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(54) **RECONFIGURABLE OPTICAL ADD-DROP
 MULTIPLEXERS WITH SERVO CONTROL
 AND DYNAMIC SPECTRAL POWER
 MANAGEMENT CAPABILITIES**

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Related U.S. Patent Documents

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(52) **U.S. Cl.** **385/24; 385/10; 385/33; 385/37;**
398/83

(58) **Field of Classification Search** **385/24,**
385/11, 10, 37, 34, 33; 398/79, 82, 83, 84,
398/88, 87

See application file for complete search history.

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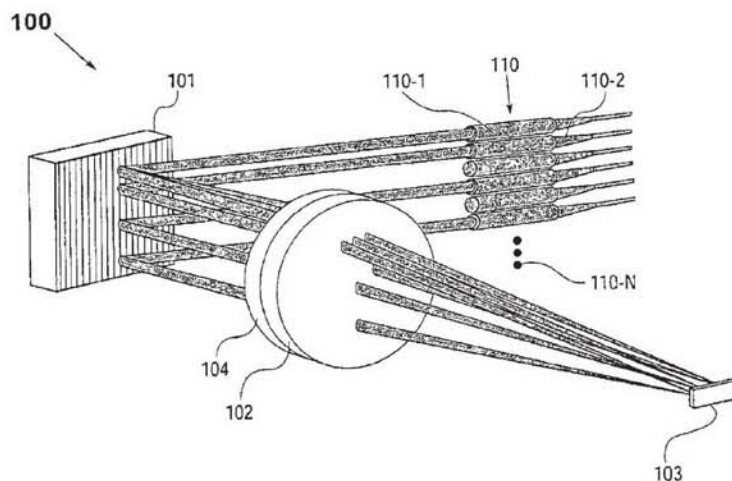
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(57) ABSTRACT

This invention provides a novel wavelength-separating-routing (WSR) apparatus that uses a diffraction grating to separate a multi-wavelength optical signal by wavelength into multiple spectral channels, which are then focused onto an array of corresponding channel micromirrors. The channel micromirrors are individually controllable and continuously pivotable to reflect the spectral channels into selected output ports. As such, the inventive WSR apparatus is capable of routing the spectral channels on a channel-by-channel basis and coupling any spectral channel into any one of the output ports. The WSR apparatus of the present invention may be further equipped with servo-control and spectral power-management capabilities, thereby maintaining the coupling efficiencies of the spectral channels into the output ports at desired values. The WSR apparatus of the present invention can be used to construct a novel class of dynamically reconfigurable optical add-drop multiplexers (OADMs) for WDM optical networking applications.

22 Claims, 12 Drawing Sheets



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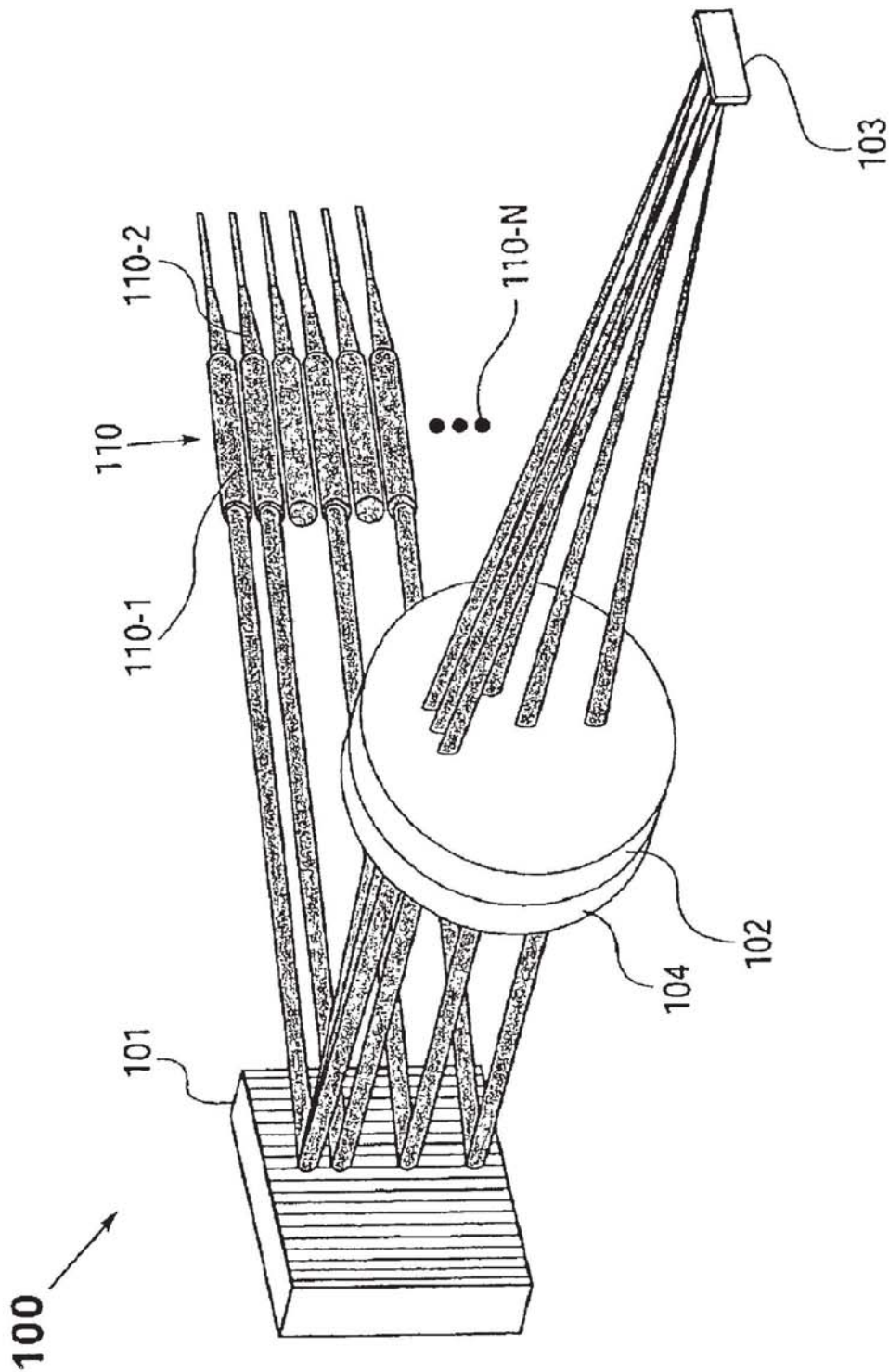


