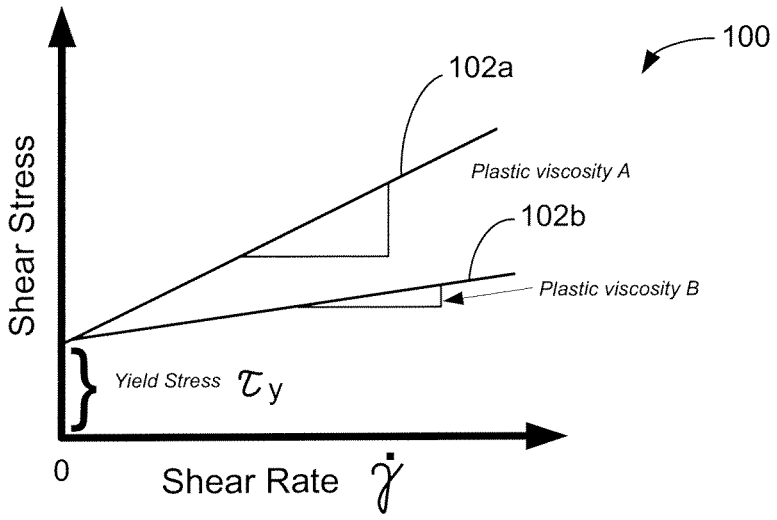

100
102a
Plastic viscosity A
102b
Plastic viscosity B
Shear Stress
Yield Stress τ_y
0
Shear Rate $\dot{\gamma}$

FIG. 1

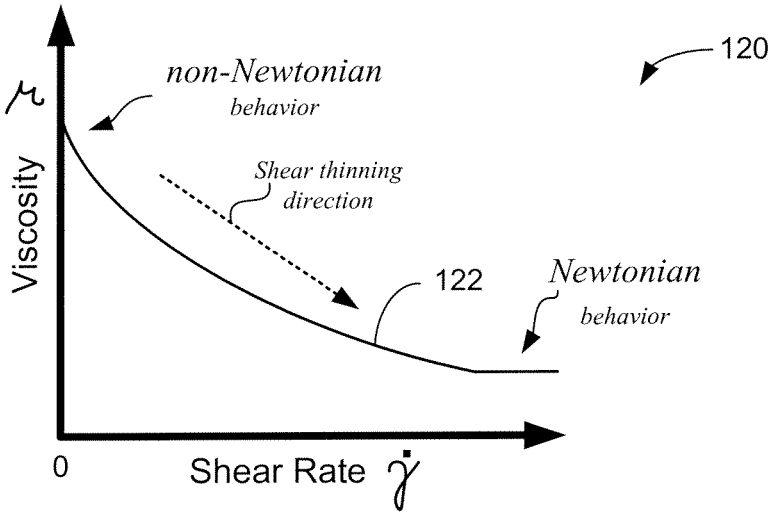

120
non-Newtonian
behavior
Shear thinning
direction
122
Newtonian
behavior
Viscosity
0
Shear Rate $\dot{\gamma}$

