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Volodin

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(54) **HIGH-POWER, PHASED-LOCKED, LASER ARRAYS**

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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 0 days.

This patent is subject to a terminal disclaimer.

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See application file for complete search history.

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(57) **ABSTRACT**

High-power, phased-locked, laser arrays as disclosed herein utilize a system of optical elements that may be external to the laser oscillator array. Such an external optical system may achieve mutually coherent operation of all the emitters in a laser array, and coherent combination of the output of all the lasers in the array into a single beam. Such an "external gain harness" system may include: an optical lens/mirror system that mixes the output of all the emitters in the array; a holographic optical element that combines the output of all the lasers in the array, and an output coupler that selects a single path for the combined output and also selects a common operating frequency for all the coupled gain regions.

20 Claims, 9 Drawing Sheets

