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(71) Applicant (for all designated States except US): **AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH** [SG/SG]; 1 Fusionopolis Way, #20-10 Connexis, Singapore 138632 (SG).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **WAN, Yee Ming, Stephen** [MY/SG]; 239 Bukit Batok East Ave 5, #08-175, Singapore 638075 (SG).

(74) Agent: **ATMD BIRD & BIRD LLP**; 39 Robinson Road #07-01, Robinson Point, Singapore 068911 (SG).

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(54) Title: ABRASIVE FLOW MACHINING APPARATUS, METHOD AND SYSTEM

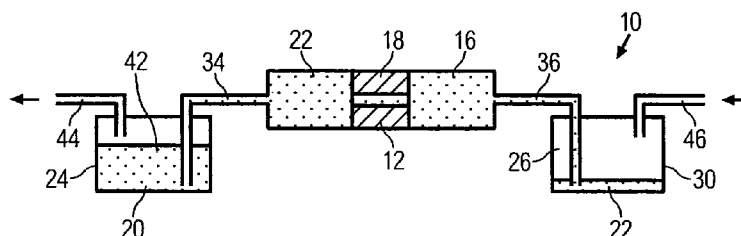


FIG. 1A

(57) Abstract: An abrasive flow machining (AFM) method, apparatus and system is disclosed for processing a surface of a workpiece by hydraulically or pneumatically extruding an abrasive media across a surface of a workpiece from one chamber on one side of the workpiece to another chamber on another side of the workpiece. The nature of the AFM design and the viscosity of the abrasive media is such that the extrusion of the abrasive media is accomplished by applying the pneumatic or hydraulic pressure directly to the abrasive media itself. The chambers on either side of the workpiece may be partially defined by a floating piston, and a pressure intensifier may be employed together with a floating piston to increase the pressure of the hydraulically or pneumatically driving force. A mixer may be employed to ensure mixing of the abrasives in the media, and multiple abrasive media chambers may be arranged to form a polishing chamber for processing external or internal surfaces of three-dimensional free form workpieces.