FIG. 2

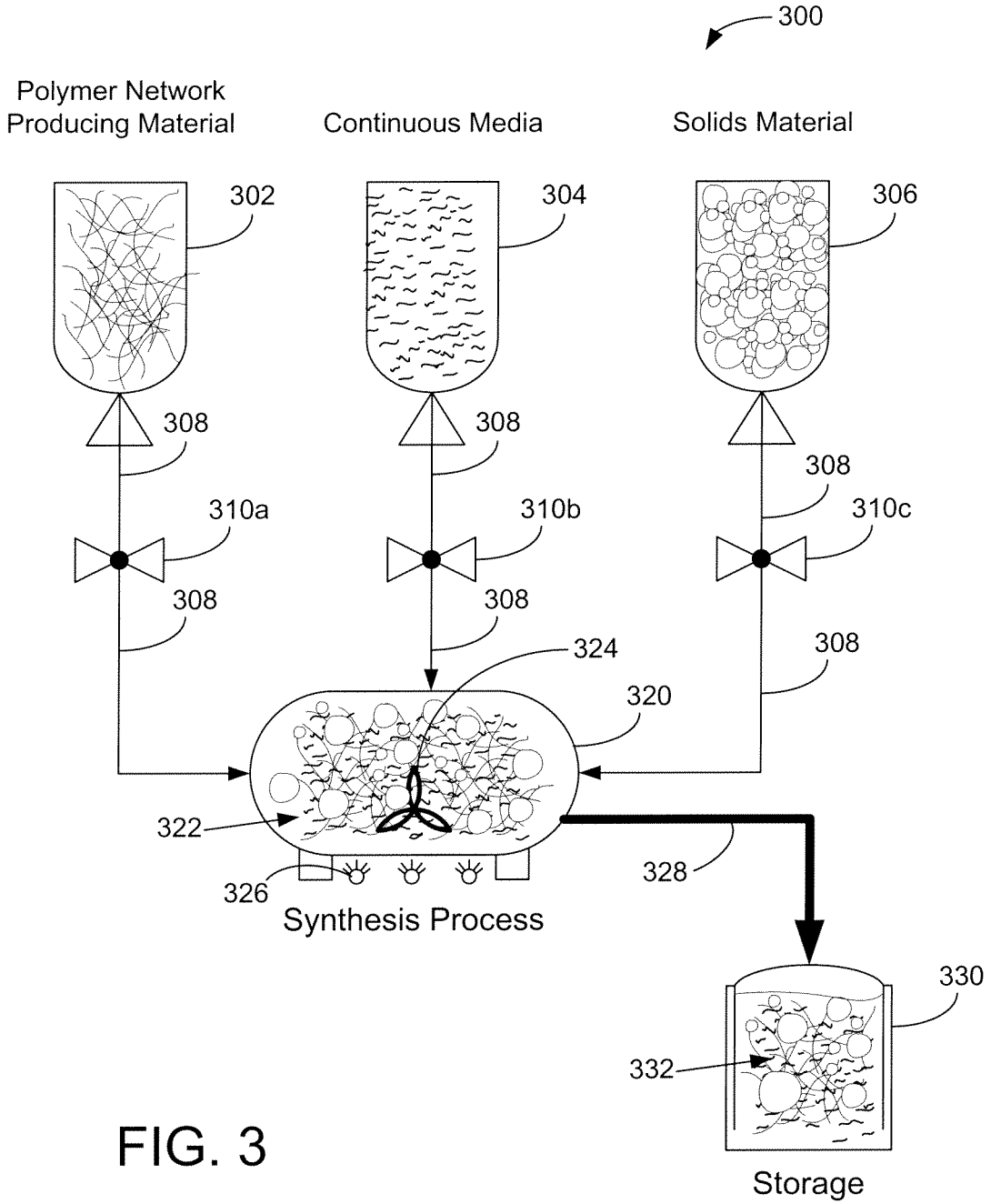

300
Polymer Network Producing Material
Continuous Media
Solids Material
302
304
306
308
308
308
310a
310b
310c
308
308
308
324
320
322
326
328
Synthesis Process
330
332
Storage

