

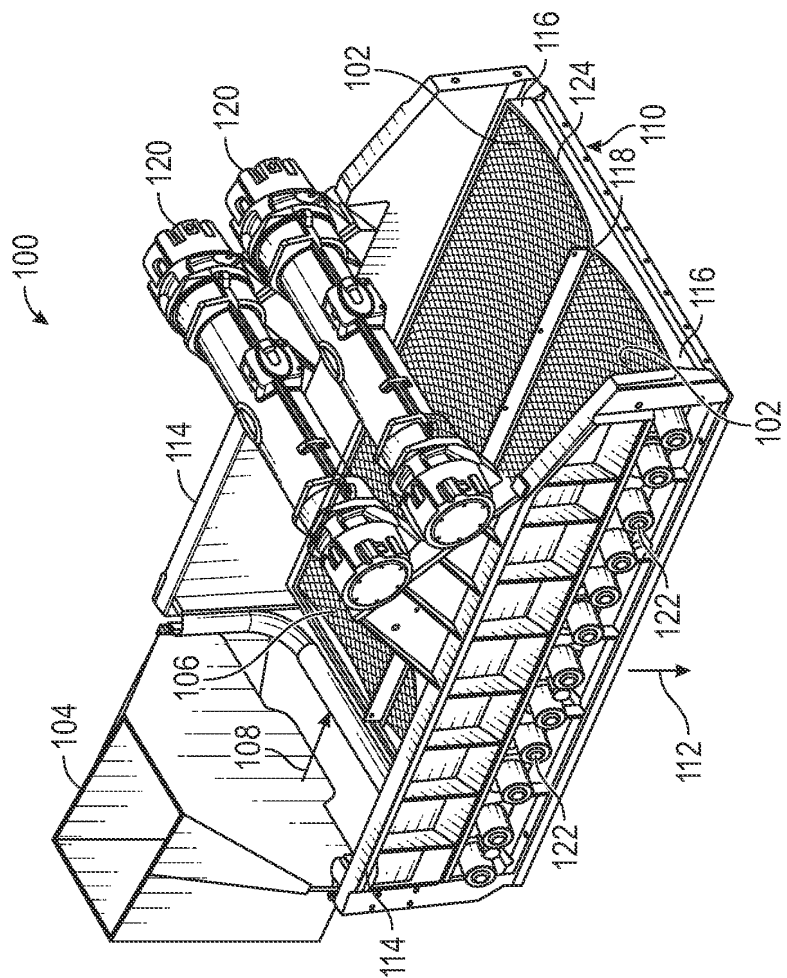


FIG. 1

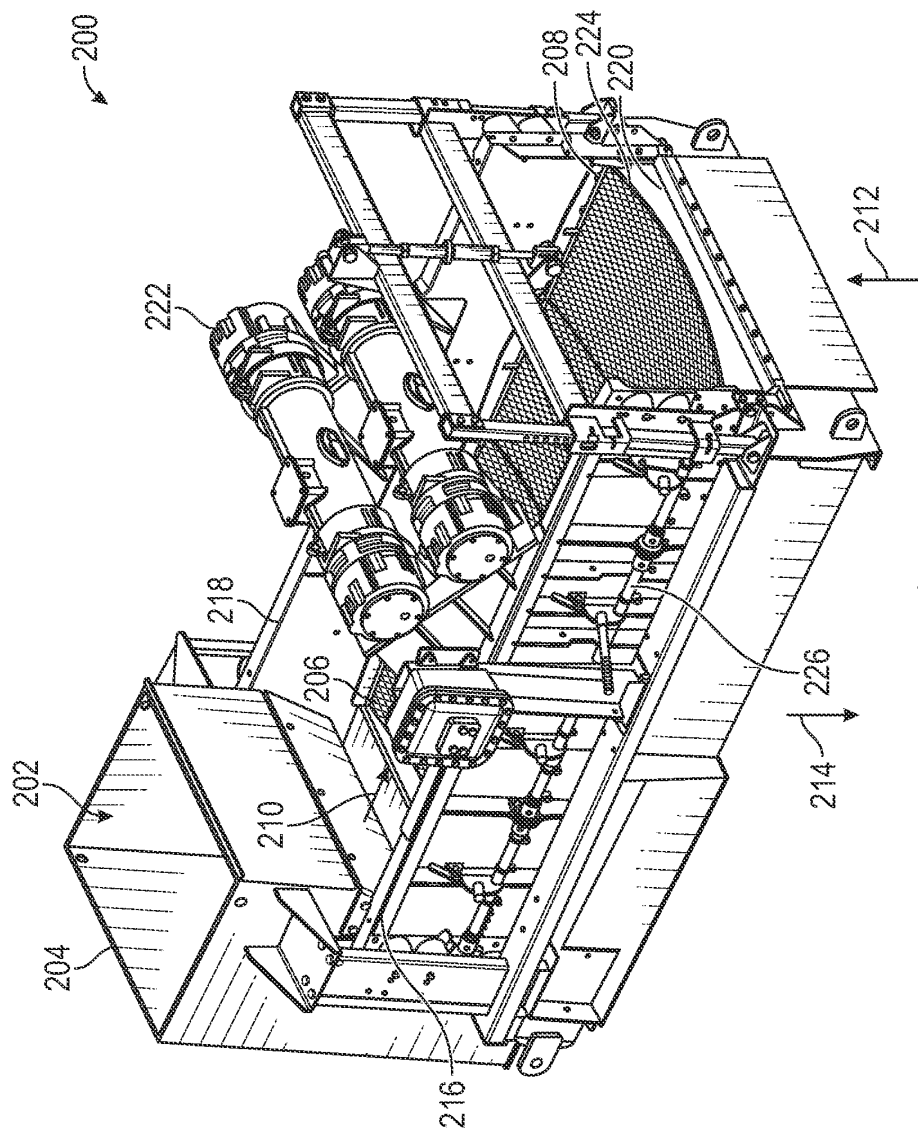


FIG. 2

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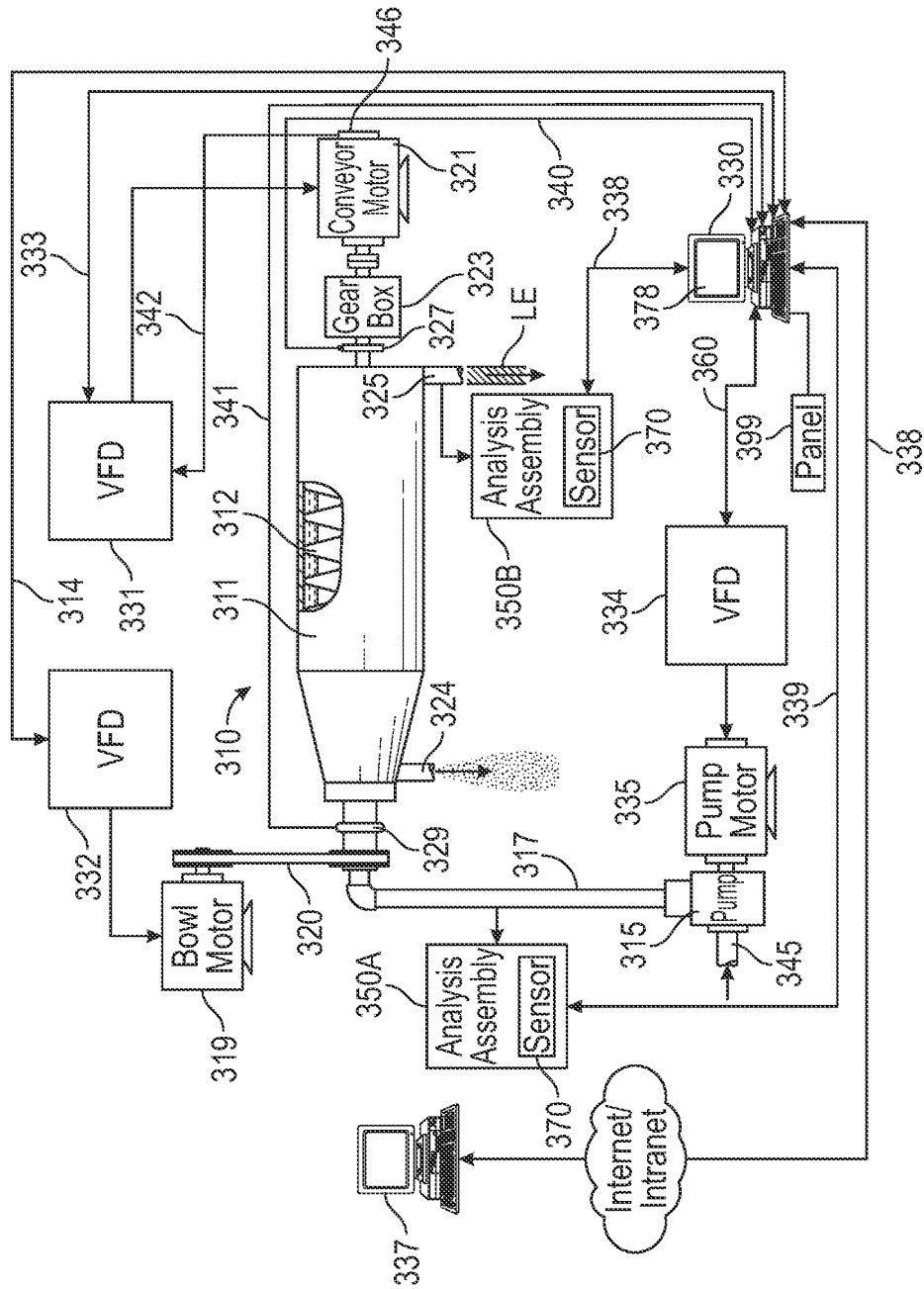


FIG. 3

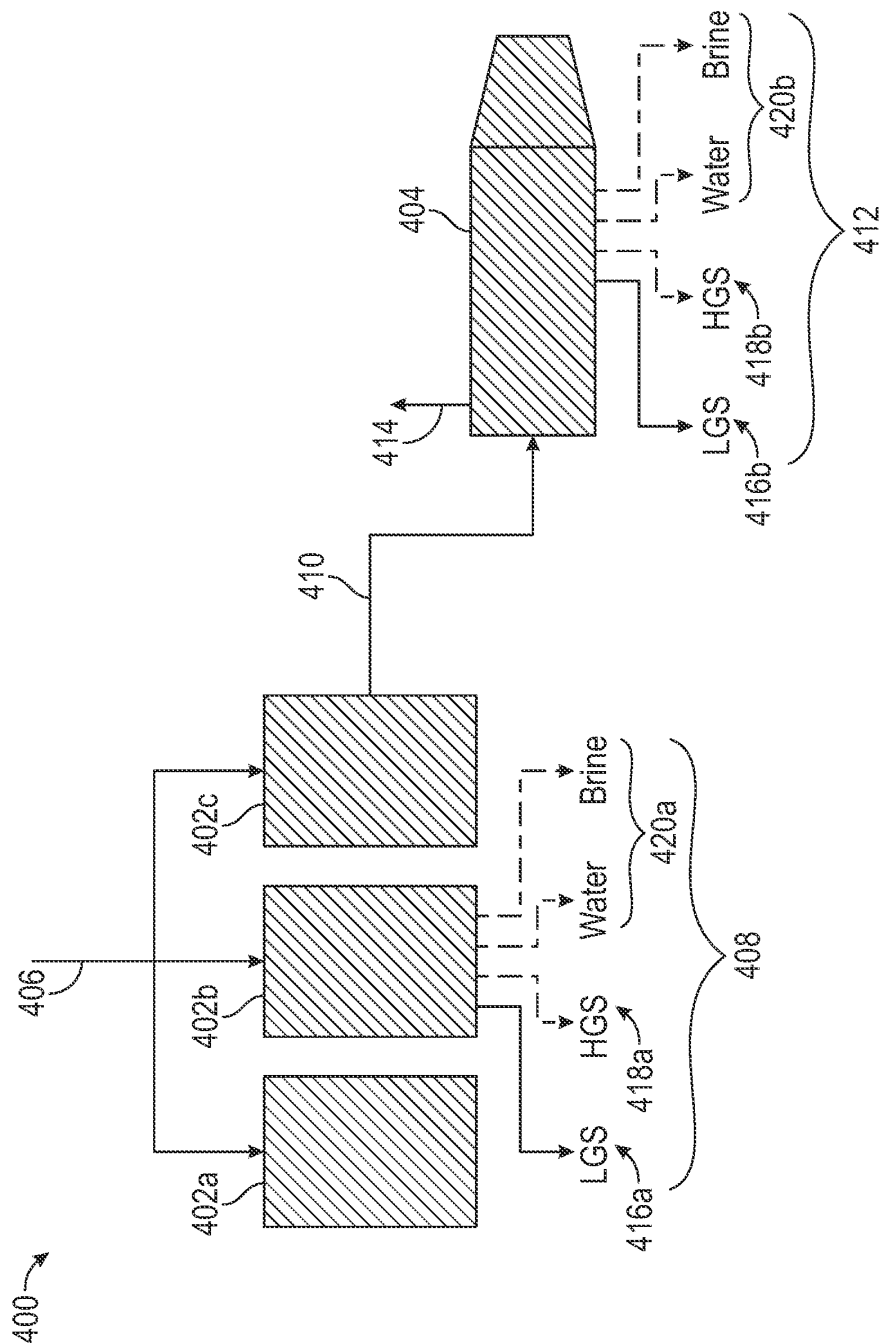


FIG. 4

500 →

	512 discard rate	514 % solids discard	516 screen utilization and tracking	518 % vol LGS	520 % vol HGS	522 % vol oil % vol brine	524 particle size	526 power consumption
502 dilution cost savings	automated	manual retort	manual	manual	manual	mud report	manual	
504 disposal cost savings	automated	manual retort	manual	manual	manual	mud report	manual	
506 energy cost savings	automated	manual retort		manual	manual	mud report		automated
508 maintenance cost savings	automated	manual retort	manual				manual	
510 NPT savings			manual				manual	

FIG. 5

600 →

	512	514	516	518	520	522	524	526
	discard rate	% solids discard	screen utilization and tracking	% vol LGS	% vol HGS	% vol oil % vol brine	particle size	power consumption
502	dilution cost savings	automated	calculated mass balance	auto RFID	automated	mud report	manual	
504	disposal cost savings	automated	calculated mass balance	auto RFID	automated	mud report	manual	
506	energy cost savings	automated	calculated mass balance		automated	mud report		automated
508	maintenance cost savings	automated	calculated mass balance	auto RFID			manual	
510	NPT savings			auto RFID			manual	

FIG. 6

700												728
												726
												724
												722
												720
												718
												716
												714
												712
												710
												708
												706
											704	

