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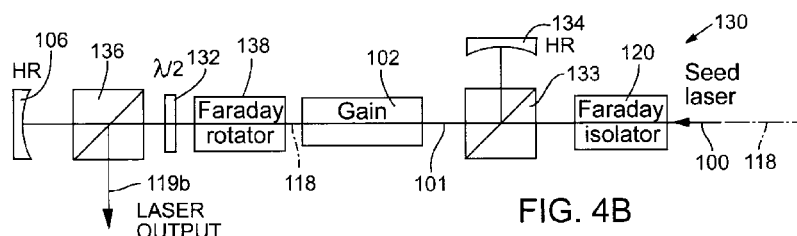
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(54) **Title:** MULTI-PASS OPTICAL POWER AMPLIFIER

**FIG. 4B**

(57) **Abstract:** Anisotropic crystals such as Nd:YVO₄, Nd:YLF, and Nd:GdVO₄ have become preferred gain materials for many laser applications. The anisotropic gain medium without ancillary compensation ensures there is no degradation of laser modes when passing through the gain medium. An optical power amplifier that incorporates an anisotropic gain medium achieves power scaling with multiple passes while also maintaining good mode matching between the laser and the pump during each pass. Preferred embodiments implement for multiple passes of a seed laser beam (100) through an anisotropic gain medium (102) with substantially zero angular beam displacement during each pass. The multi-pass system provides an economical, reliable method of achieving high TEM₀₀ power to meet the demands of micromachining, via drilling, and harmonic conversion applications.

