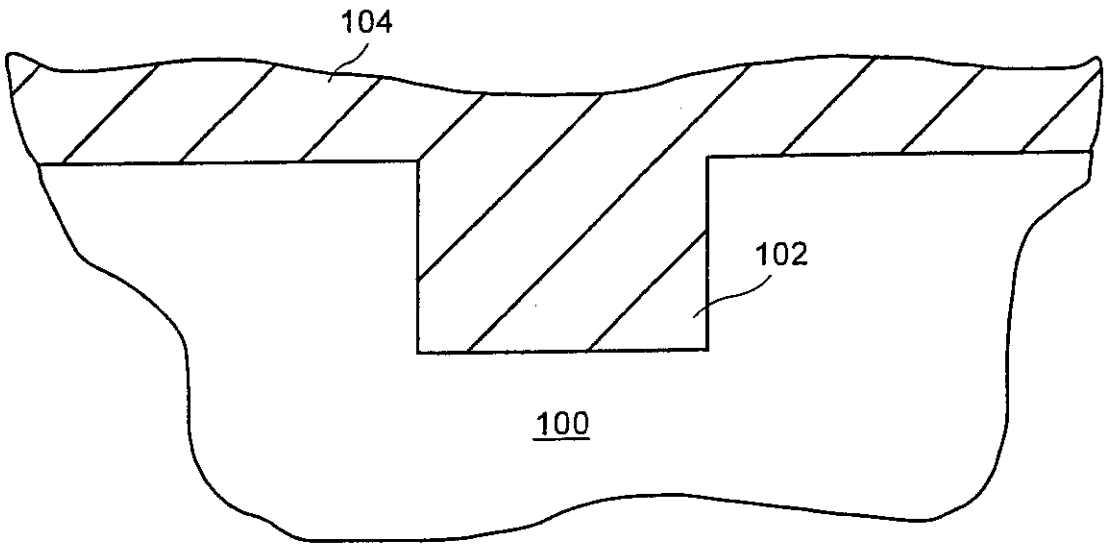


FIG. 1A
(prior art)

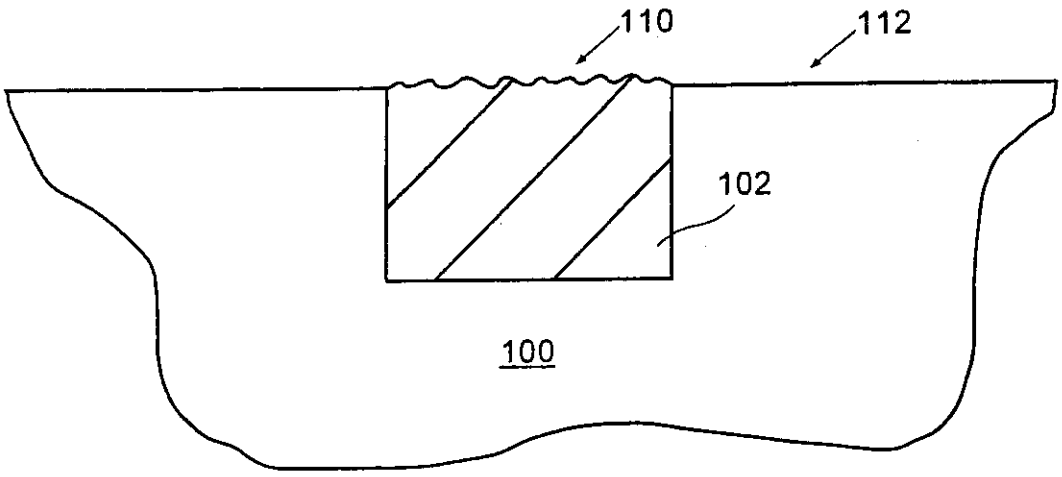


FIG. 1B
(prior art)

