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(54) Micro-electromechanical (MEM) optical resonator and method

(57) An integrated micro-electromechanical (MEM) optical resonator comprises a cantilever beam which is fixed to a substrate at one end and extends freely over the substrate at the other end, and a bimorph actuator stacked atop the beam at its fixed end. A reflective surface partially covers the top of the beam at its free end. The bimorph actuator comprises material layers having different thermal expansion coefficients. A DC-biased AC voltage connected across the actuator causes it to heat and cool as the current passing through it increases and decreases, creating a thermal bimorph effect which causes the cantilever beam and the reflective surface to oscillate in accordance with the varying current, preferably at the beam and actuator structure's fundamental resonant frequency. Combining the resonator with a light source and actuator excitation circuitry creates an optical scanner engine which delivers a scan angle in excess of 20 degrees and a scan rate of up to 2000 Hz, using a driving voltage of only 2 V_{p-p}.

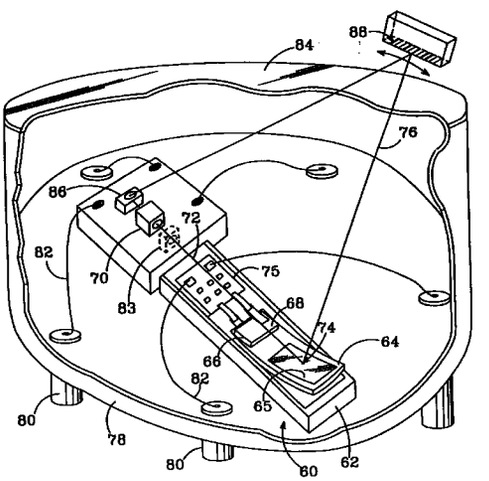

FIG.4

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EUROPEAN SEARCH REPORT

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EP 98 10 7655

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TECHNICAL FIELDS SEARCHED (Int.Cl.6)

G02B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17 May 1999	THEOPISTOU, P

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Application Number
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