Fig. 1A

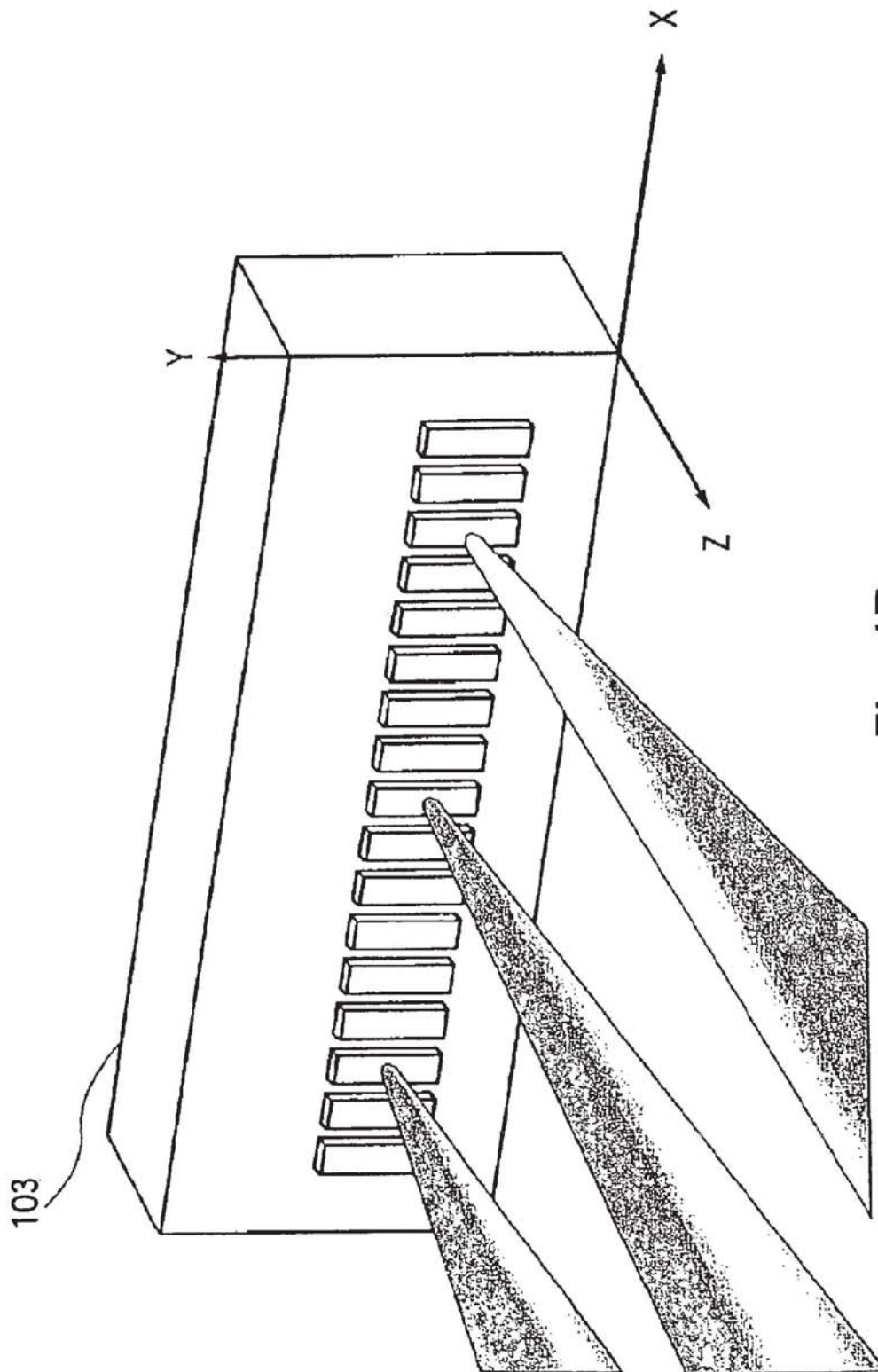
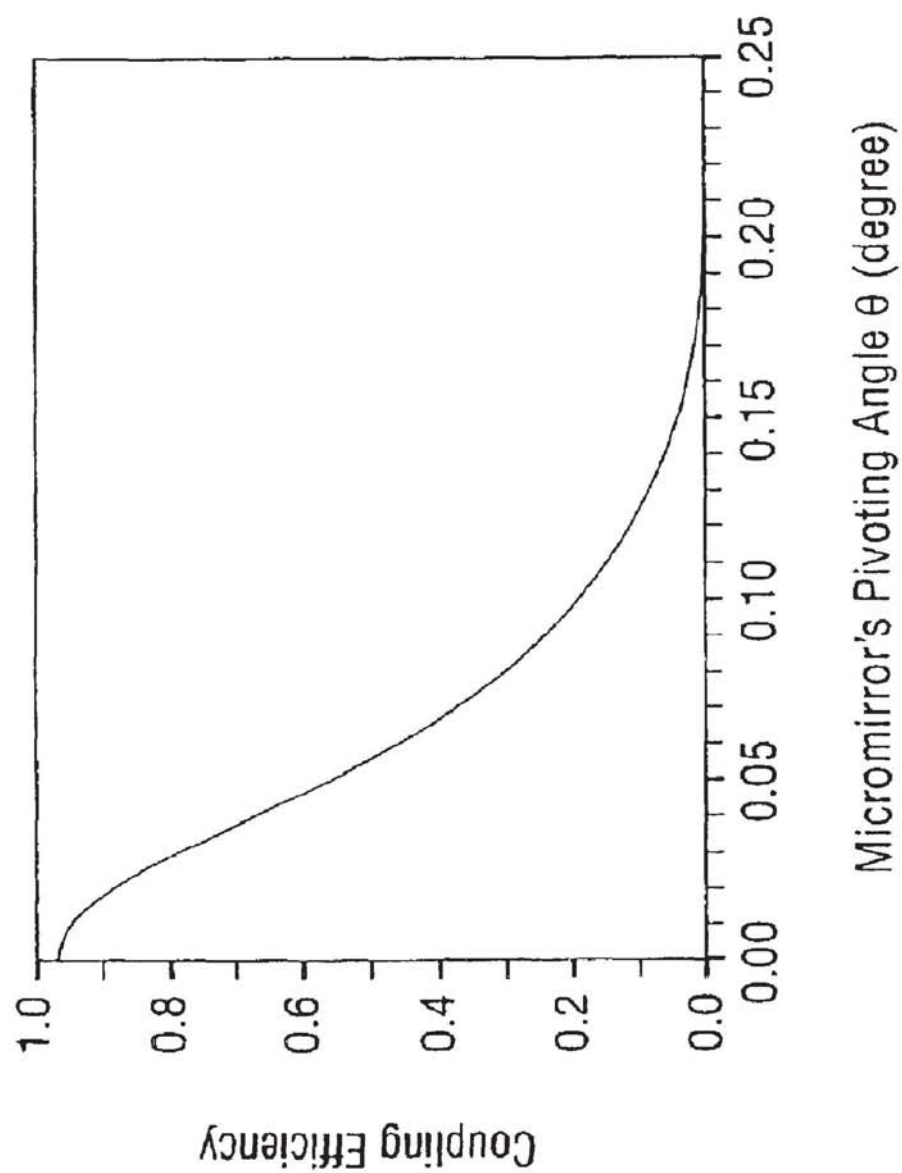


Fig. 1B

**Fig. 1C**



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