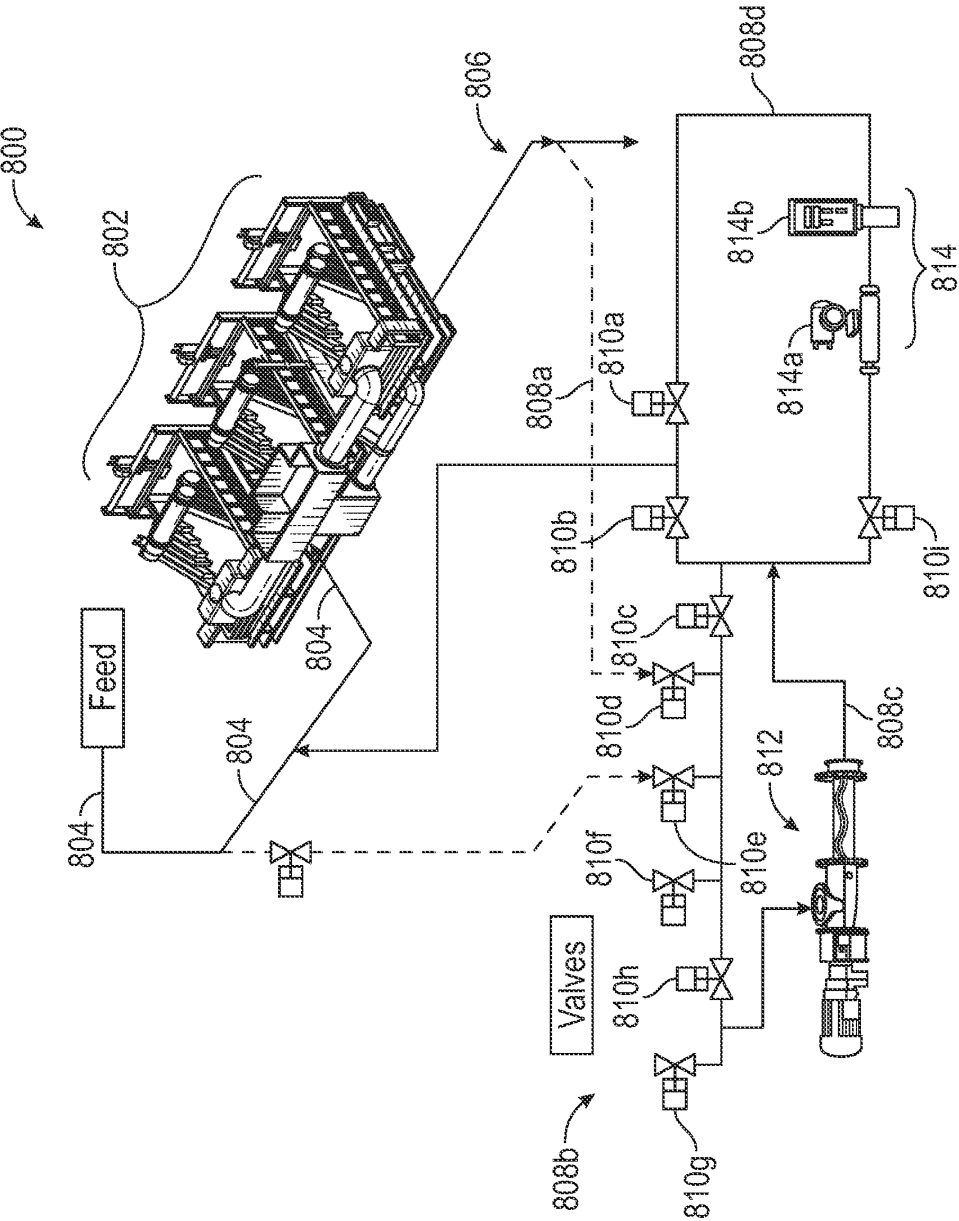


FIG. 8

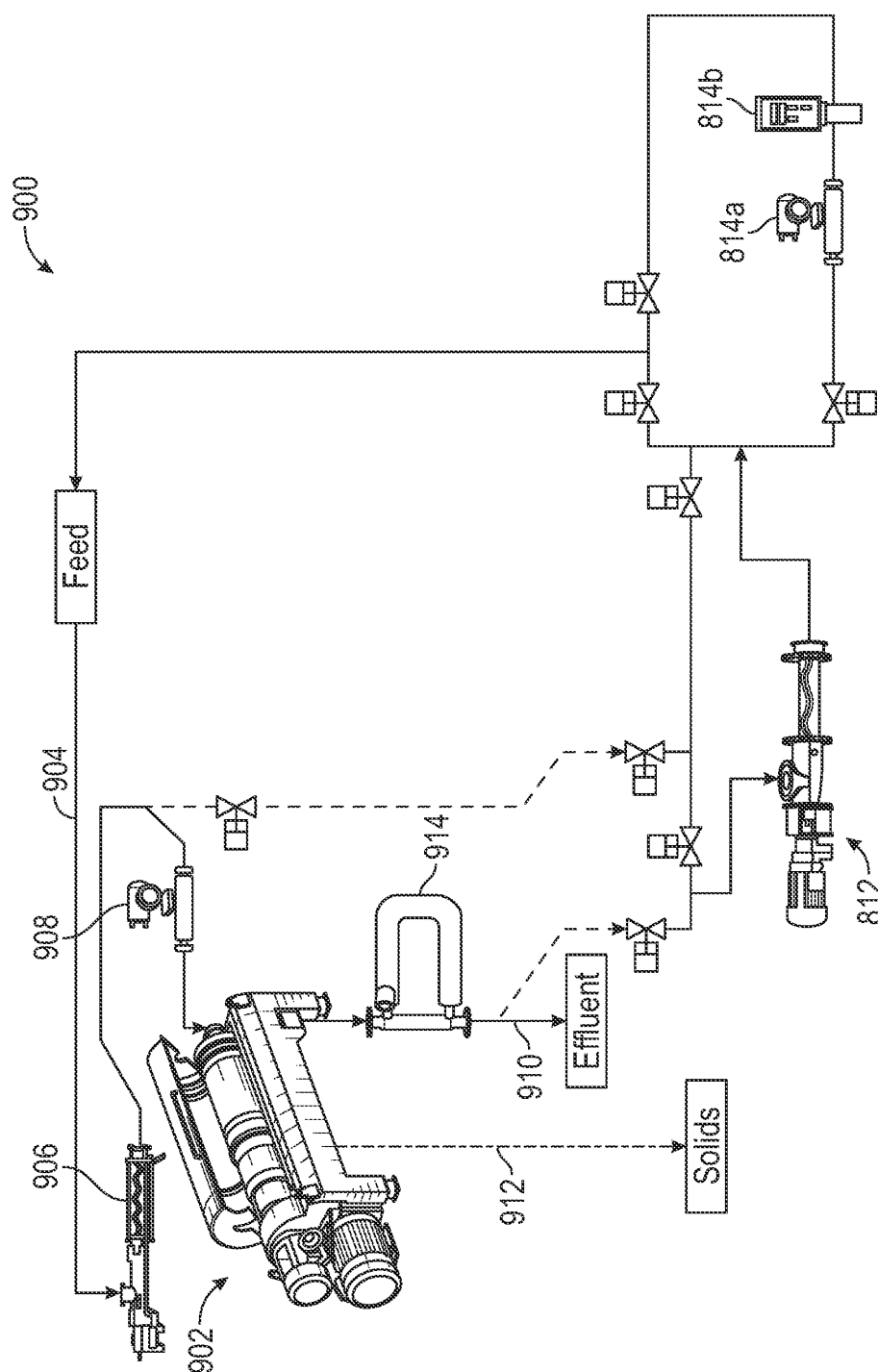


FIG. 9

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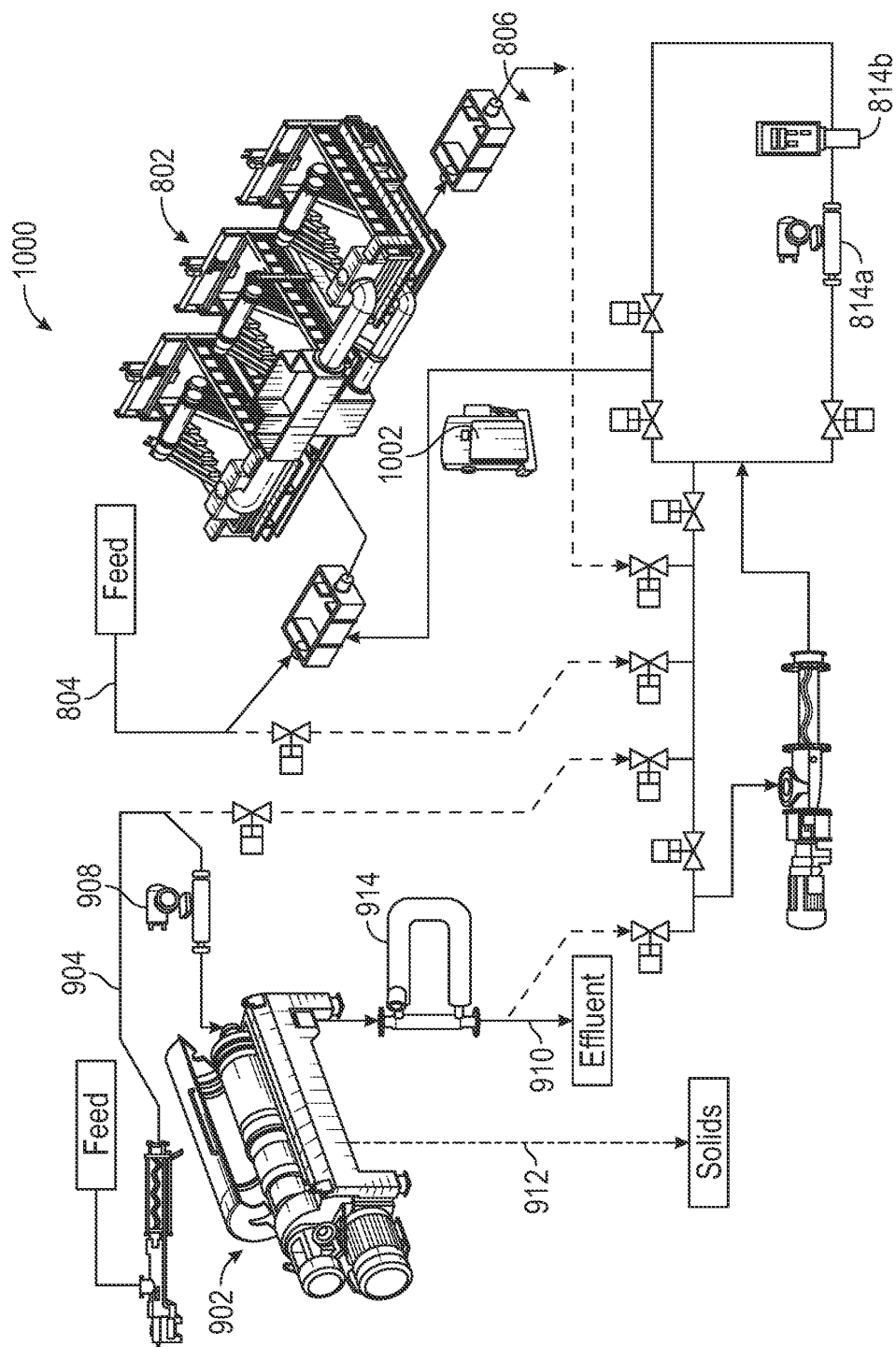


