mode couplers. The high add/drop efficiency and low loss of this coupler enable low loss wavelength selective elements such as optical switches, amplifiers, routers, and sources to be fabricated. The grating assisted mode coupler can be wavelength tuned by modifying the optical properties of the coupler interaction region. A programmable, wavelength selective router composed of multiple grating assisted mode couplers is also disclosed.

**31 Claims, 10 Drawing Sheets**



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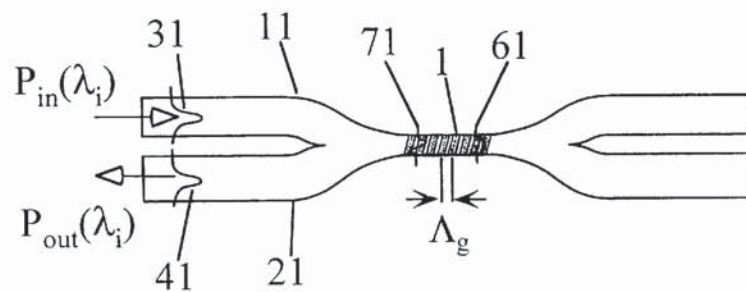


FIG. 1

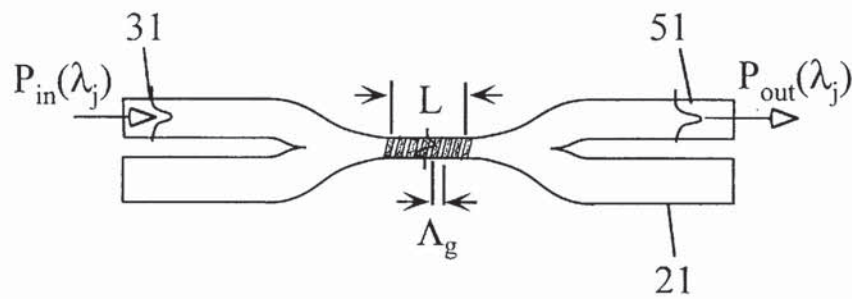


FIG. 2

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