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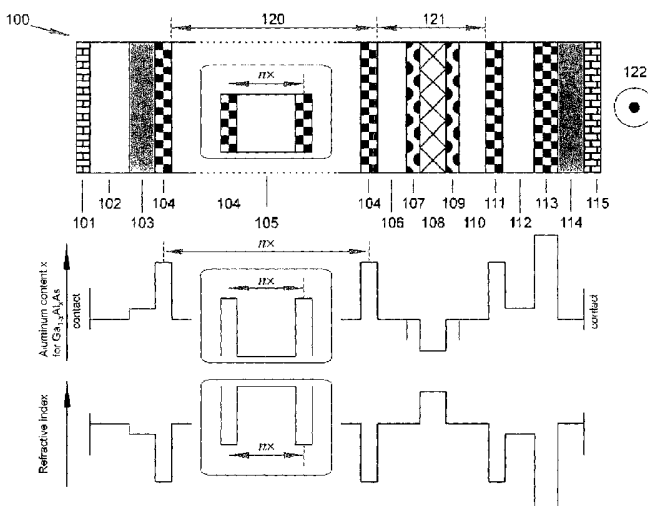
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(54) Title: A SEMICONDUCTOR LASER



(57) Abstract: A semiconductor laser (100) having a low beam divergence is disclosed. The laser includes at least one waveguide comprising an active layer (108) generating an optical gain by injection of a current, a photonic band gap crystal (120) having the refractive index modulation in the direction perpendicular to the propagation of the emitted light, and at least one defect (121). The active layer (108) is preferably placed within the defect (121). The photonic band gap crystal (120) and the defect are optimized such that the fundamental mode of laser radiation is localized at the defect (121) and decays away from the defect (121), while the other optical modes are extended over the photonic band gap crystal. Localization of the fundamental mode at the defect (121) results in the relative enhancement of the amplitude of the mode with respect to the other modes. Therefore, there is a larger confinement factor of the fundamental mode as compared to the confinement factor of the other modes. This enables efficient single-mode lasing from the laser having an extended waveguide.

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B. FIELDS SEARCHED

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	US 6,304,366 B1 (Scalora et al) 16 October 2001 (16.10.2001), see Figs. 1 - 5, Abstract, column 2, lines 64 - 68, column 3, lines 1 - 37, column 8, lines 20 - 65, column 9, lines 10 - 58, column 11, lines 55 - 68, column 12, lines 1 - 9 and column 17, lines 31 - 52).	1-14, 31-38, 79 - 89, and 92 - 114
Y, E	US 6,542,682 B2 (Cotterverte et al) 01 April 2003 (01.04.2003), see Figs. 1 - 38, Abstract.	15 - 30 and 90-91

Further documents are listed in the continuation of Box C. See patent family annex.

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