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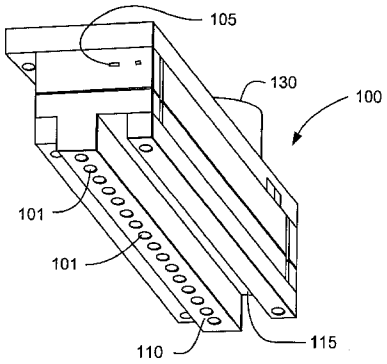
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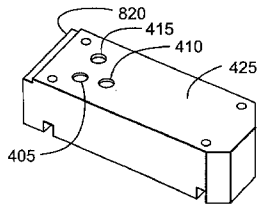
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(54) Title: METHOD AND APPARATUS FOR MITIGATING CROSS-CONTAMINATION BETWEEN LIQUID DISPENSING JETS IN CLOSE PROXIMITY TO A SURFACE





(57) Abstract: Methods and apparatus for delivering a variety of processing fluids onto a semiconductor wafer substrate with a multi-port nozzle. The nozzle is formed with plurality of longitudinal liquid manifolds and gas manifolds. Each manifold is positioned within the nozzle body so they are in fluid communication with a separate corresponding inlet formed in the body of the nozzle. Fluid inlets may be connected to external sources for receiving processing fluids to be dispensed. In addition, the nozzle includes a plurality of nozzle tips for directing dispensed liquids onto the wafer substrate. At least some portion of each tip extends beyond the bottom surface of the nozzle, and at the same time, at least some portion of the tip extends into a liquid manifold within the nozzle body to form an interior reservoir. Furthermore, the bottom nozzle surface includes a network of trenches formed in between the nozzle tips in a grid-like pattern and may further include a plurality of gas orifices therein. The gas orifices are connected to a gas manifold to receive pressurized gas thereby forming gas curtains which assist in controlling and directing the various processing fluids onto the wafer substrate with reduced cross-contamination and splashback from the wafer substrate.

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