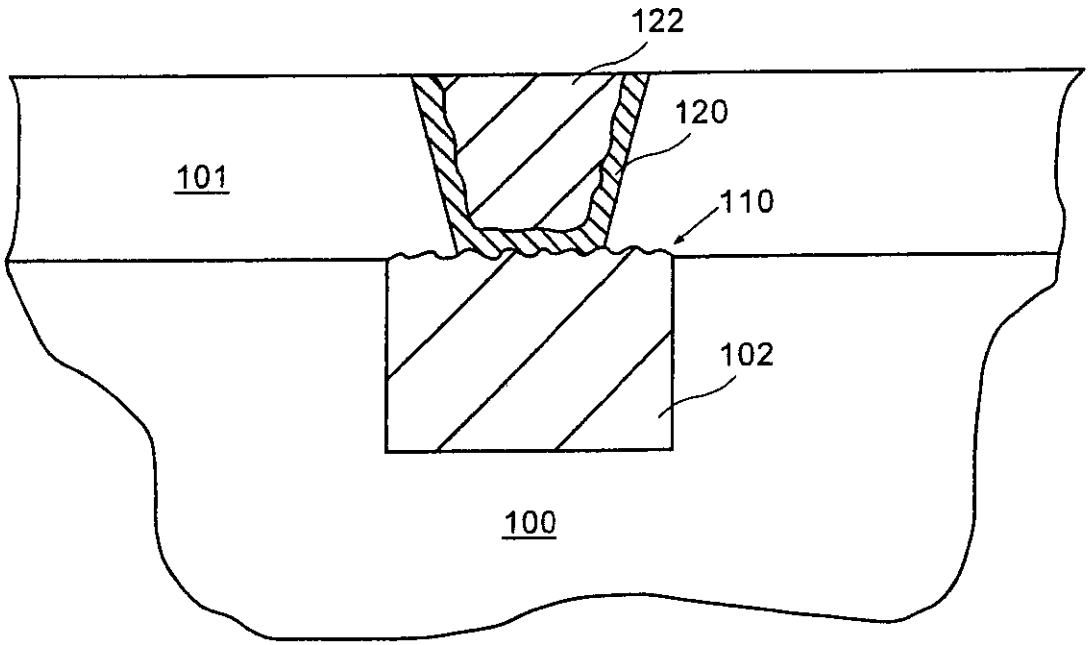


FIG. 1C
(prior art)