FIG. 10

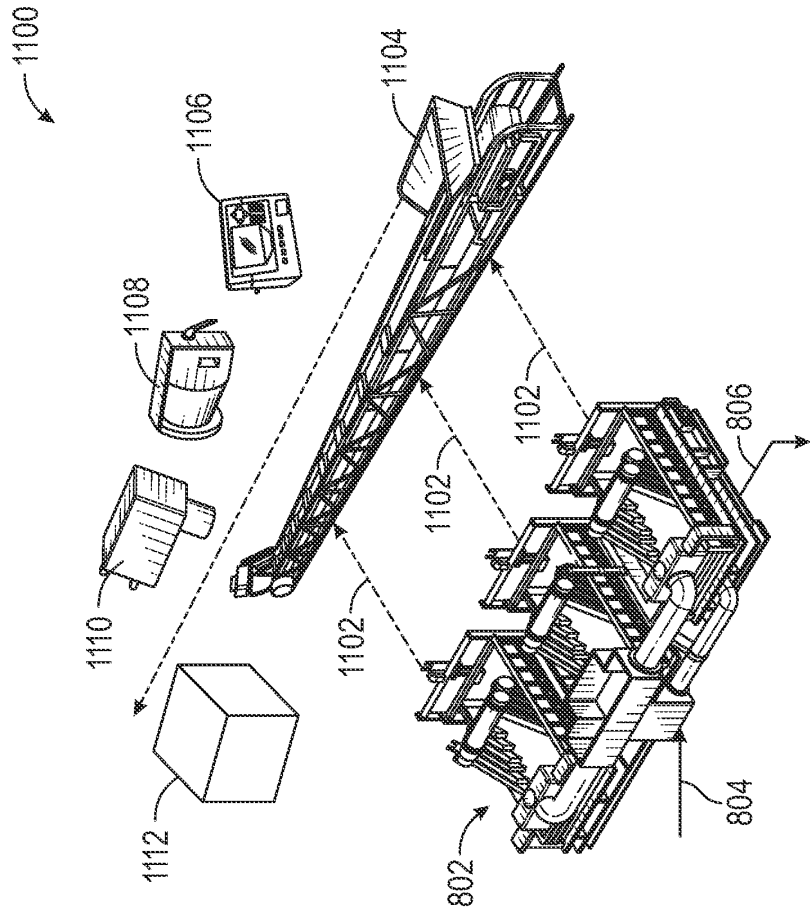


FIG. 11

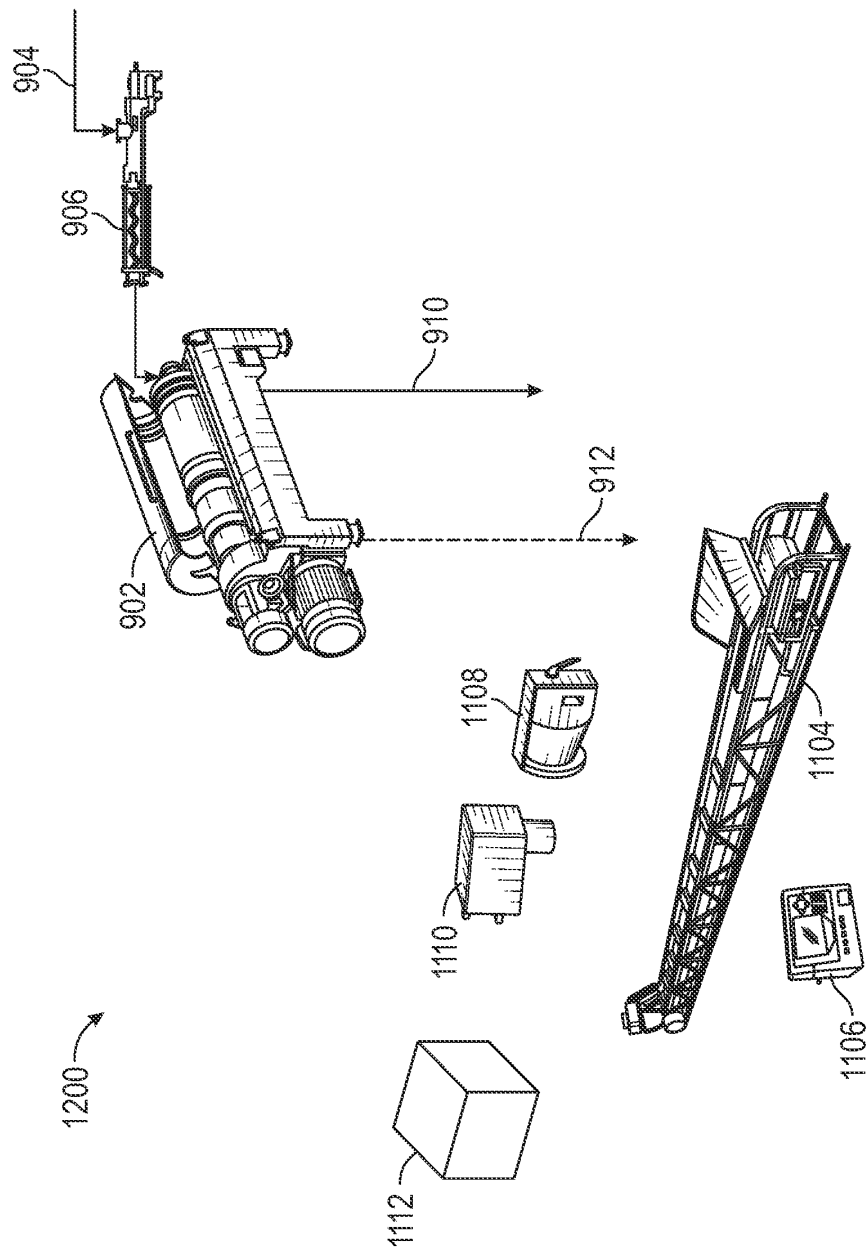


FIG. 12

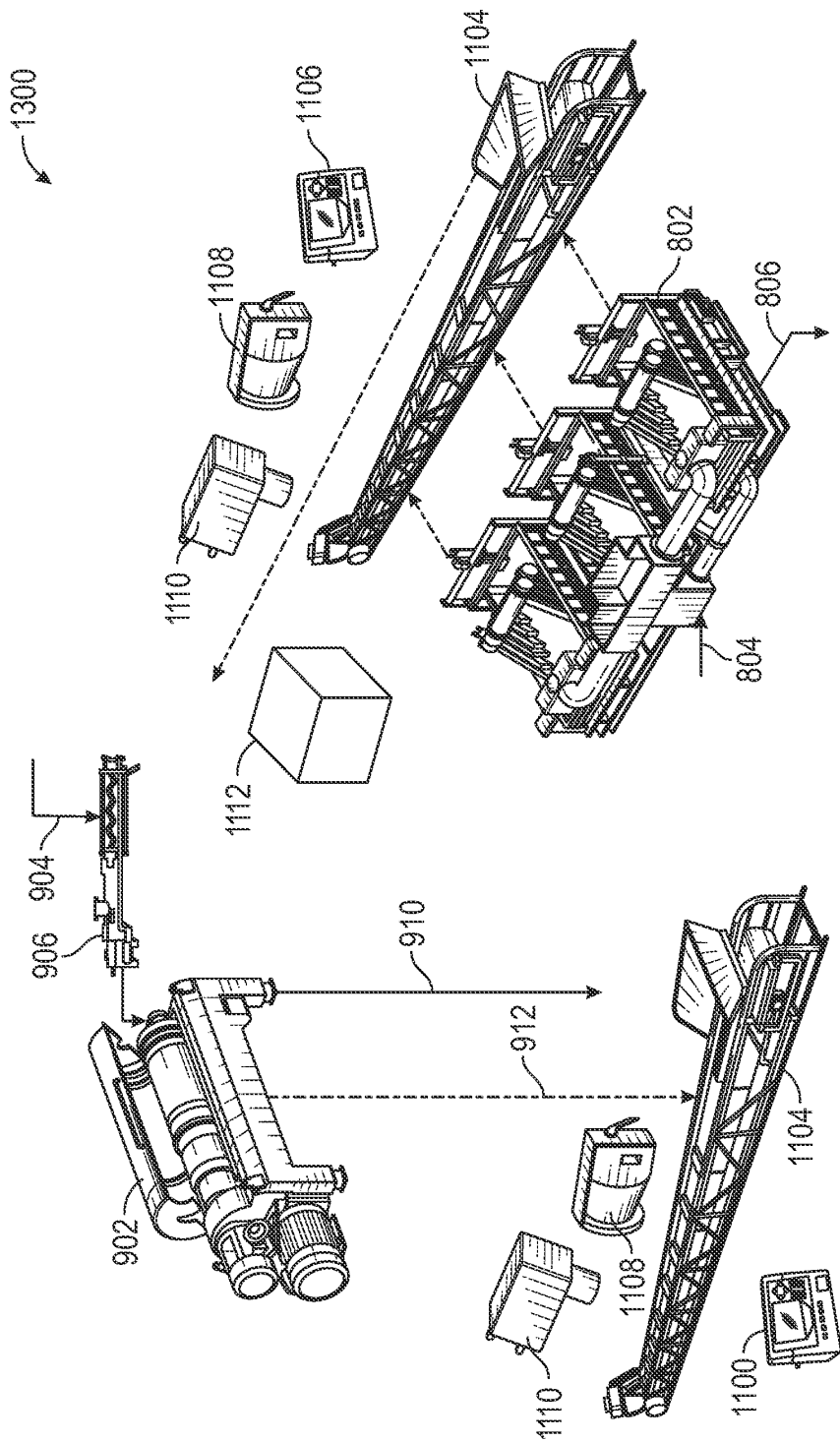


FIG. 13

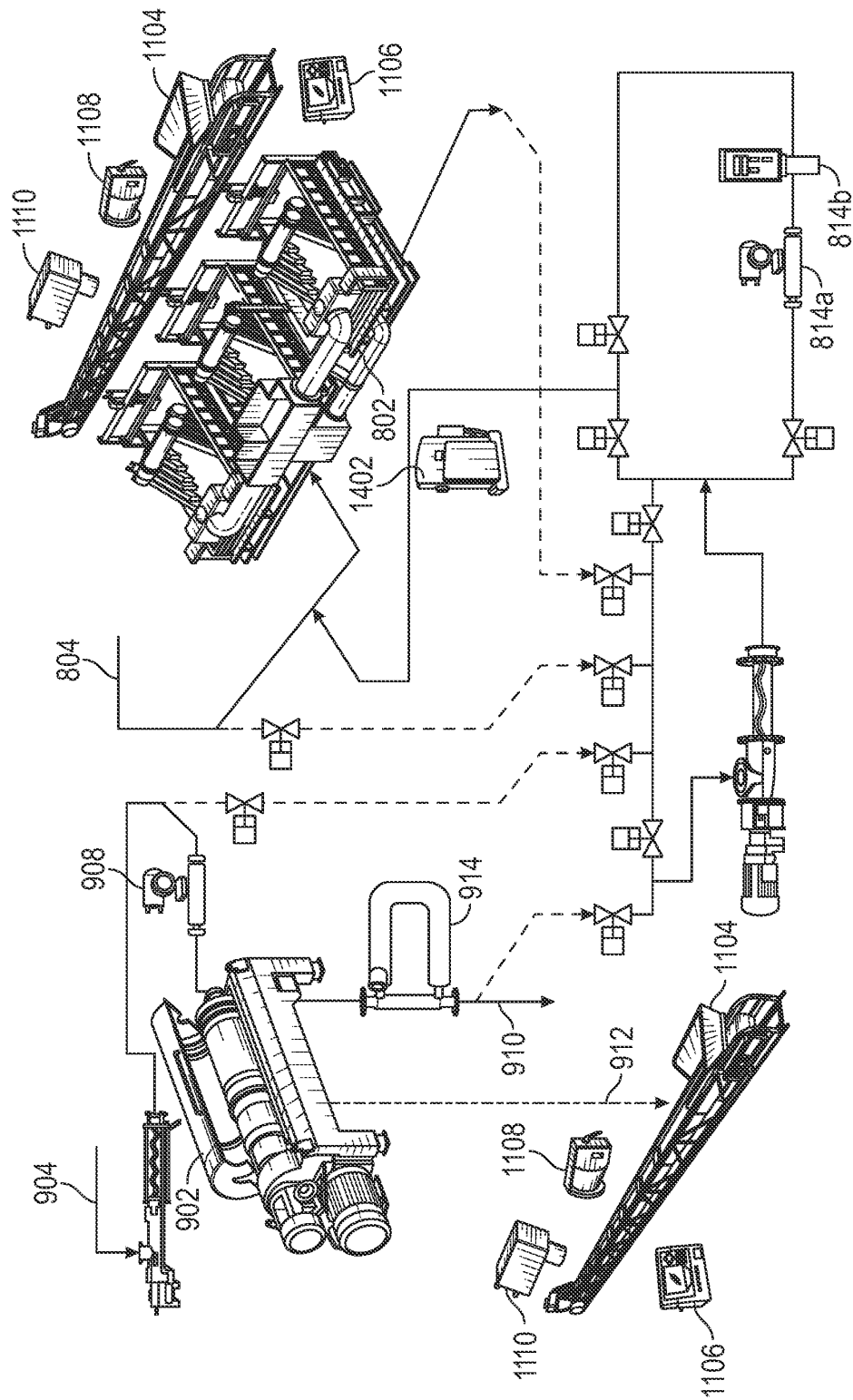


FIG. 14

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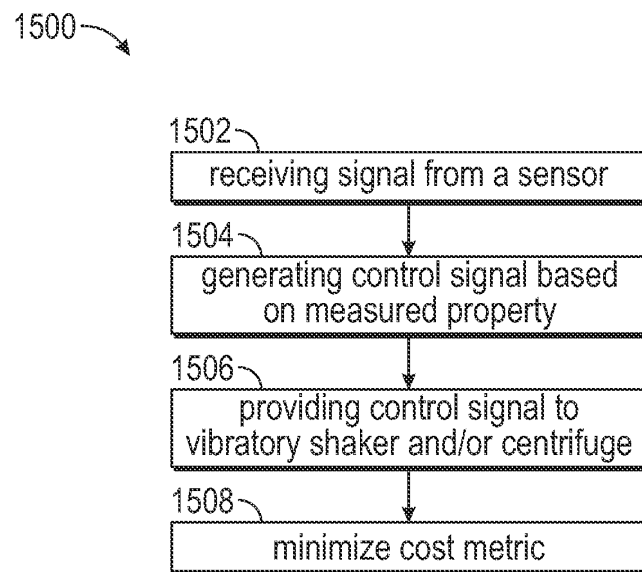
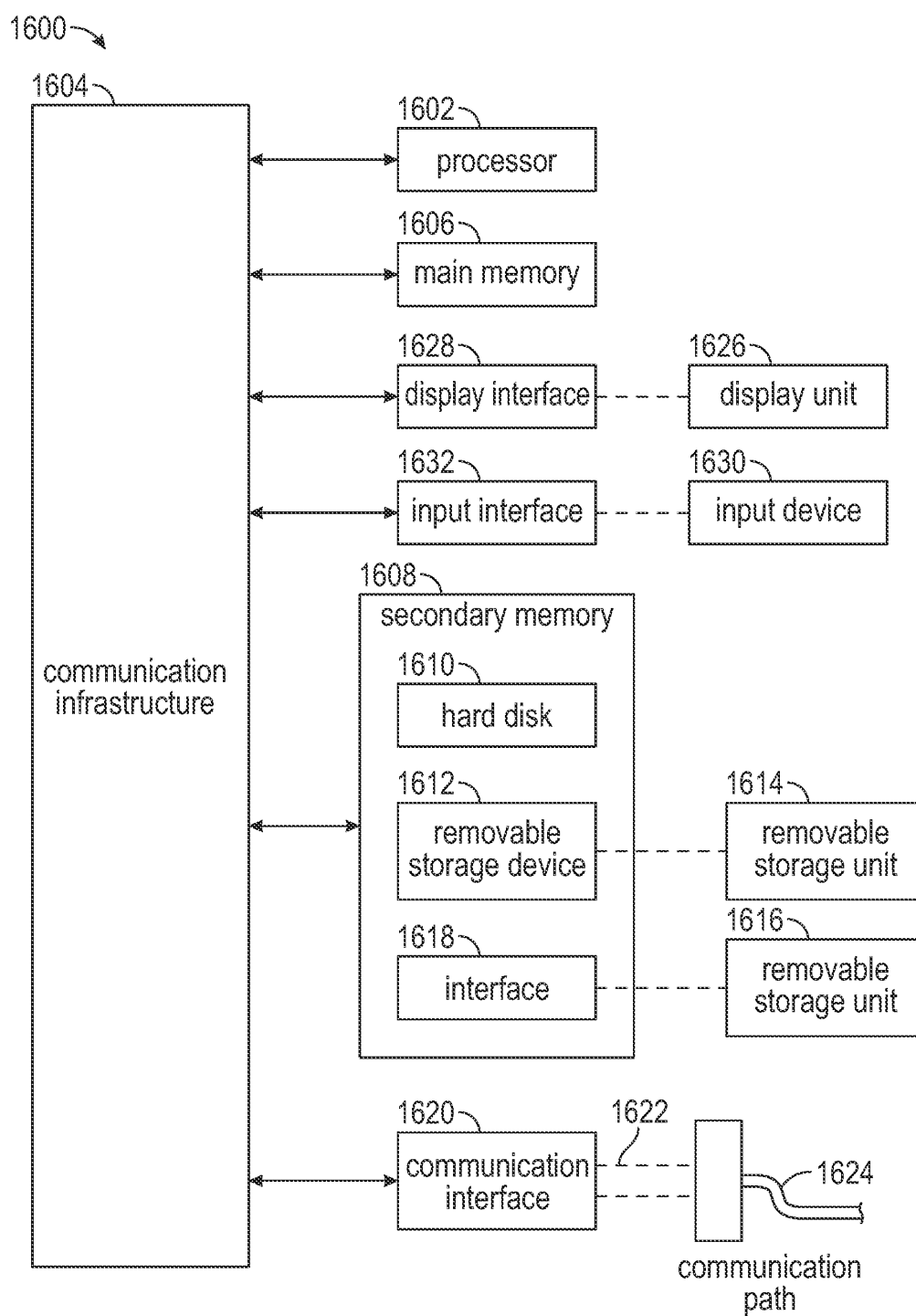


