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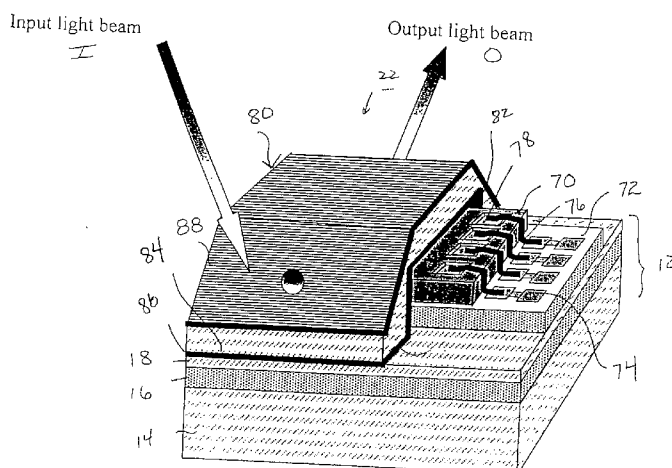
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(54) Title: VERTICAL STACKING OF MULTIPLE INTEGRATED CIRCUITS INCLUDING SOI-BASED OPTICAL COMPONENTS



(57) Abstract: A vertical stack of integrated circuits includes at least one CMOS electronic integrated circuit (IC), an SOI-based opto-electronic integrated circuit structure, and an optical input/output coupling element. A plurality of metalized vias may be formed through the thickness of the stack so that electrical connections can be made between each integrated circuit. Various types of optical input/output coupling can be used, such as prism coupling, gratings, inverse tapers, and the like. By separating the optical and electrical functions onto separate ICs, the functionalities of each may be modified without requiring a re-design of the remaining system. By virtue of using SOI-based opto-electronics with the CMOS electronic ICs, a portion of the SOI structure may be exposed to provide access to the waveguiding SOI layer for optical coupling purposes.

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