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(12) **United States Patent**
Marom

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(45) **Date of Patent:** **Sep. 27, 2005**

(54) **TUNABLE, MULTI-PORT OPTICAL ADD-DROP MULTIPLEXER**

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* cited by examiner

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 628 days.

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(21) Appl. No.: **09/944,802**

(57) **ABSTRACT**

(22) Filed: **Aug. 31, 2001**

A tunable (reconfigurable) OADM provides multiple drop ports and multiple add ports by which desired channels can be removed from, or added to, a composite optical signal. In one embodiment, a programmable demultiplexer is arranged to receive an input signal containing components at x different wavelengths from an optical input port, and distribute the input signal components among K output ports. K-1 of the output ports are the "drop" ports of the OADM, and cumulatively contain w different wavelengths. The remaining port, which is the "through port" that carries the z wavelengths not dropped from the original input signal, is connected to the first port of an M port programmable multiplexer having M-1 other input ports. The remaining M-1 ports are the "add" ports of the OADM, which cumulatively receive v different wavelengths to be added by the OADM.

(65) **Prior Publication Data**

US 2002/0196493 A1 Dec. 26, 2002

Related U.S. Application Data

(60) Provisional application No. 60/300,272, filed on Jun. 22, 2001.

(51) **Int. Cl.**⁷ **H04J 14/02**

(52) **U.S. Cl.** **398/83; 398/79; 398/82; 398/84; 398/45; 385/24; 385/37**

(58) **Field of Search** 398/83, 84, 82, 398/79, 45, 87, 88; 385/24, 37, 18, 31, 16, 17, 15, 27