FIG. 15

16/44**FIG. 16**

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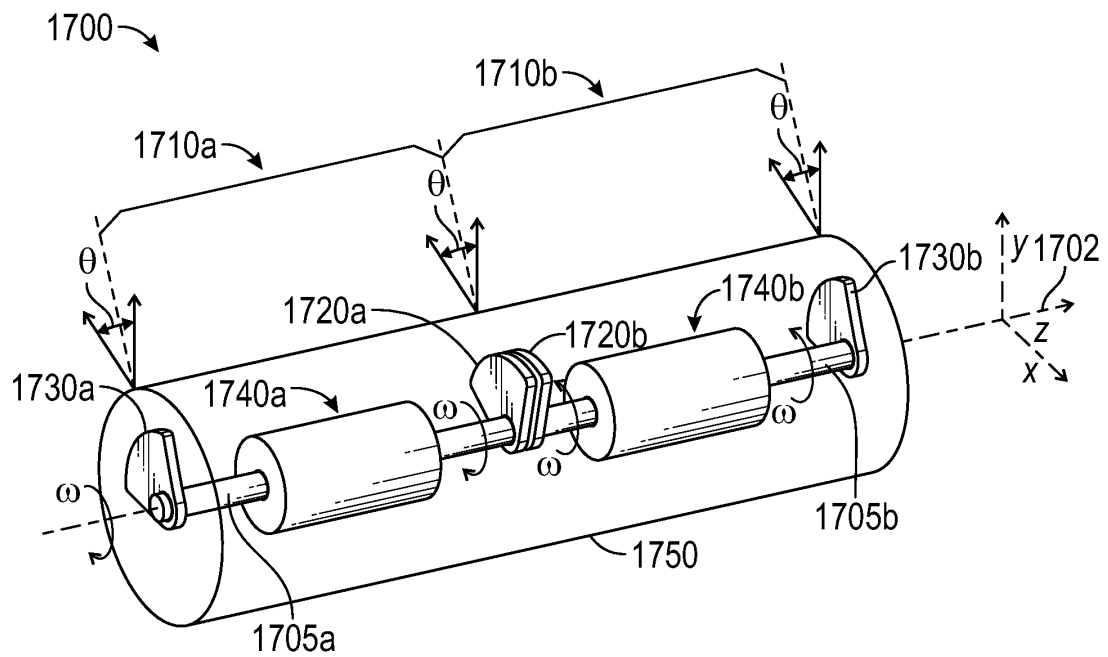


FIG. 17

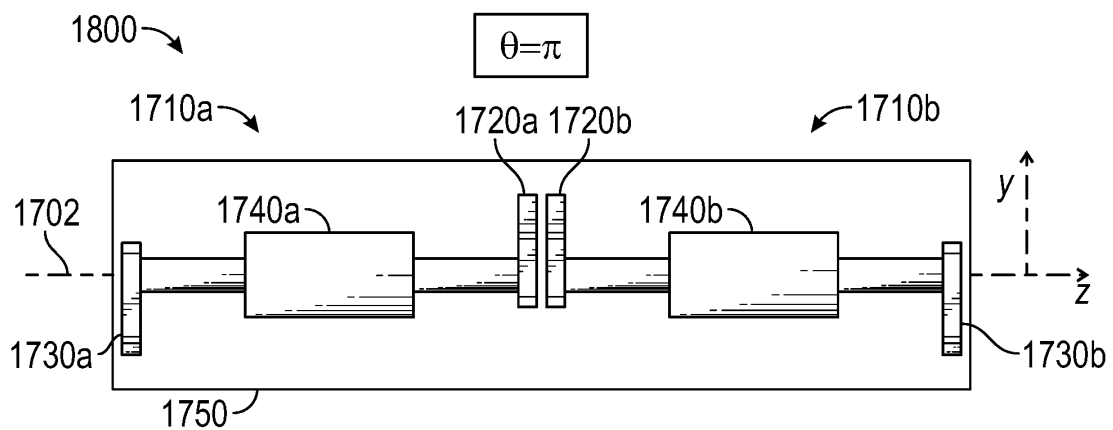
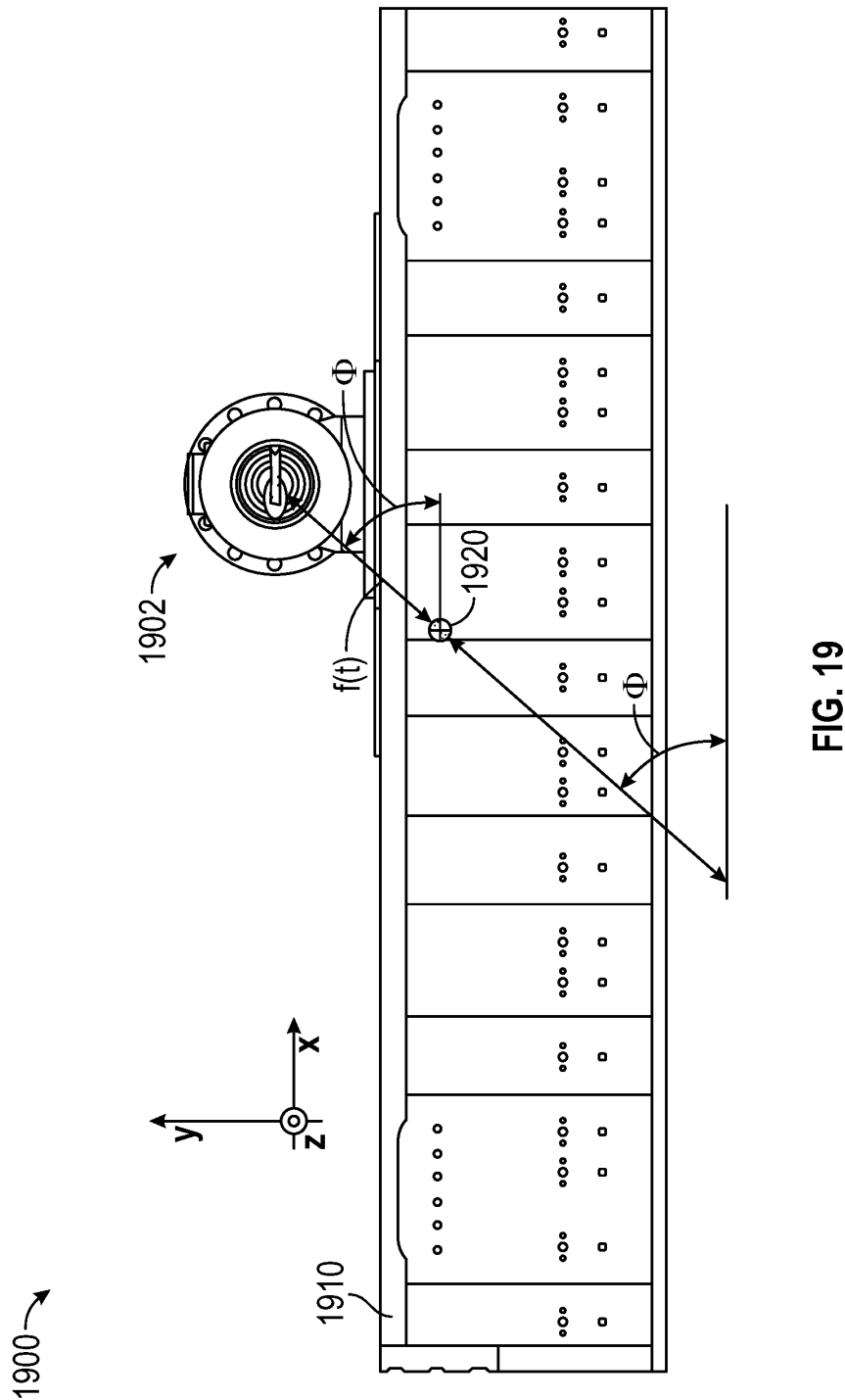


FIG. 18



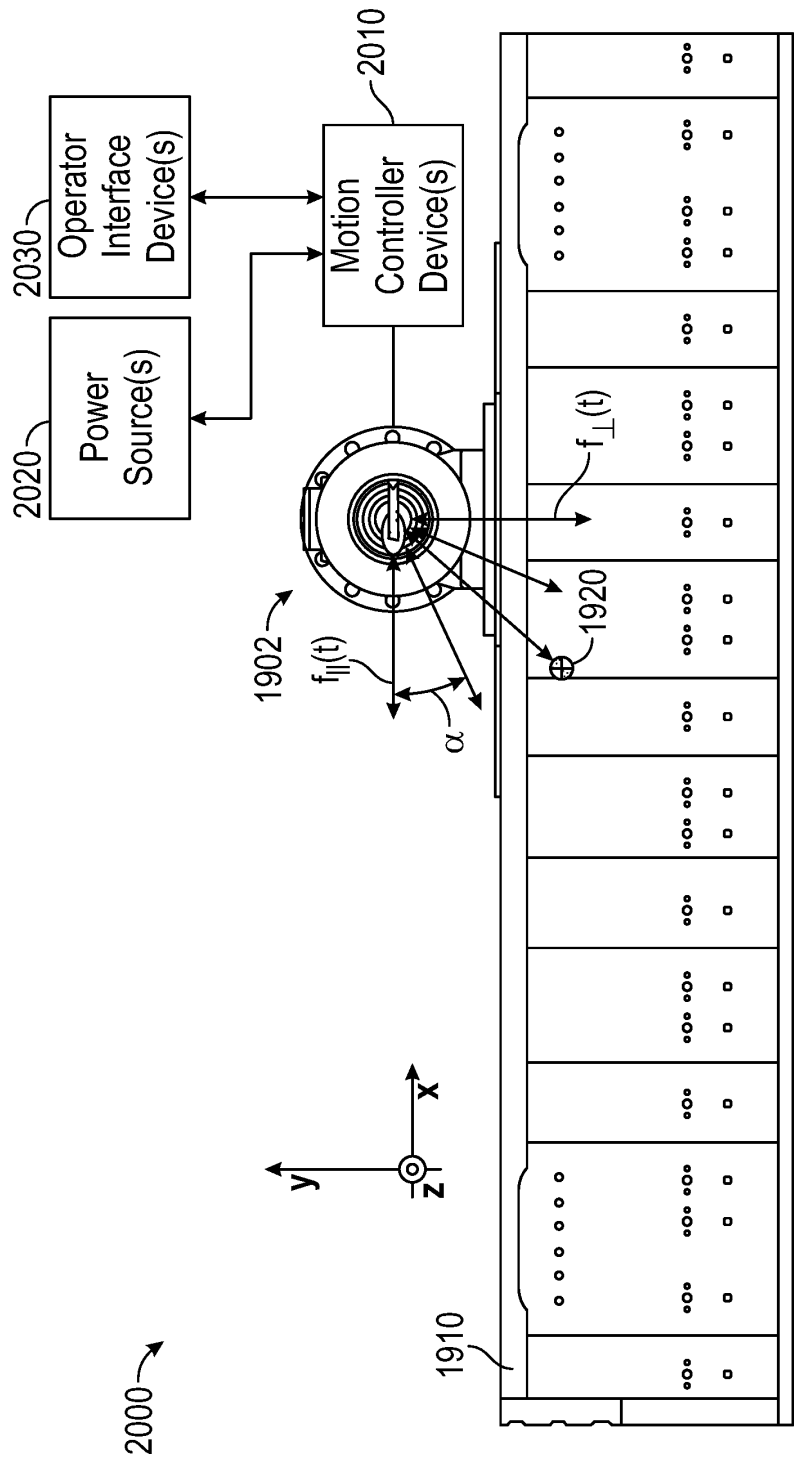


FIG. 20

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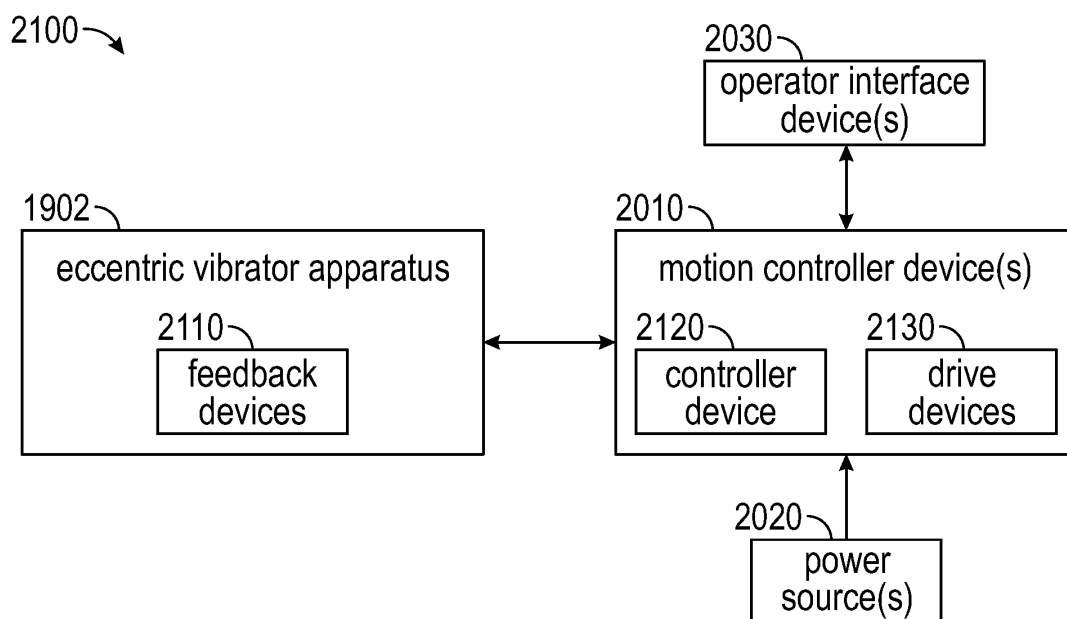


