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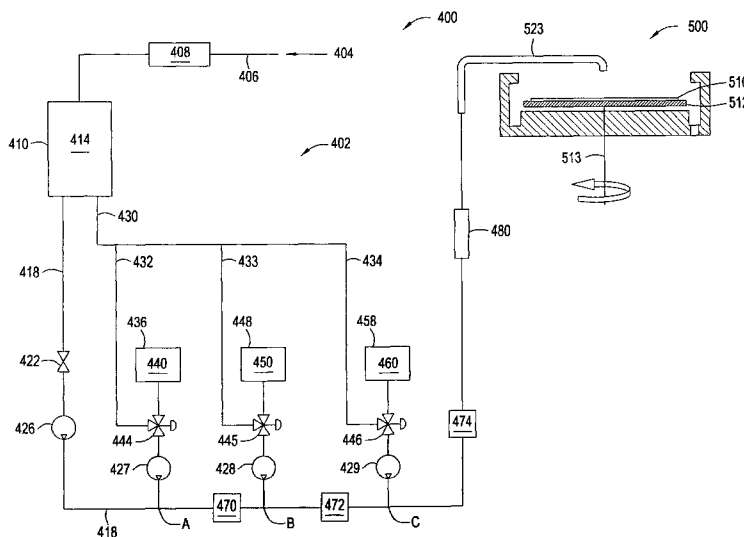
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(54) Title: SELECTIVE SELF-INITIATING ELECTROLESS CAPPING OF COPPER WITH COBALT-CONTAINING ALLOYS



(57) Abstract: Embodiments of the invention generally provide compositions of plating solutions, methods to mix plating solutions and methods to deposit capping layers with plating solutions. The plating solutions described herein may be used as electroless deposition solutions to deposit capping layers on conductive features. The plating solutions are rather dilute and contain strong reductants to self-initiate on the conductive features. The plating solutions may provide in-situ cleaning processes for the conductive layer while depositing capping layers free of particles. In one embodiment, a method for forming an electroless deposition solution is provided which includes combining de-ionized water with a conditioning buffer solution comprising a first complexing agent, a cobalt-containing solution comprising a cobalt source and a second complexing agent and a buffered reducing solution comprising a hypophosphite source and a borane reductant.

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