FIG. 3

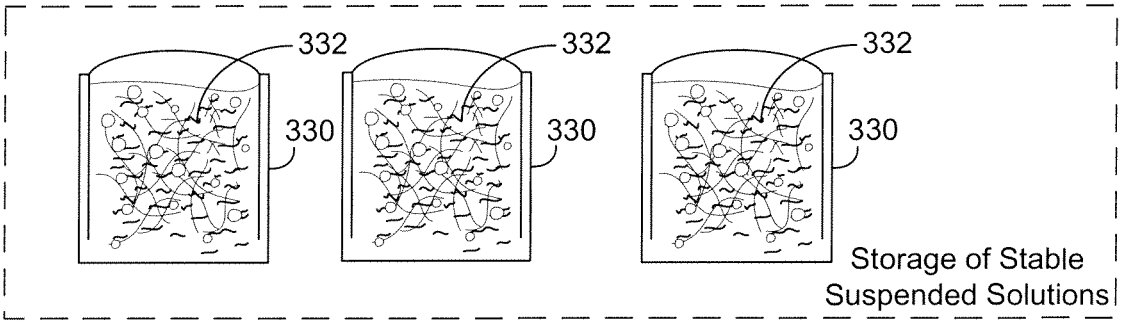

332
330
332
330
332
330
Storage of Stable
Suspended Solutions

FIG. 4

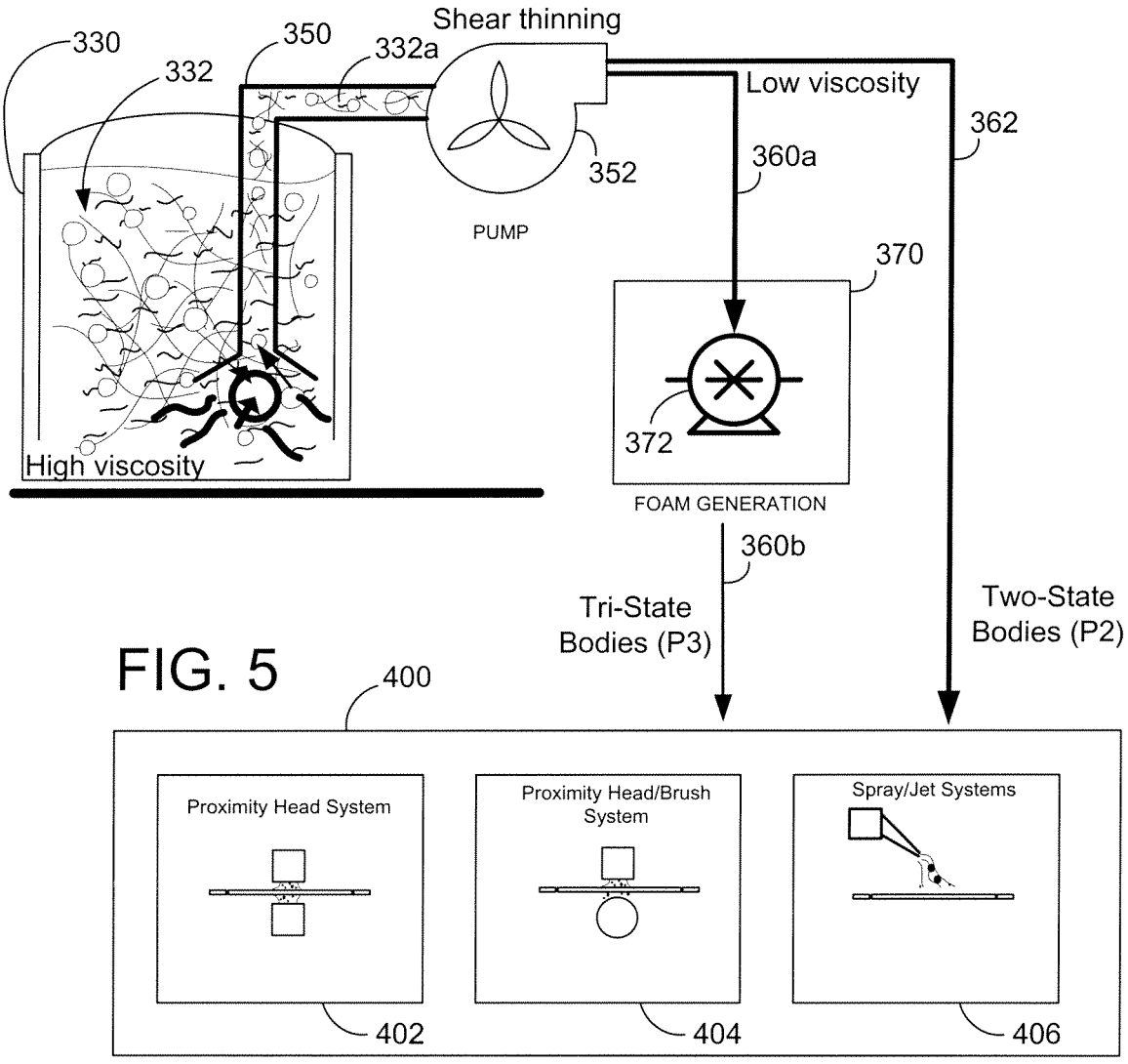

330
332
350
332a
Shear thinning
Low viscosity
362
352
360a
PUMP
370
372
High viscosity
FOAM GENERATION
360b
Tri-State
Bodies (P3)
Two-State
Bodies (P2)
400
Proximity Head System
Proximity Head/Brush
System
Spray/Jet Systems
402
404
406