FIG. 21

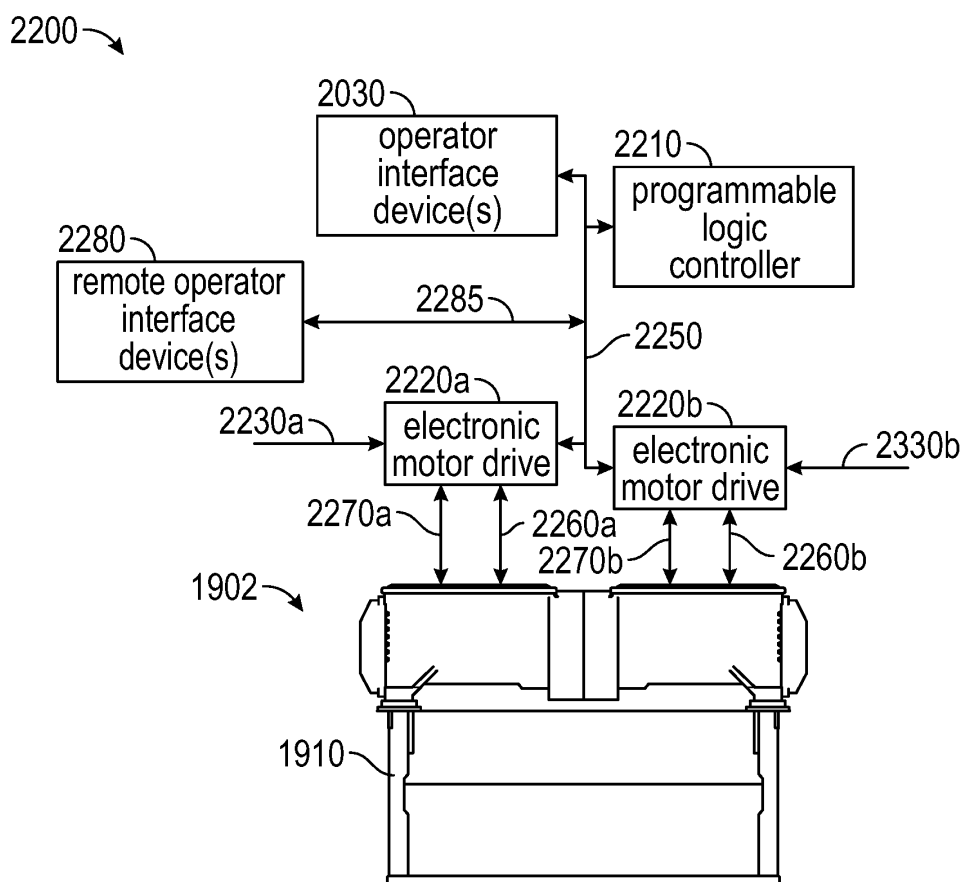


FIG. 22

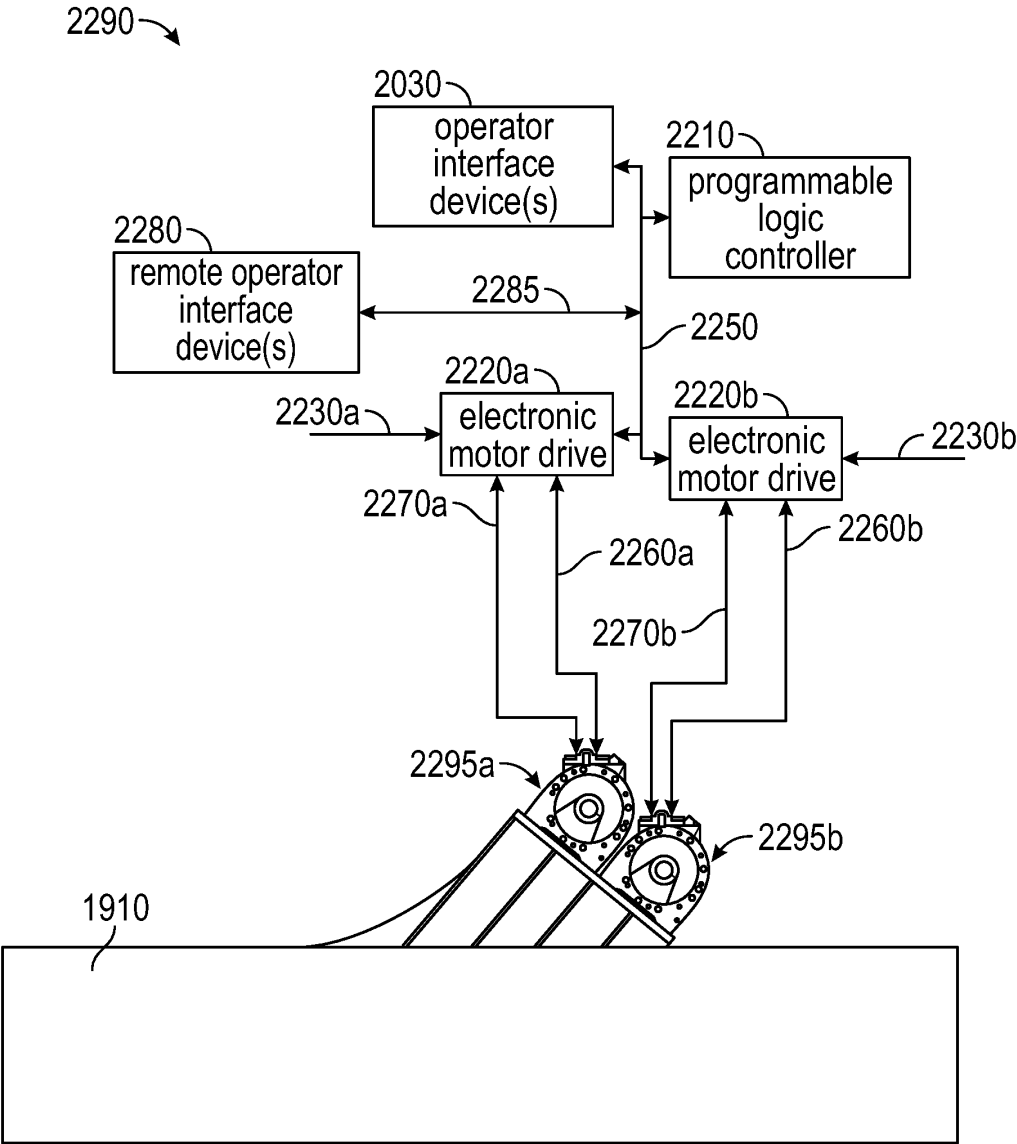


FIG. 23

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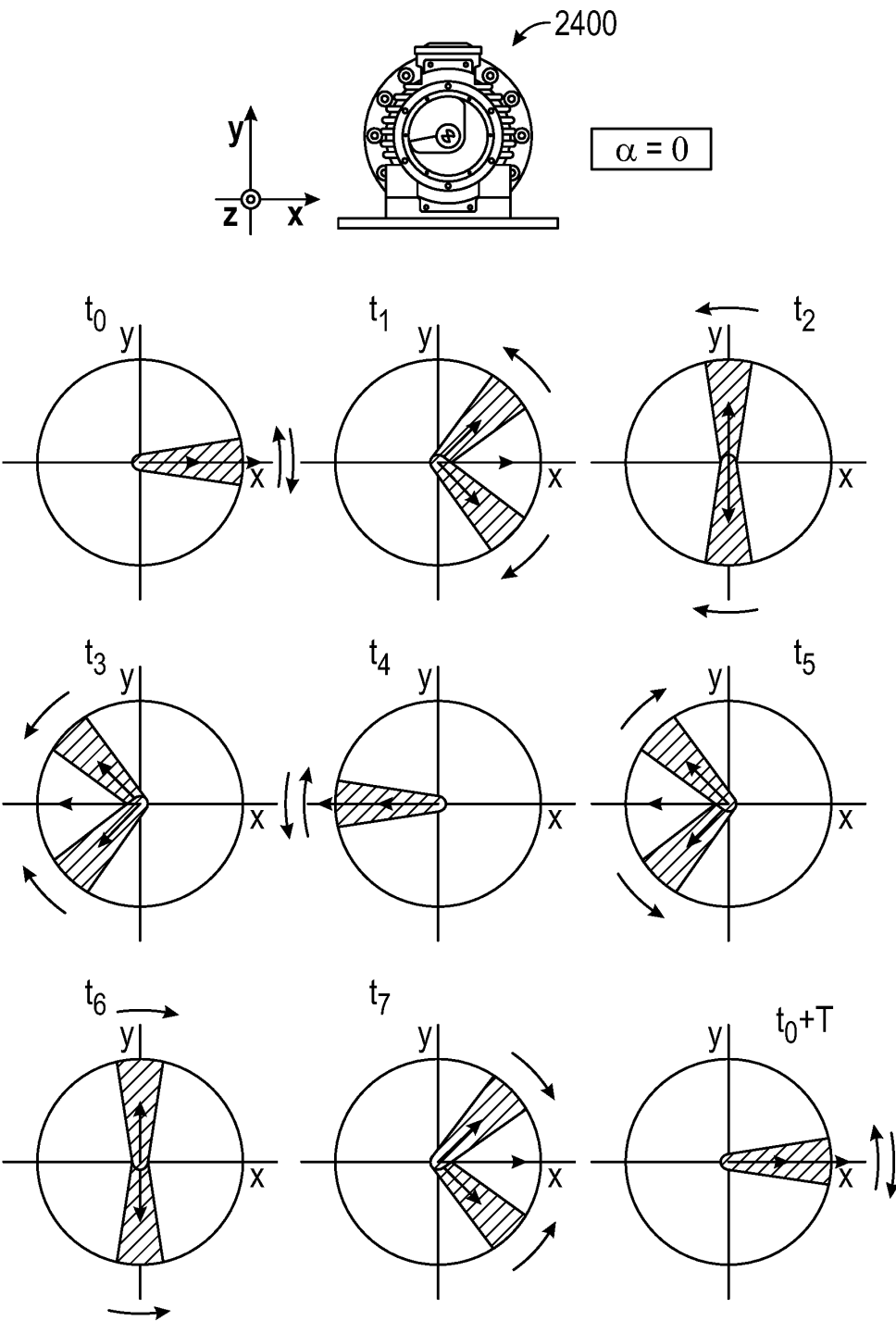


FIG. 24

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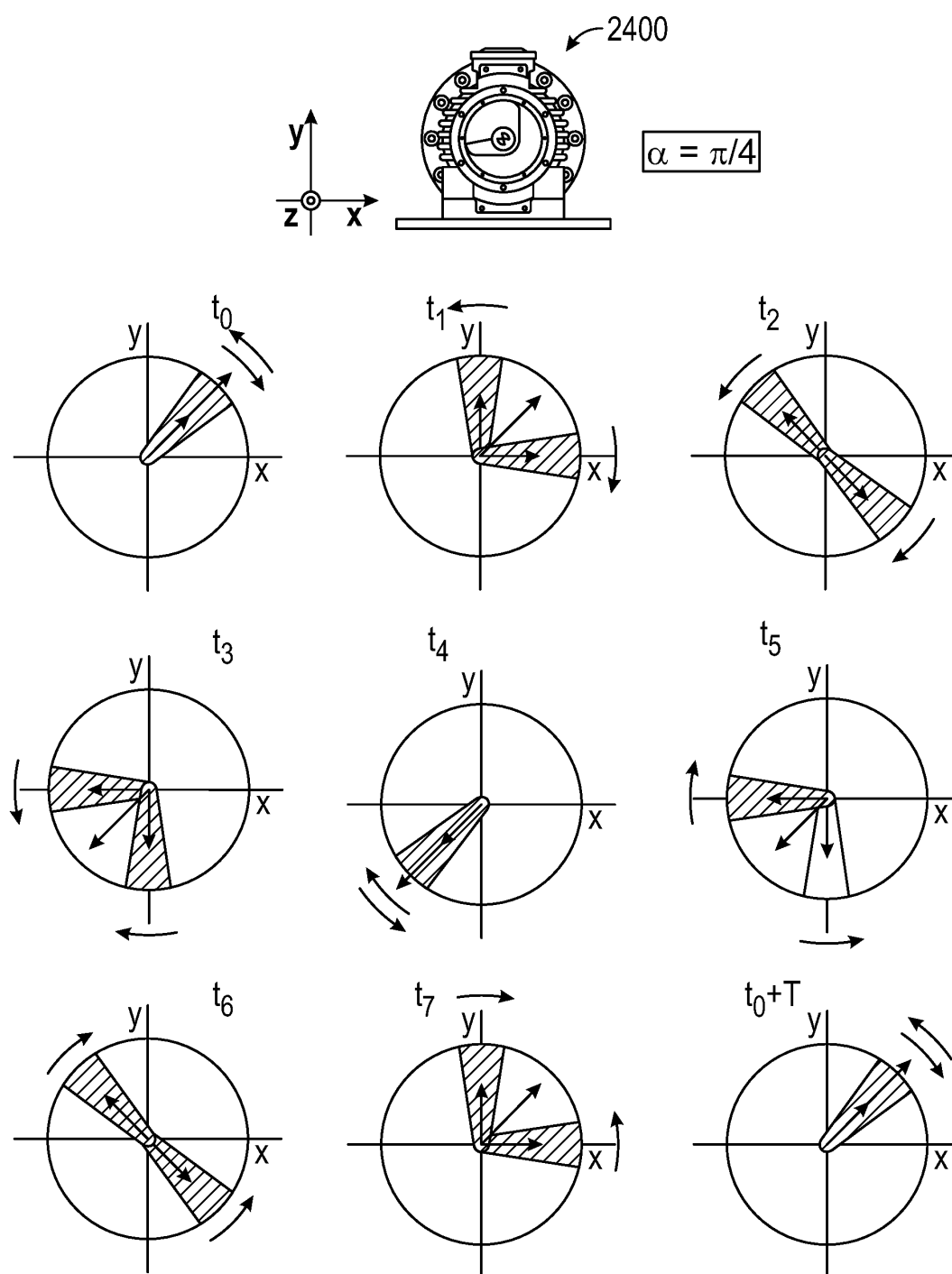


FIG. 25

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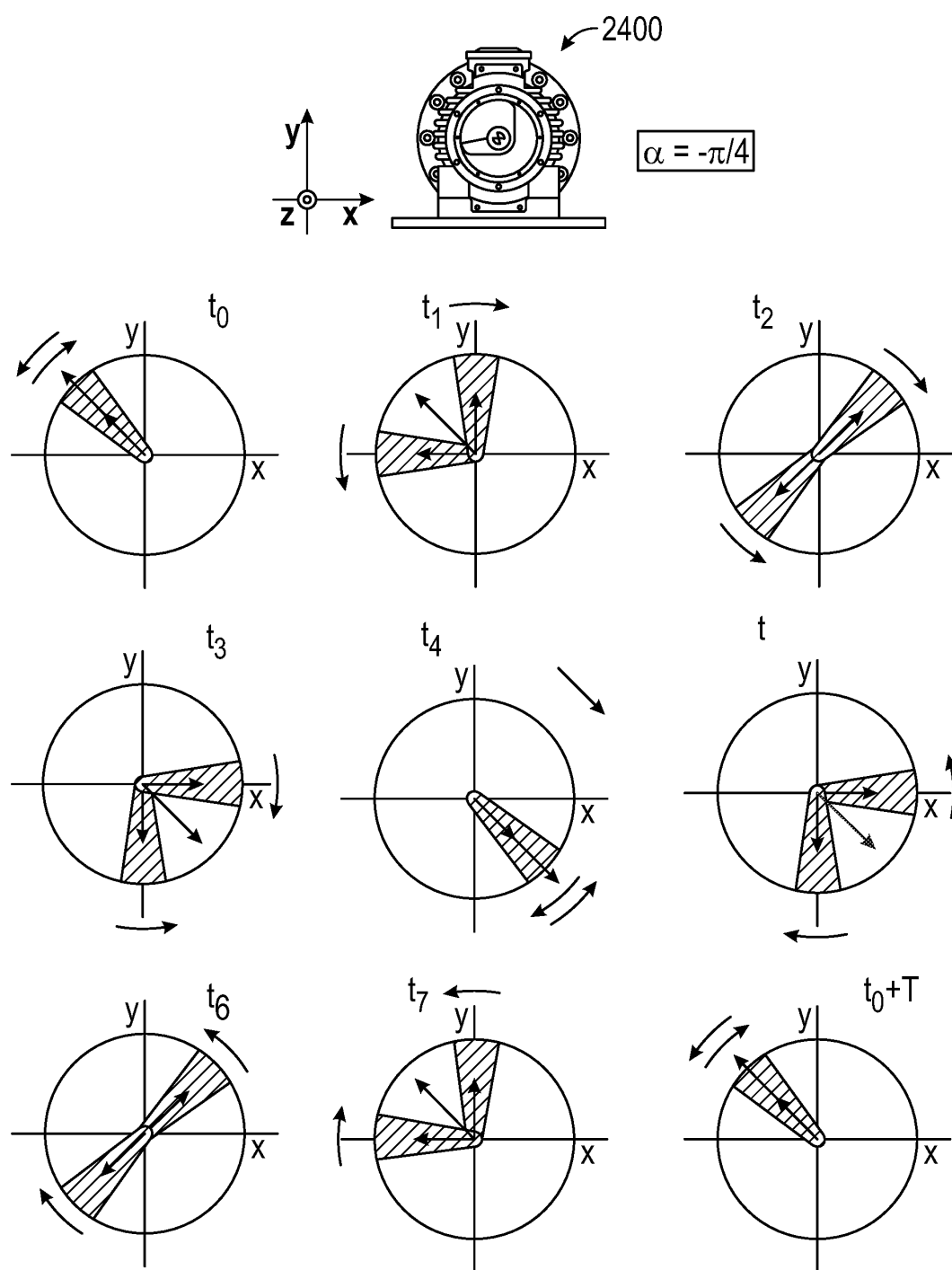


