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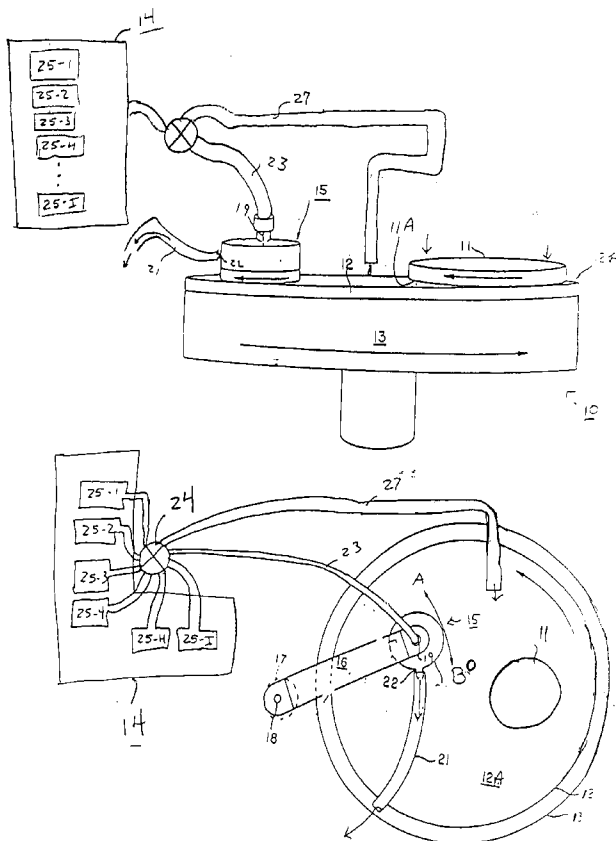
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(54) Title: MULTI-STEP, IN-SITU PAD CONDITIONING SYSTEM AND METHOD FOR CHEMICAL MECHANICAL PLANARIZATION



(57) Abstract: An arrangement for performing a multi-step polishing process on a single stage chemical mechanical planarization (CMP) apparatus utilizes an in-situ conditioning operation to continuously clean and evacuate debris and spent polishing slurry from the surface of the polishing pad. By presenting a clean, virtually "new" polishing pad surface at the beginning of each planarization cycle, polishing agents of different chemistries, morphologies, temperatures, etc. may be used without the need to remove the wafer to change the polishing source or transfer the wafer to another CMP polishing station. A multi-positional valve may be used to control the introduction of various process fluids, including a variety of different polishing slurries and conditioning/flushing agents. The use of different conditioning materials allows for the surface of the polishing pad to be altered for different process conditions (e.g., neutralizing prior polishing chemicals, modifying the surface temperature of the pad to control polishing rate, use of surfactants to dislodge particles that become attracted to the pad surface, etc.).



SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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