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Mooradian

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(54) **COUPLED CAVITY HIGH POWER SEMICONDUCTOR LASER**

(75) Inventor: **Aram Mooradian**, Sunnyvale, CA (US)

(73) Assignee: **Novalux, Inc.**, Sunnyvale, CA (US)

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(58) **Field of Search** 372/43, 50, 96, 372/97, 98, 99, 108; 438/29, 32, 72, 69

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PCT Search Report.

Primary Examiner—Minsun Oh Harvey

Assistant Examiner—Armando Rodriguez

(74) *Attorney, Agent, or Firm*—Fulbright & Jaworski L.L.P.

(57) **ABSTRACT**

An active gain region sandwiched between a 100% reflective bottom Bragg mirror and an intermediate partially reflecting Bragg mirror is formed on a lower surface of a supporting substrate, to thereby provide the first ("active") resonator cavity of a high power coupled cavity surface emitting laser device. The bottom mirror is preferably in direct thermal contact with an external heat sink for maximum heat removal effectiveness. The reflectivity of the intermediate mirror is kept low enough so that laser oscillation within the active gain region will not occur. The substrate is entirely outside the active cavity but is contained within a second ("passive") resonator cavity defined by the intermediate mirror and a partially reflecting output mirror, where it is subjected to only a fraction of the light intensity that is circulating in the gain region. The active gain region is preferably electrically excited, with a circular bottom electrode formed by an oxide current aperture between the bottom mirror and the heat sink, and with an annular top electrode formed on an upper surface of the substrate.

3 Claims, 2 Drawing Sheets