FIG. 26

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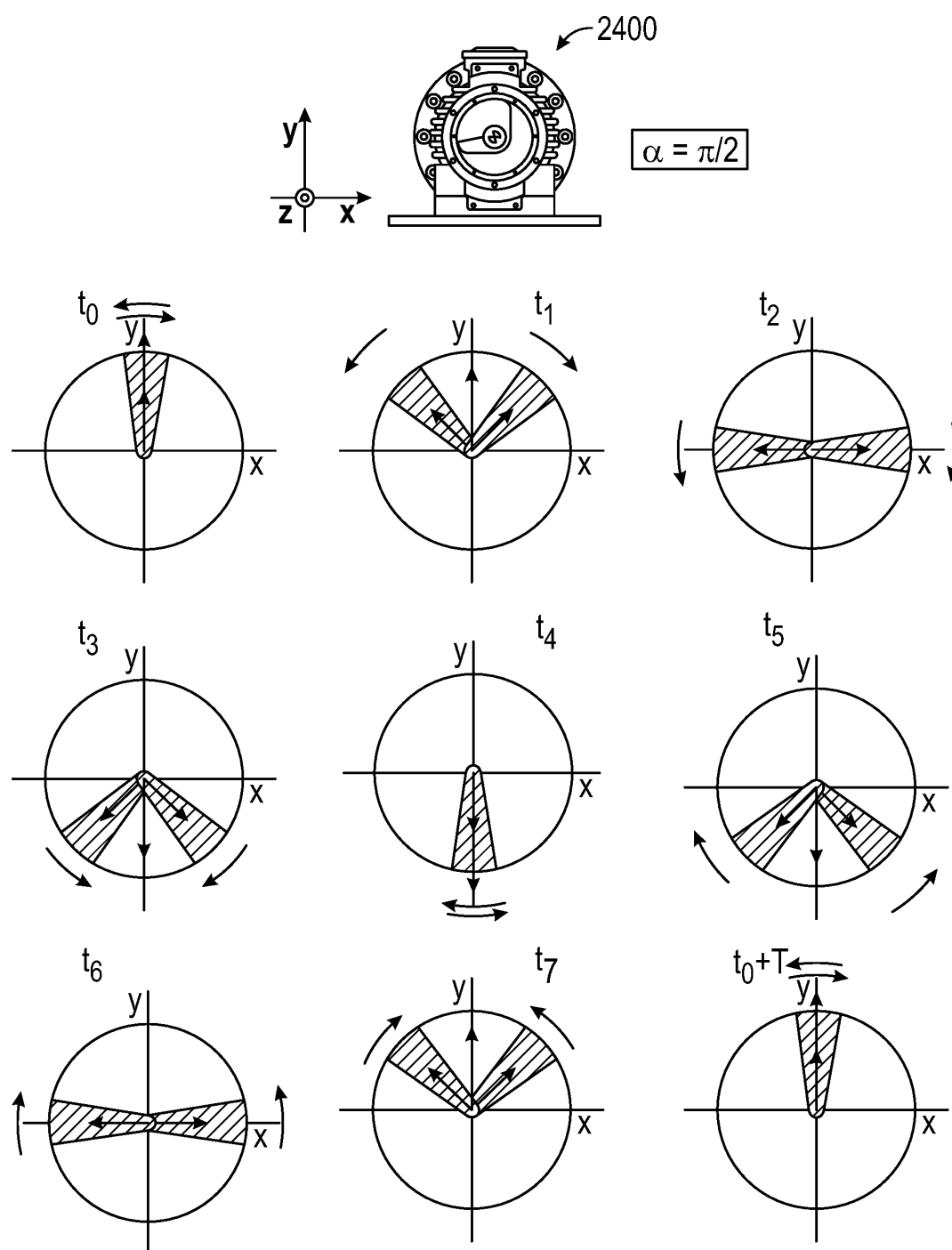