FIG. 5

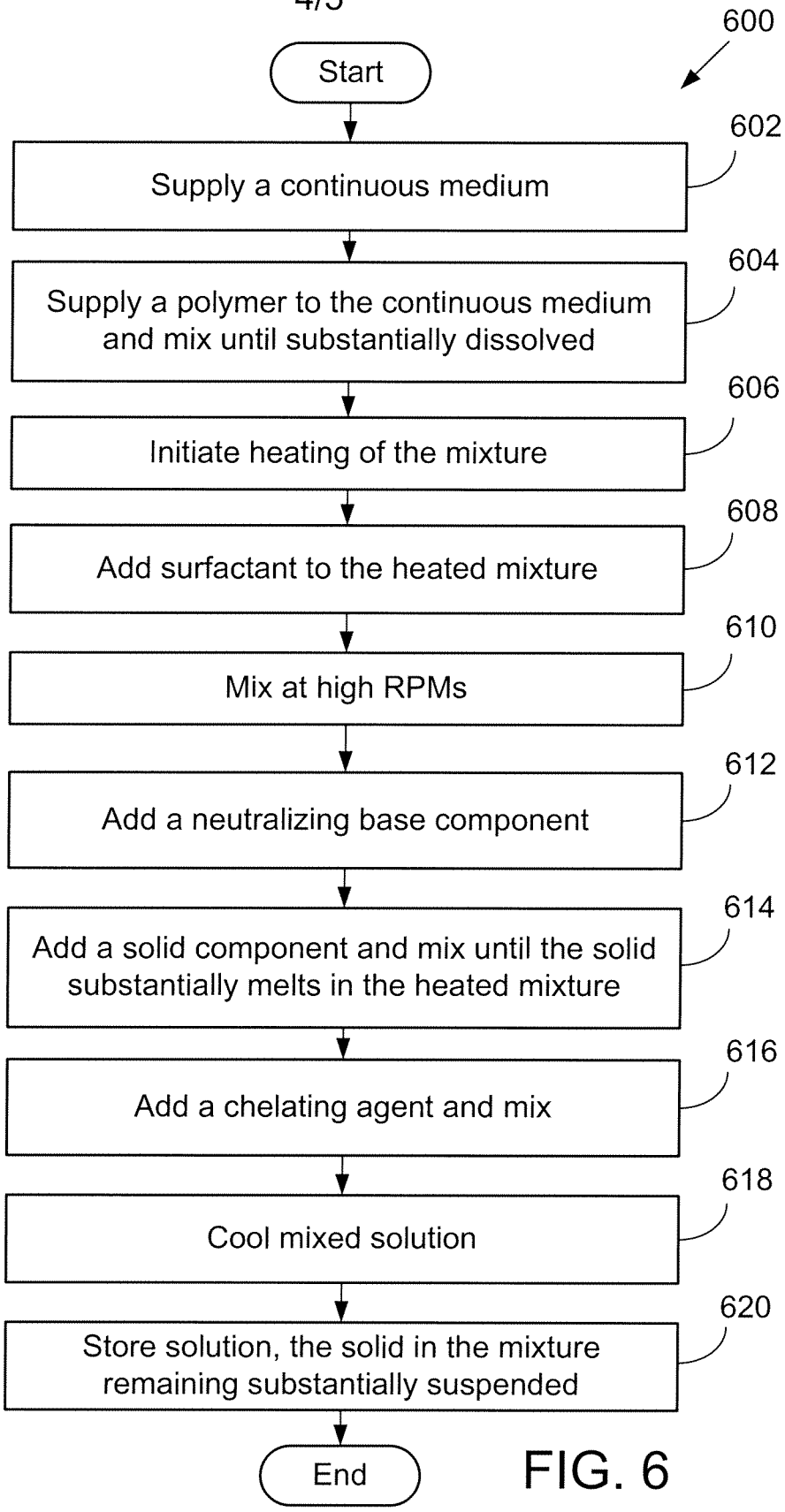

600
Start
602
Supply a continuous medium
604
Supply a polymer to the continuous medium and mix until substantially dissolved
606
Initiate heating of the mixture
608
Add surfactant to the heated mixture
610
Mix at high RPMs
612
Add a neutralizing base component
614
Add a solid component and mix until the solid substantially melts in the heated mixture
616
Add a chelating agent and mix
618
Cool mixed solution
620
Store solution, the solid in the mixture remaining substantially suspended
End