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9 Claims, 4 Drawing Sheets

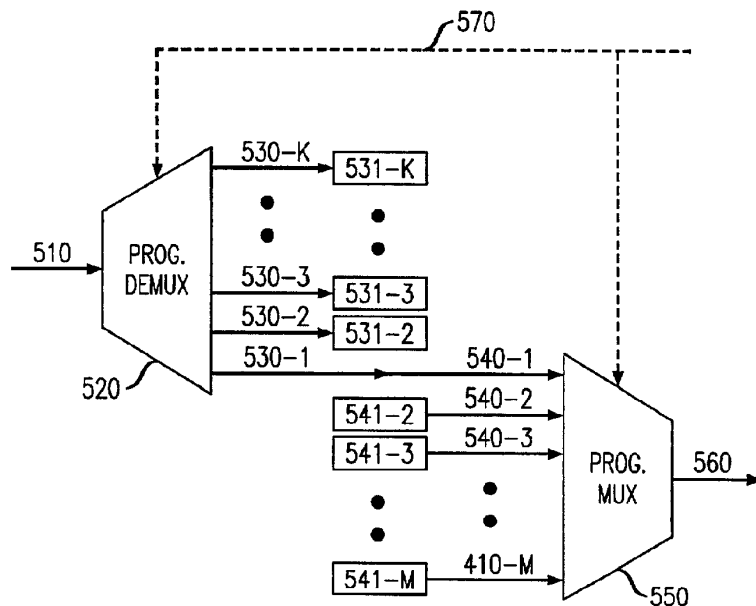


FIG. 1

PRIOR ART

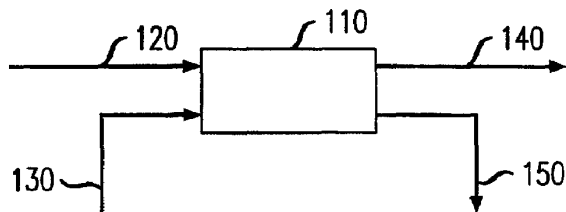


FIG. 2

PRIOR ART

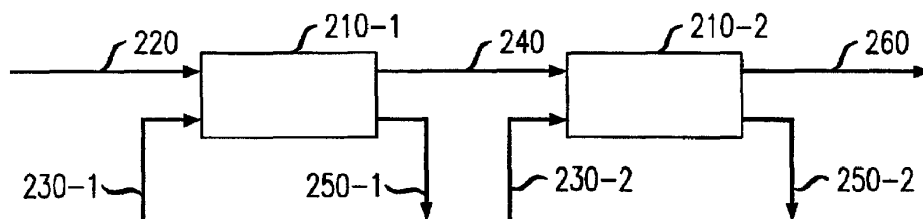


FIG. 3

PRIOR ART

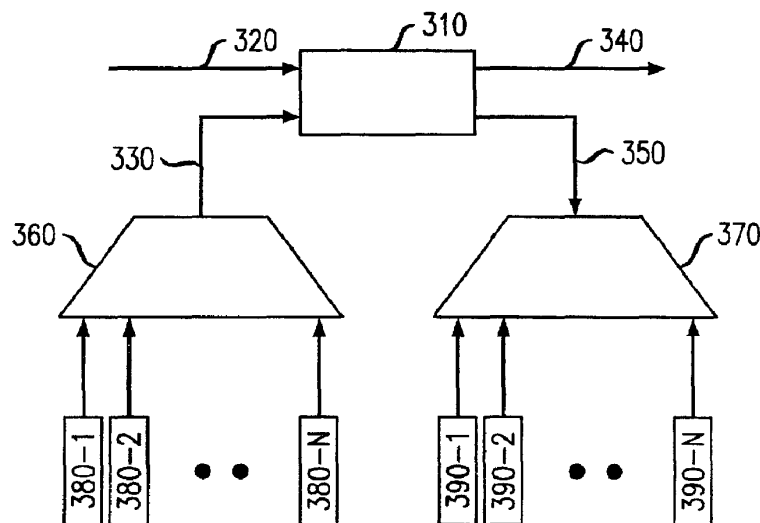


FIG. 4(A)

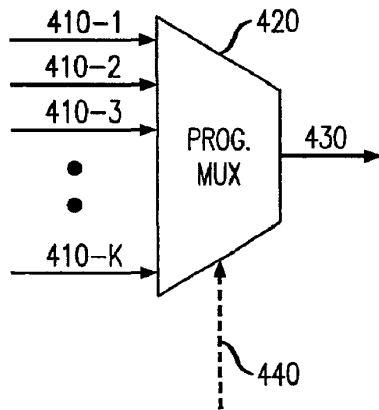


FIG. 4(B)