FIG. 27

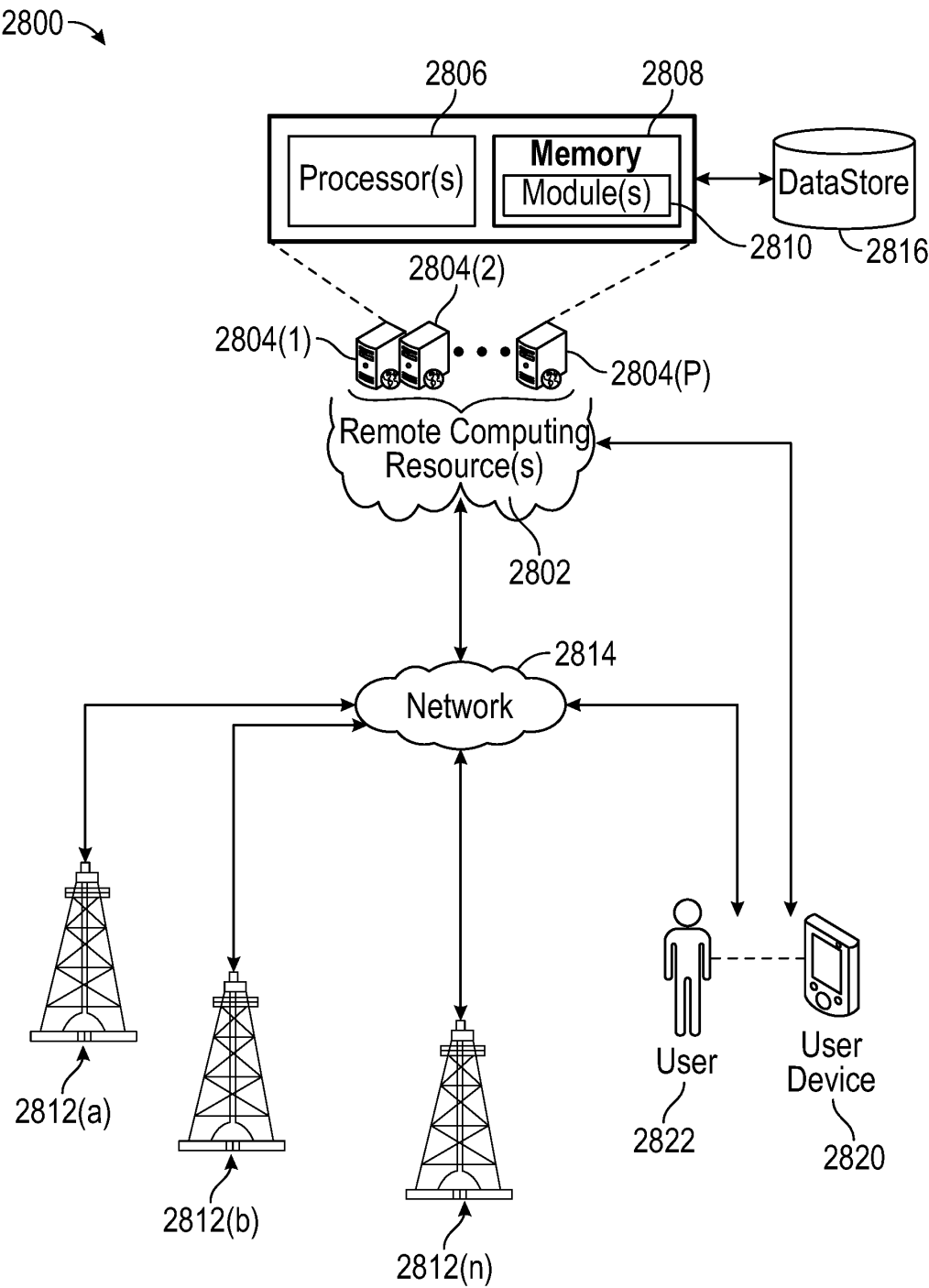


FIG. 28

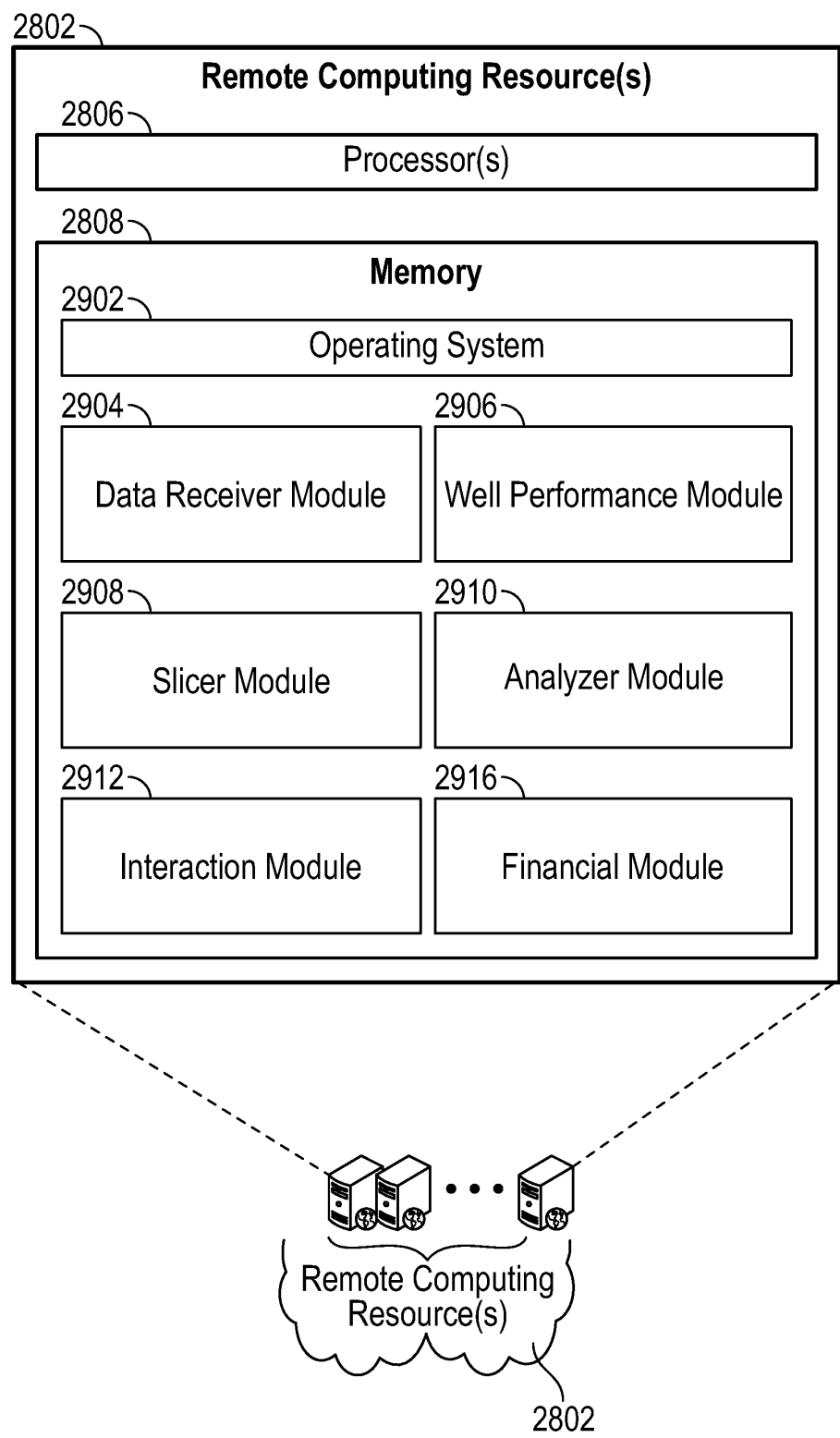


FIG. 29

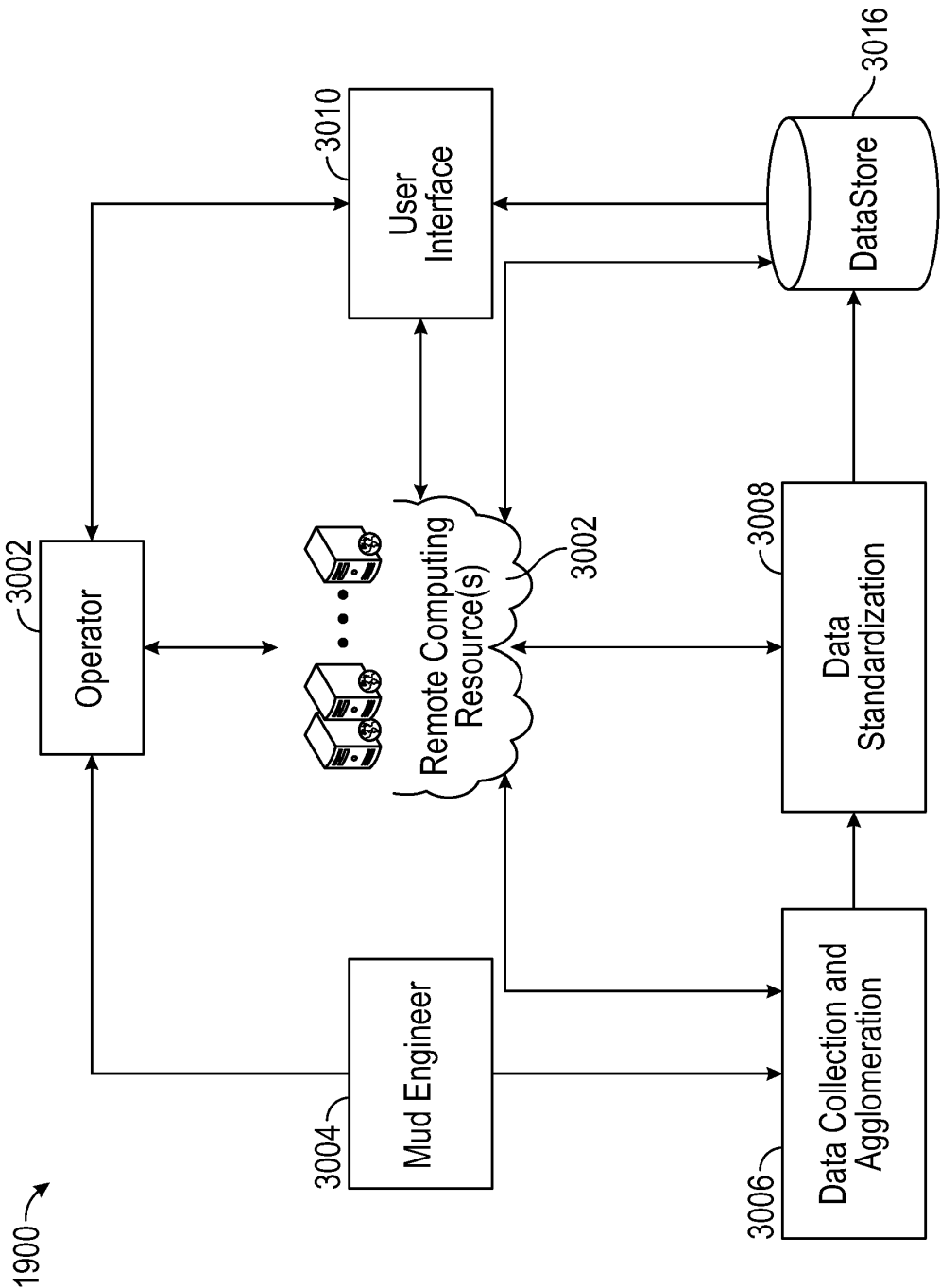


FIG. 30

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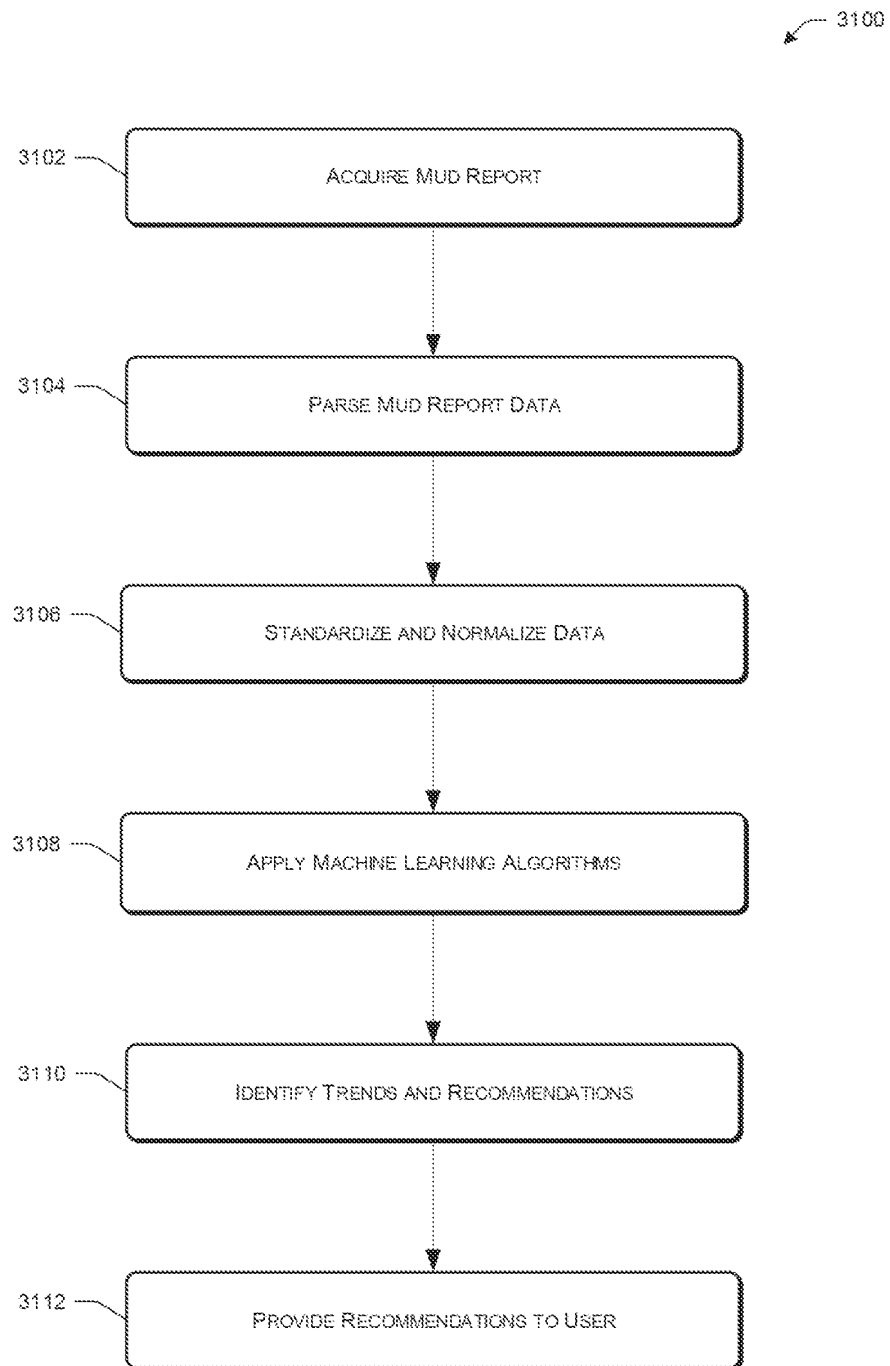


FIG. 31

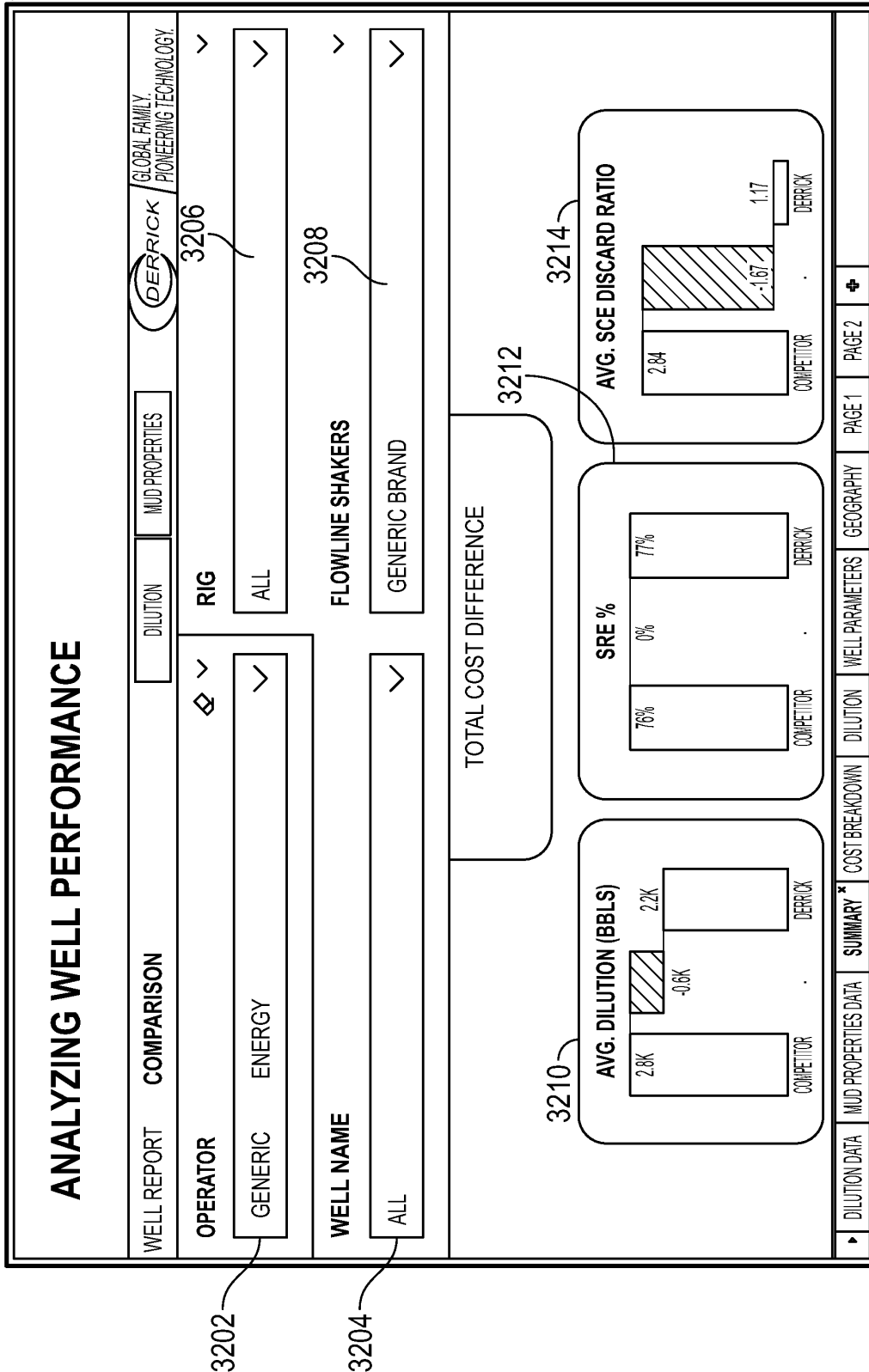
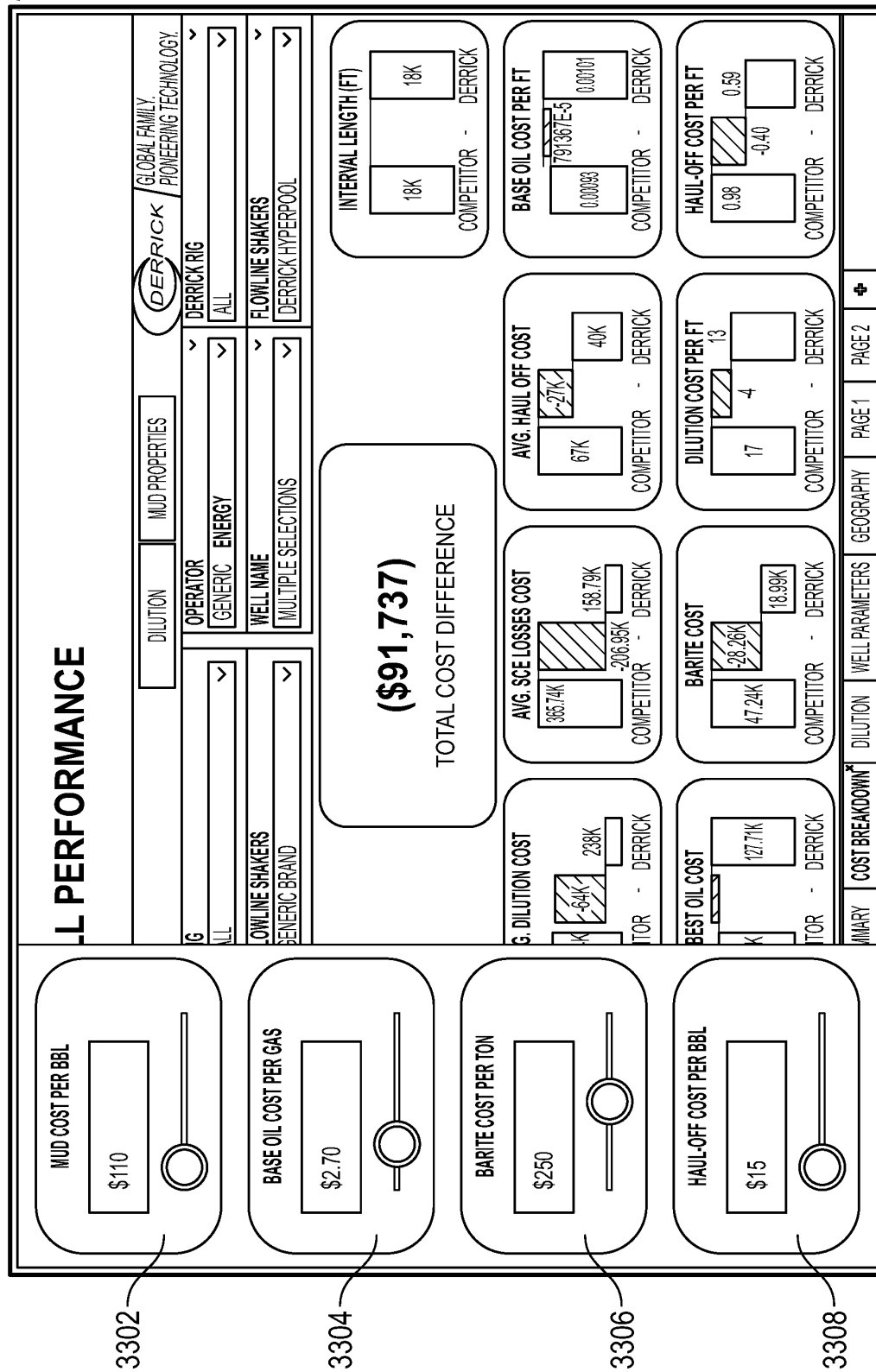