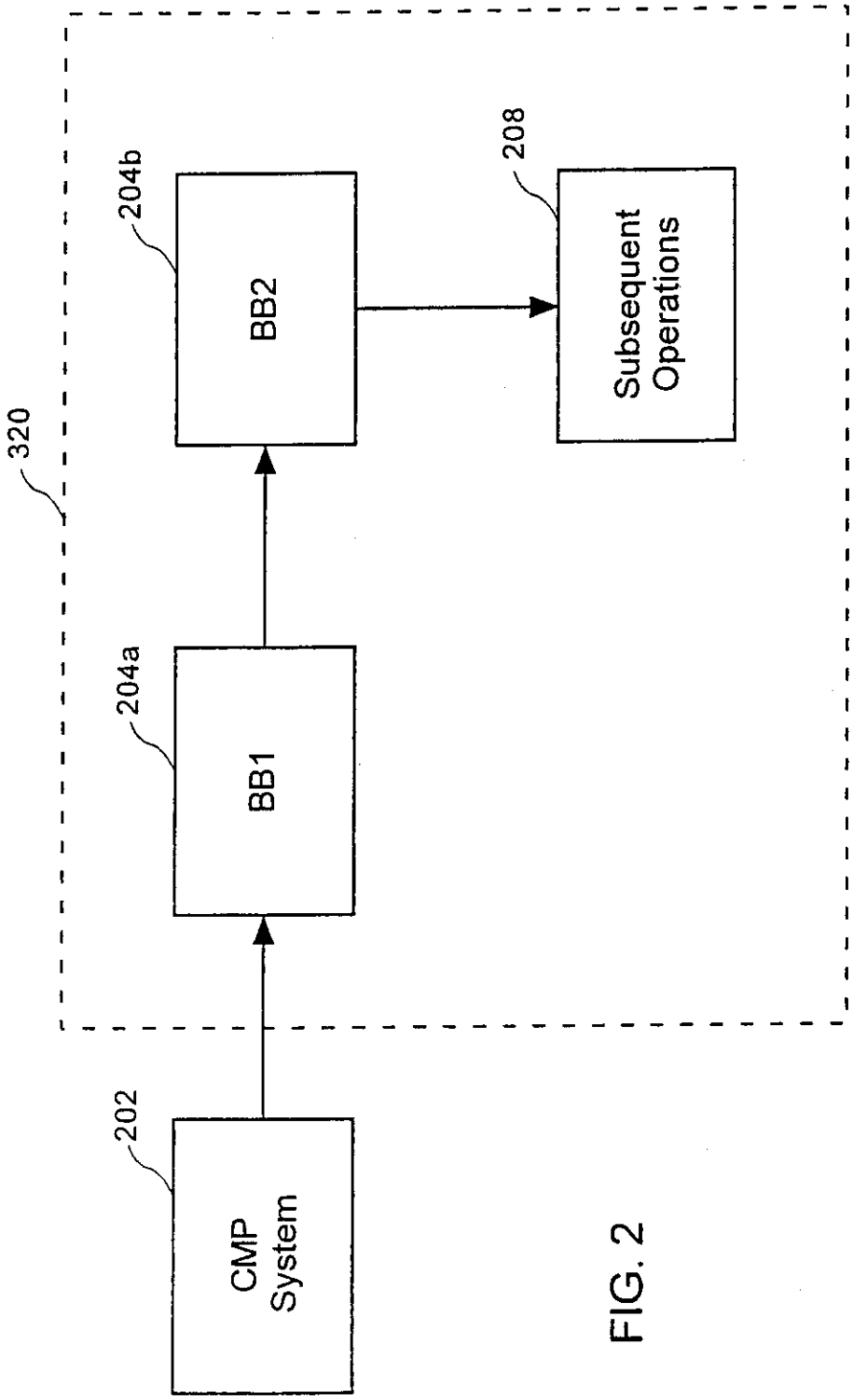

320
204b
BB2
208
Subsequent Operations
204a
BB1
202
CMP System

FIG. 2

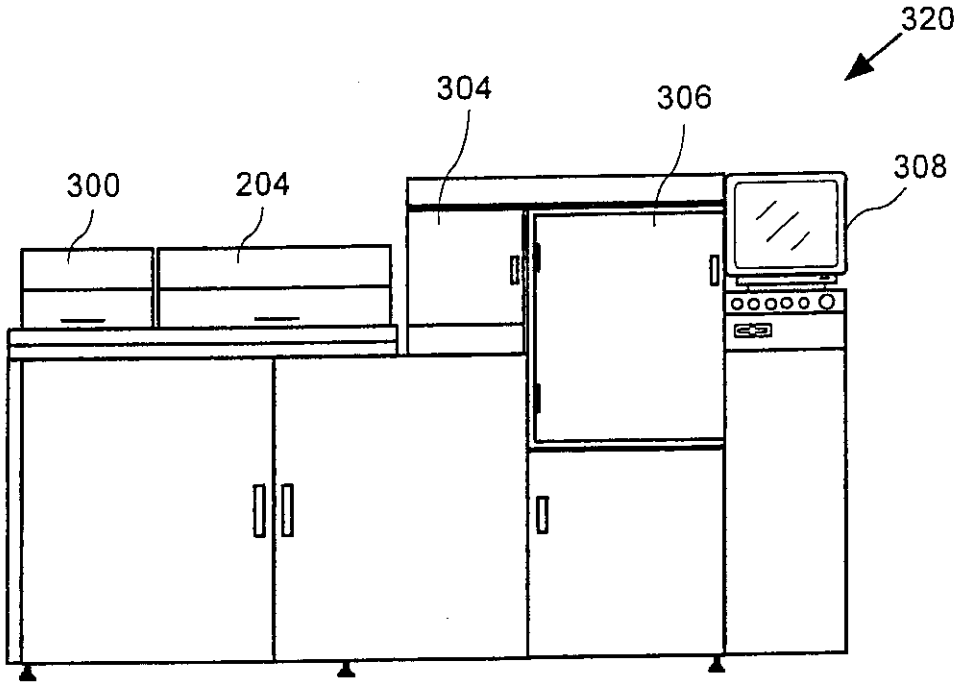


FIG. 3A

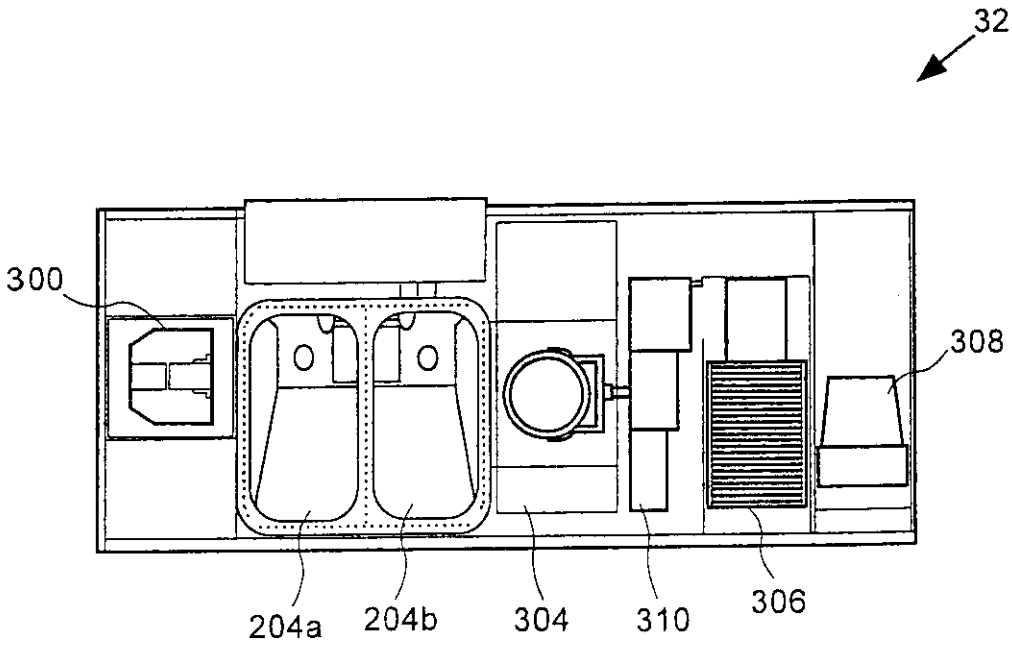


FIG. 3B

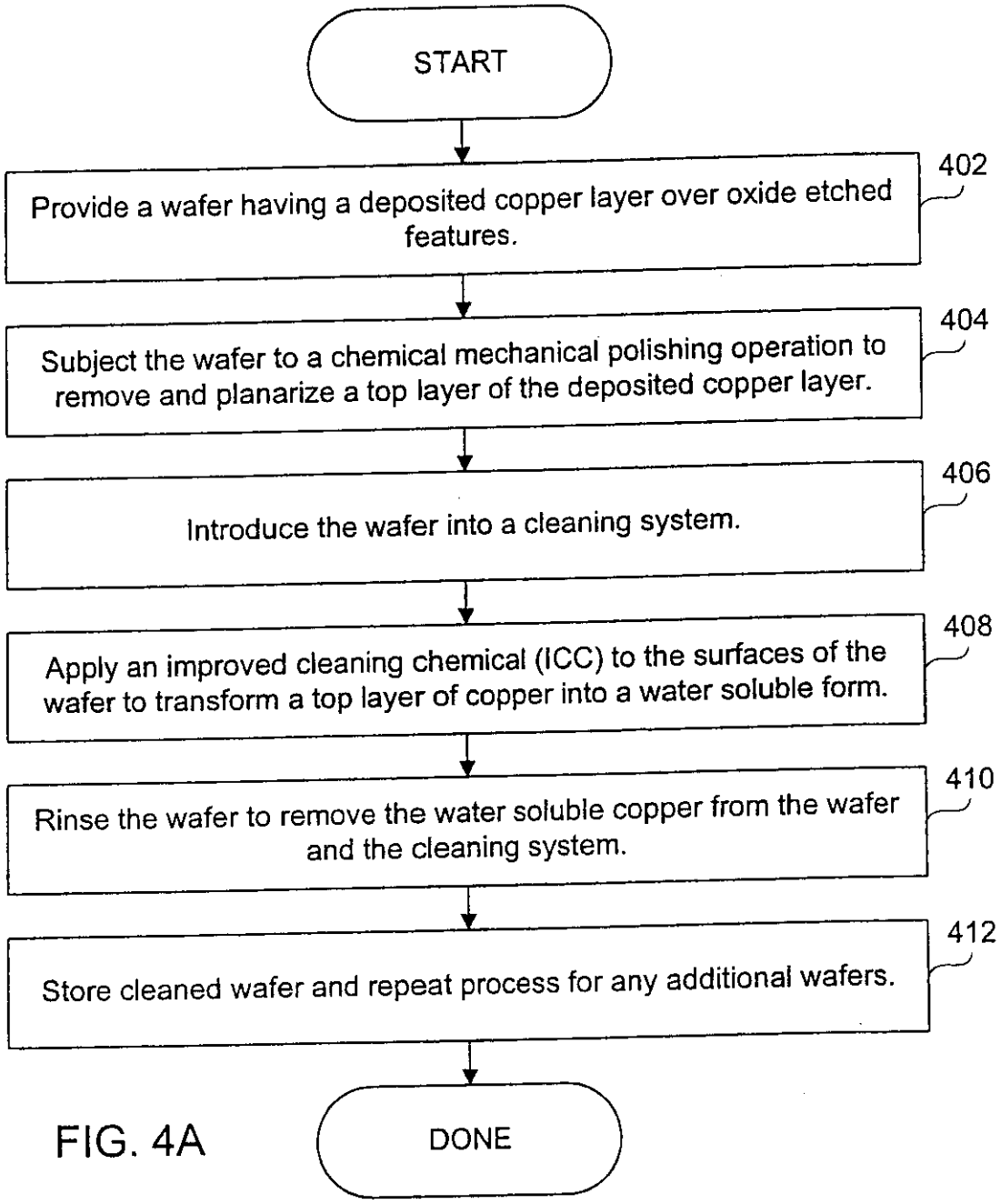

START
Provide a wafer having a deposited copper layer over oxide etched features.
402
Subject the wafer to a chemical mechanical polishing operation to remove and planarize a top layer of the deposited copper layer.
404
Introduce the wafer into a cleaning system.
406
Apply an improved cleaning chemical (ICC) to the surfaces of the wafer to transform a top layer of copper into a water soluble form.
408
Rinse the wafer to remove the water soluble copper from the wafer and the cleaning system.
410
Store cleaned wafer and repeat process for any additional wafers.
412
DONE