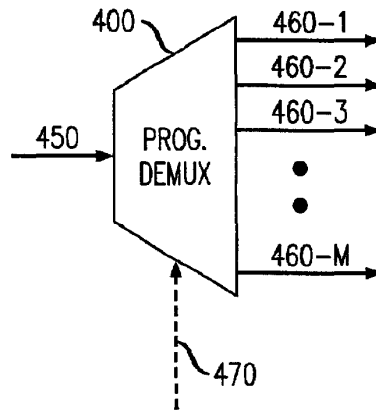


FIG. 5

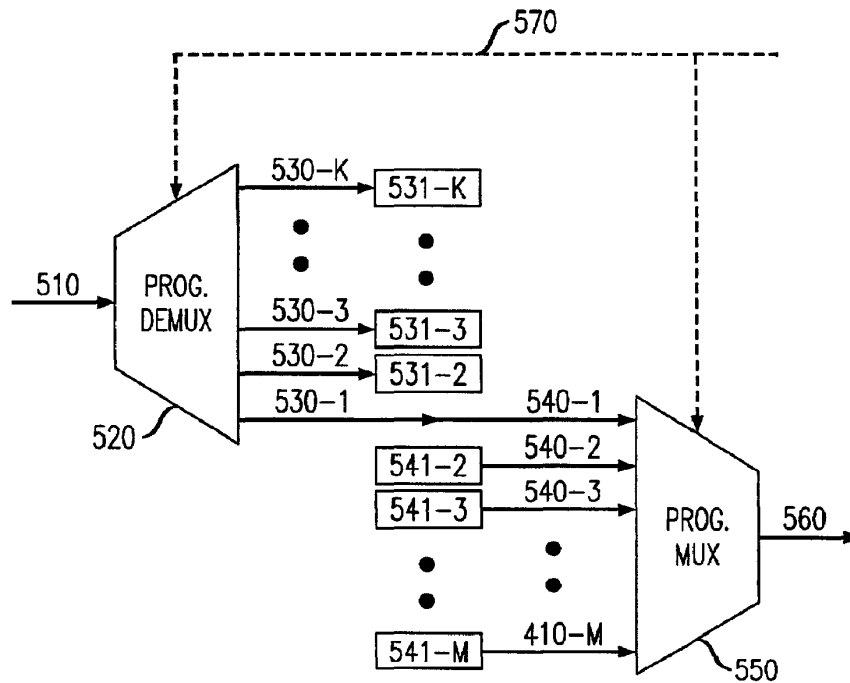


FIG. 6

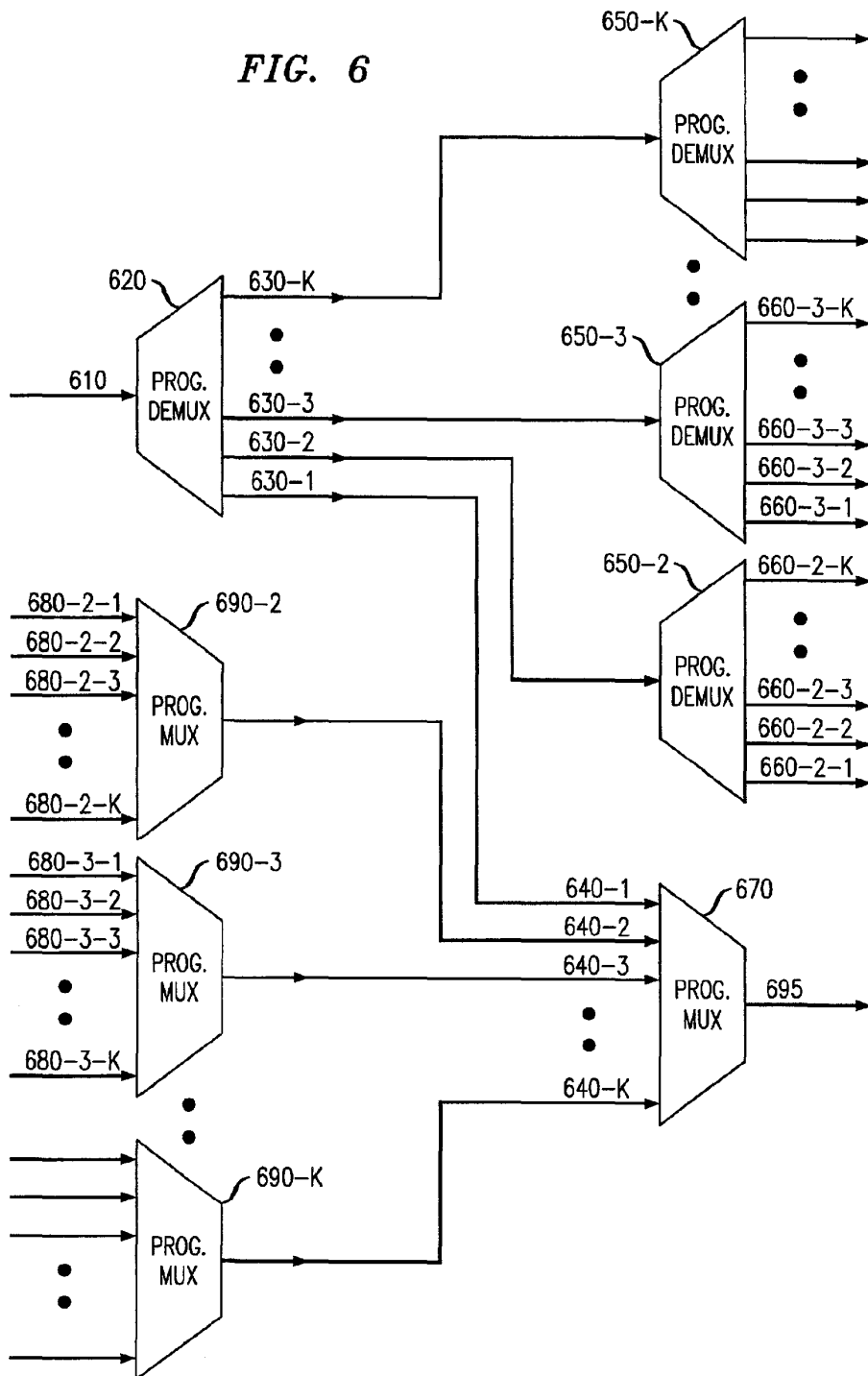


FIG. 7

