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(54) Title: DESIGNS OF NANO-PRECISE SHORT STROKE STAGES FOR ACTUATION

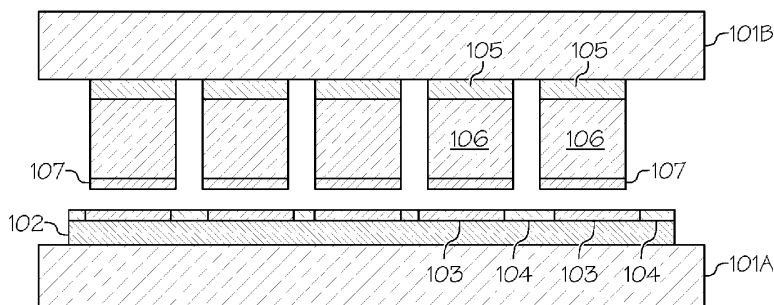


FIG. 1

(57) Abstract: A system for aligning four or more dies with respect to a substrate. The system includes four or more stage modules utilized to enable the aligning of the four or more dies with respect to the substrate. The aligning is performed with sub-50 nm alignment precision, where the four or more stage modules are actuated along the X, Y, and/or θ_z directions. The motion along the Z, θ_x , and/or θ_y directions is supported actively or passively, where the passive supporting is enabled by flexures and/or a liquid film. Furthermore, actuation is enabled by piezoelectric and/or electromagnetic methods.

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