FIG. 4A

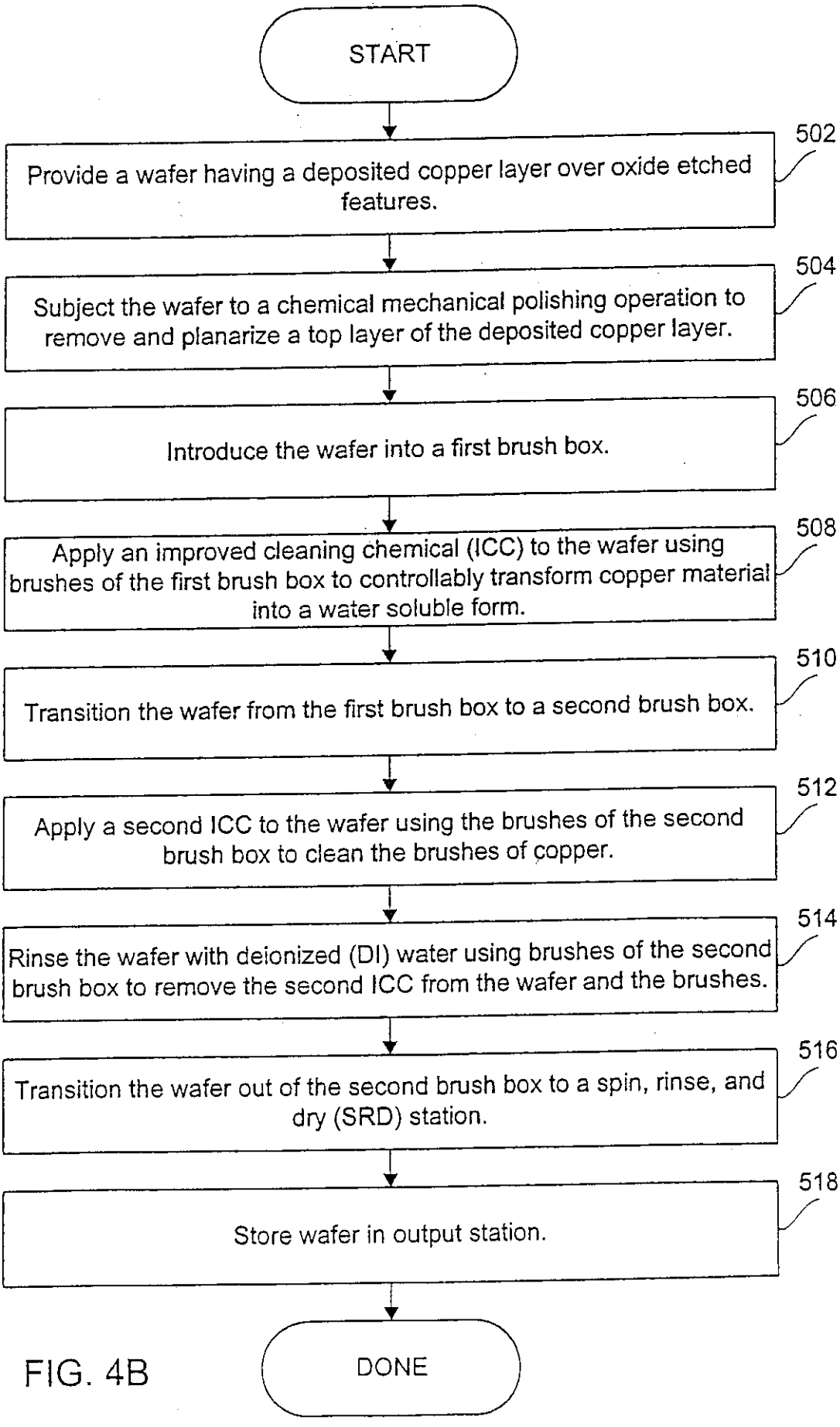

START
Provide a wafer having a deposited copper layer over oxide etched features.
502
Subject the wafer to a chemical mechanical polishing operation to remove and planarize a top layer of the deposited copper layer.
504
Introduce the wafer into a first brush box.
506
Apply an improved cleaning chemical (ICC) to the wafer using brushes of the first brush box to controllably transform copper material into a water soluble form.
508
Transition the wafer from the first brush box to a second brush box.
510
Apply a second ICC to the wafer using the brushes of the second brush box to clean the brushes of copper.
512
Rinse the wafer with deionized (DI) water using brushes of the second brush box to remove the second ICC from the wafer and the brushes.
514
Transition the wafer out of the second brush box to a spin, rinse, and dry (SRD) station.
516
Store wafer in output station.
518
DONE