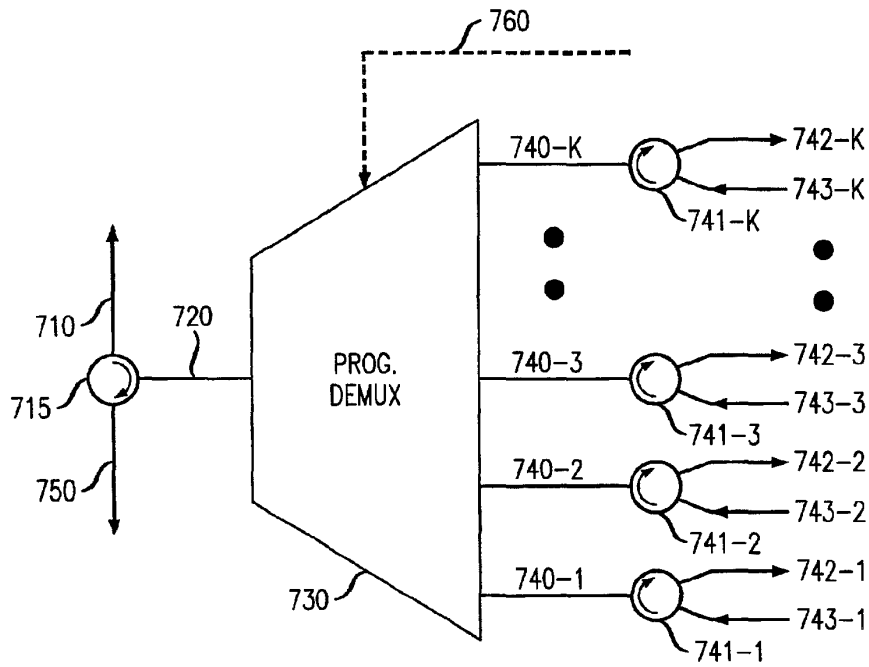
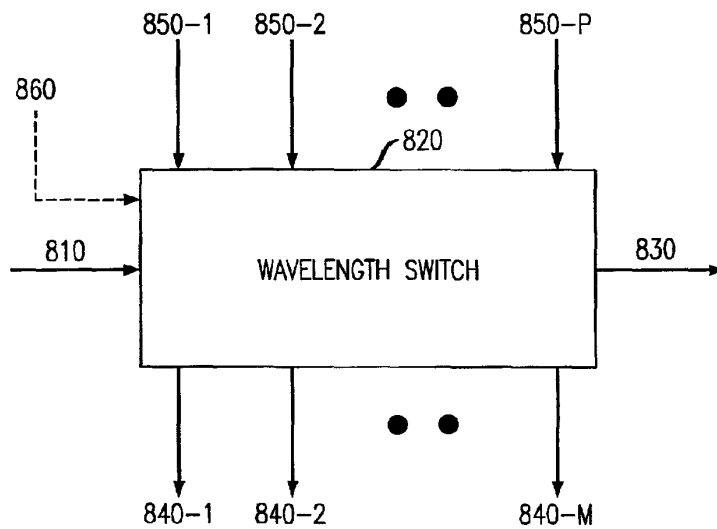


FIG. 8



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