FIG. 6

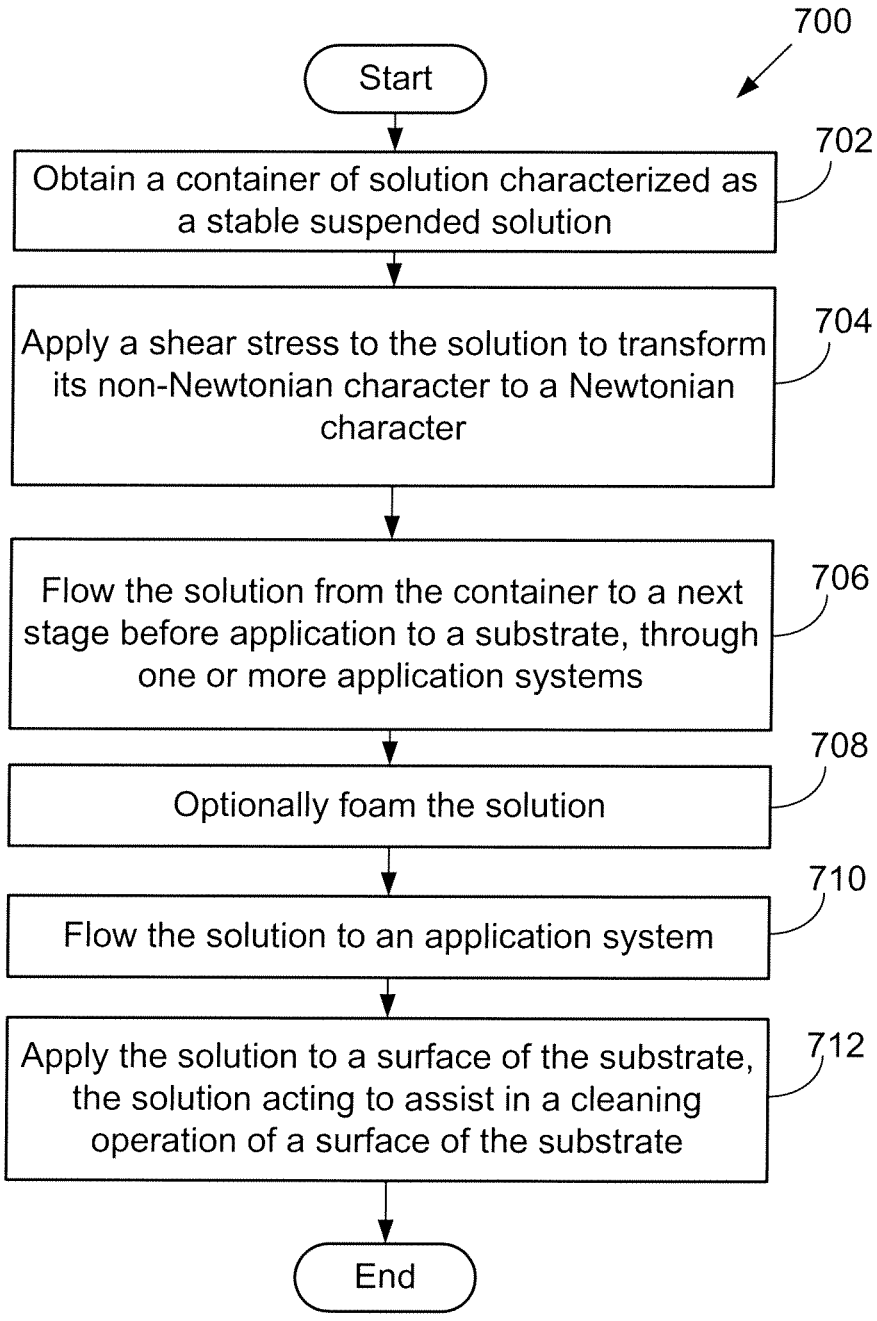

700
Start
Obtain a container of solution characterized as a stable suspended solution
702
Apply a shear stress to the solution to transform its non-Newtonian character to a Newtonian character
704
Flow the solution from the container to a next stage before application to a substrate, through one or more application systems
706
Optionally foam the solution
708
Flow the solution to an application system
710
Apply the solution to a surface of the substrate, the solution acting to assist in a cleaning operation of a surface of the substrate
712
End

FIG. 7