FIG. 4B

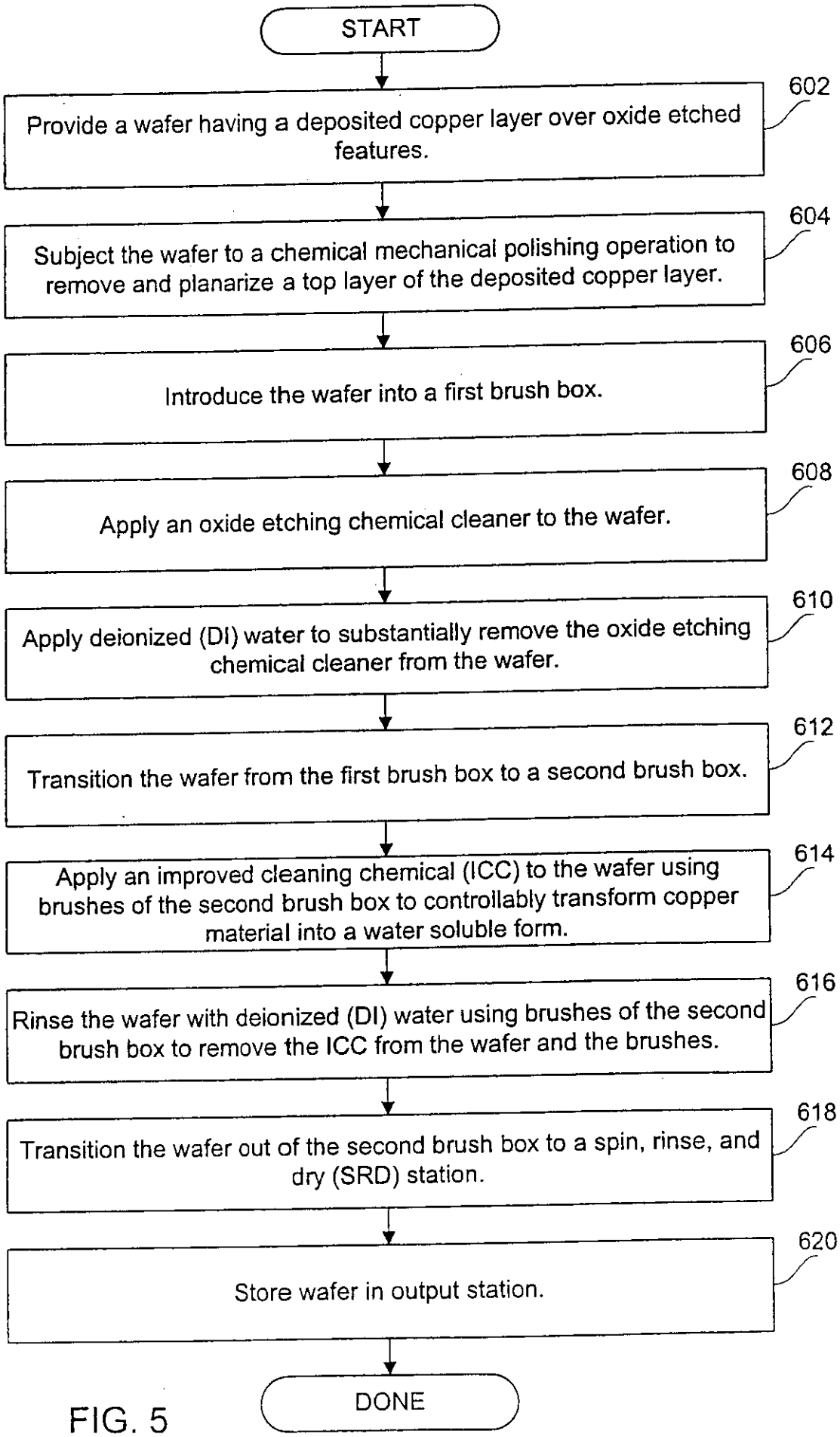

START
Provide a wafer having a deposited copper layer over oxide etched features.
602
Subject the wafer to a chemical mechanical polishing operation to remove and planarize a top layer of the deposited copper layer.
604
Introduce the wafer into a first brush box.
606
Apply an oxide etching chemical cleaner to the wafer.
608
Apply deionized (DI) water to substantially remove the oxide etching chemical cleaner from the wafer.
610
Transition the wafer from the first brush box to a second brush box.
612
Apply an improved cleaning chemical (ICC) to the wafer using brushes of the second brush box to controllably transform copper material into a water soluble form.
614
Rinse the wafer with deionized (DI) water using brushes of the second brush box to remove the ICC from the wafer and the brushes.
616
Transition the wafer out of the second brush box to a spin, rinse, and dry (SRD) station.
618
Store wafer in output station.
620
DONE

FIG. 5