FIG. 32



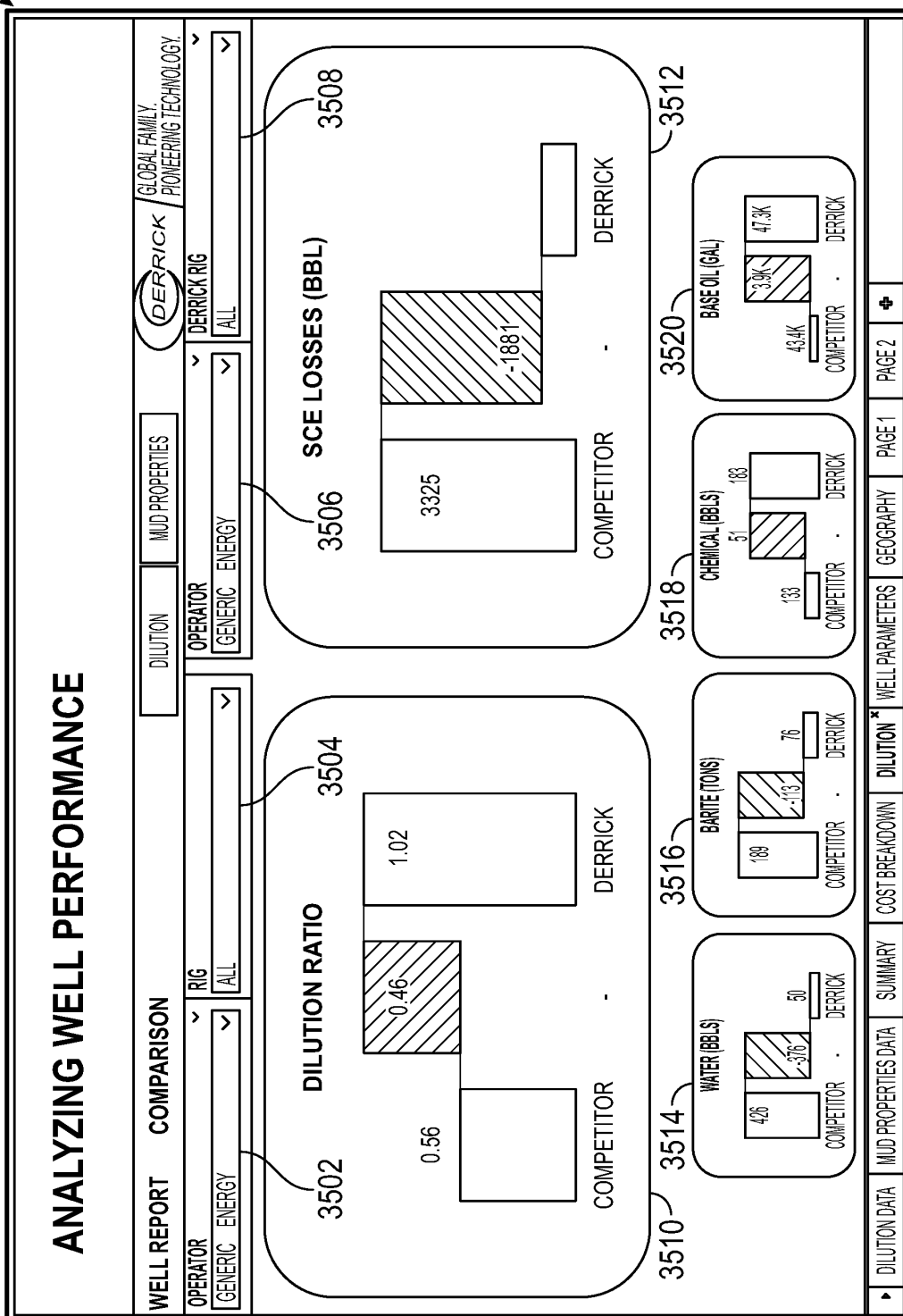


FIG. 35

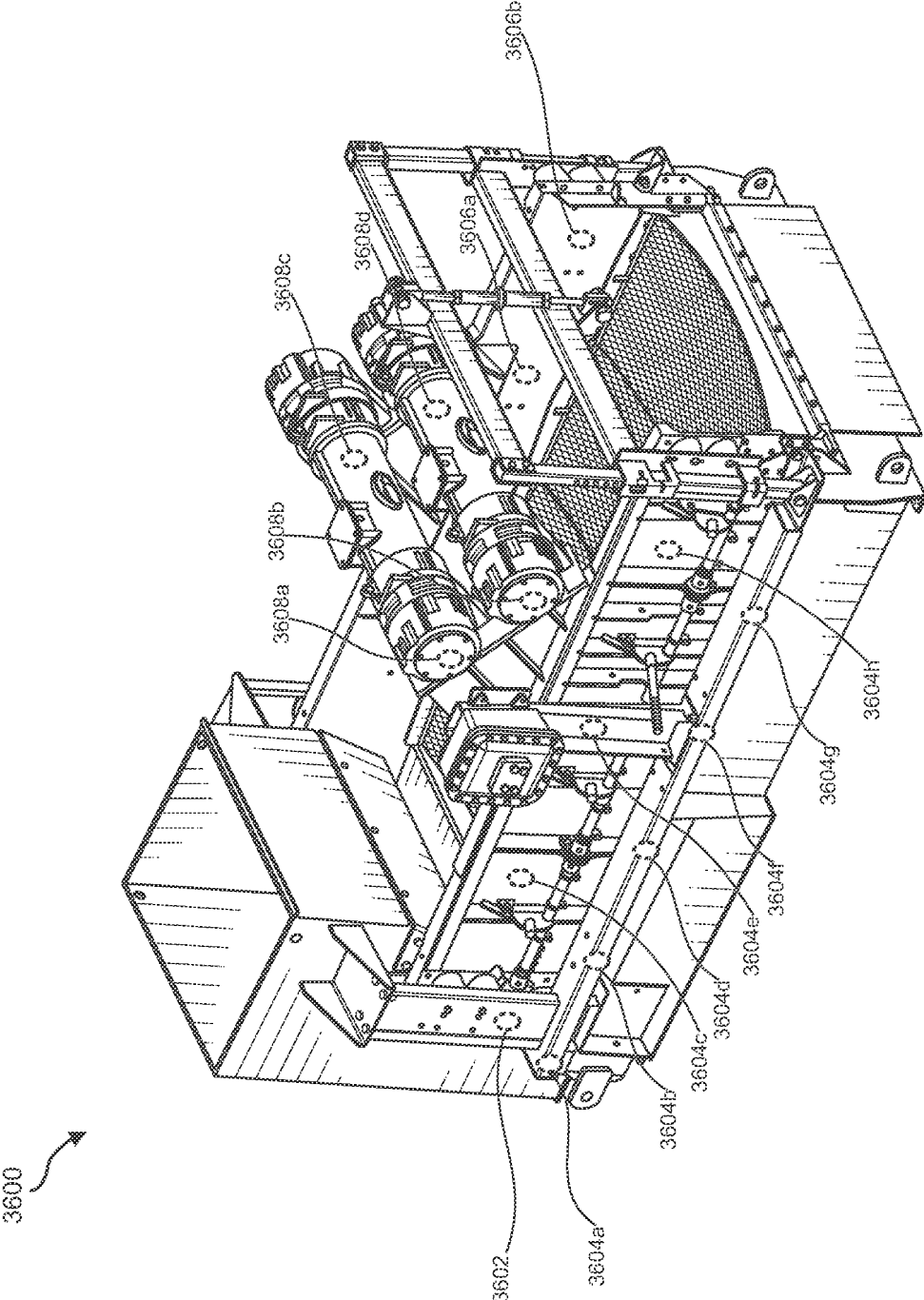


FIG. 36A

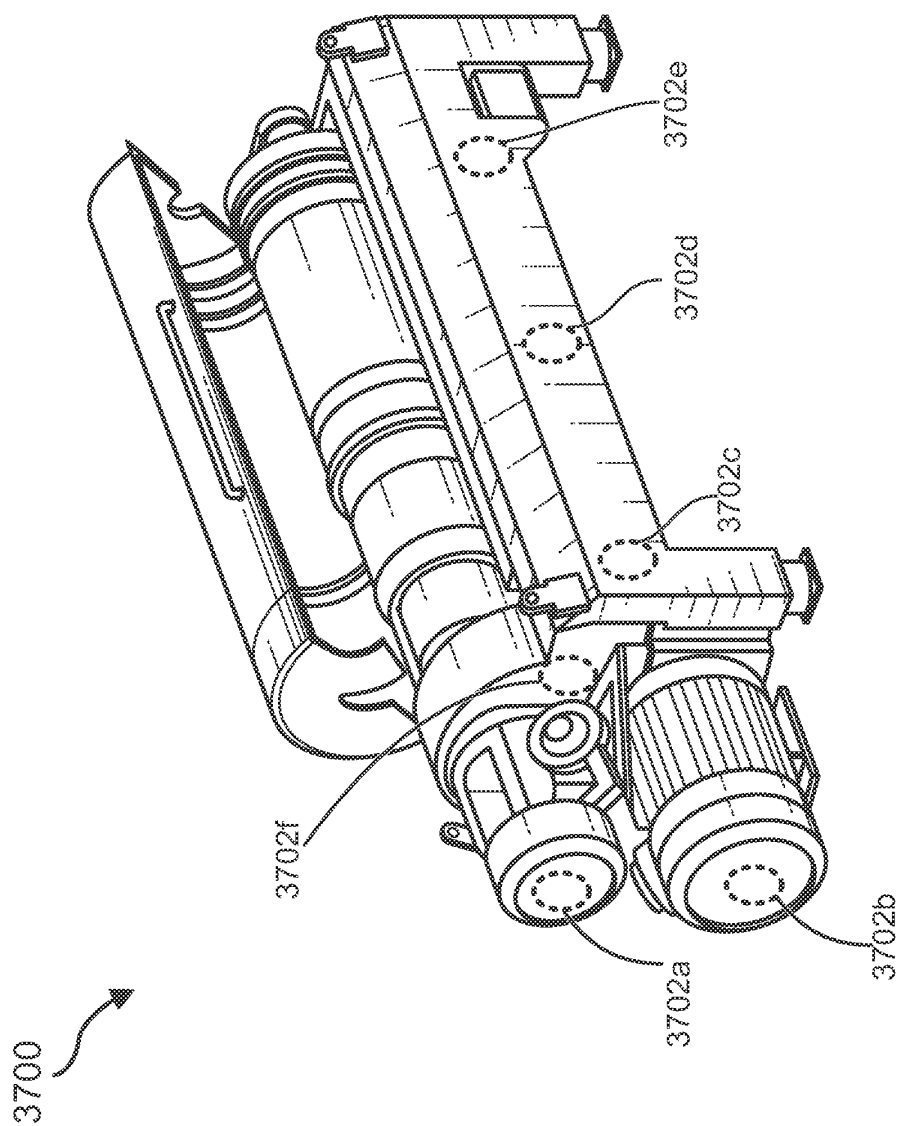


FIG. 36B

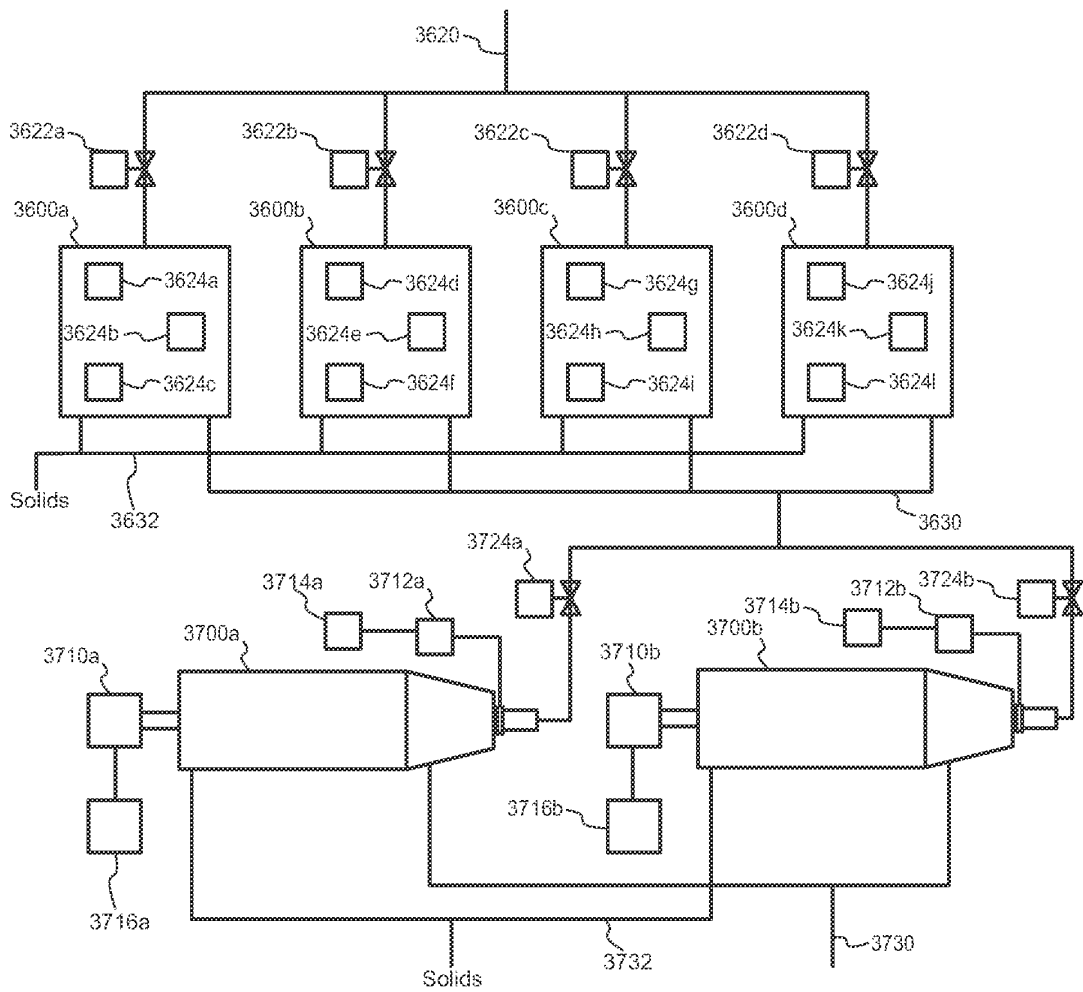


FIG. 37

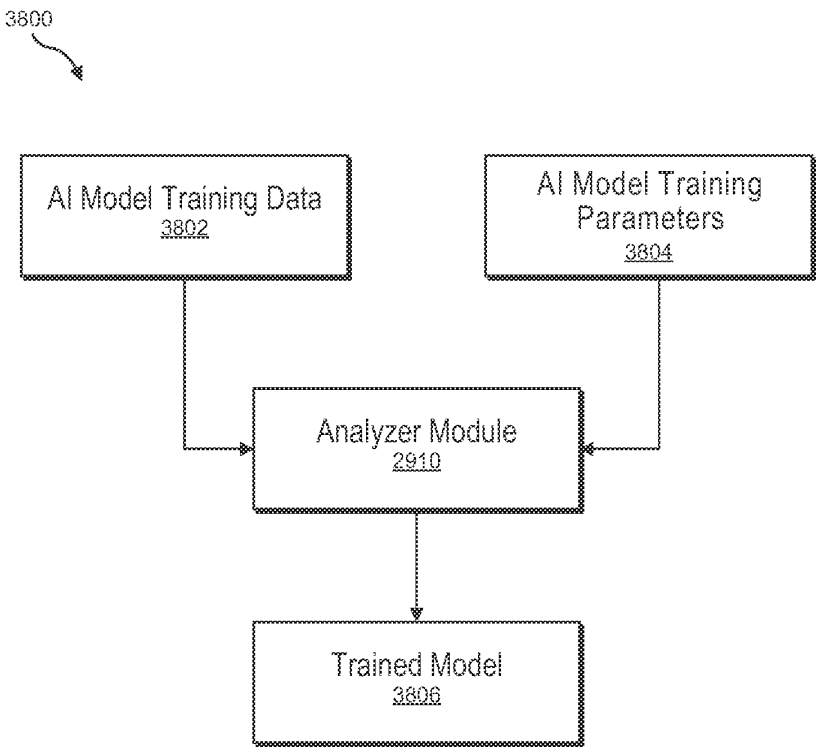


FIG. 38

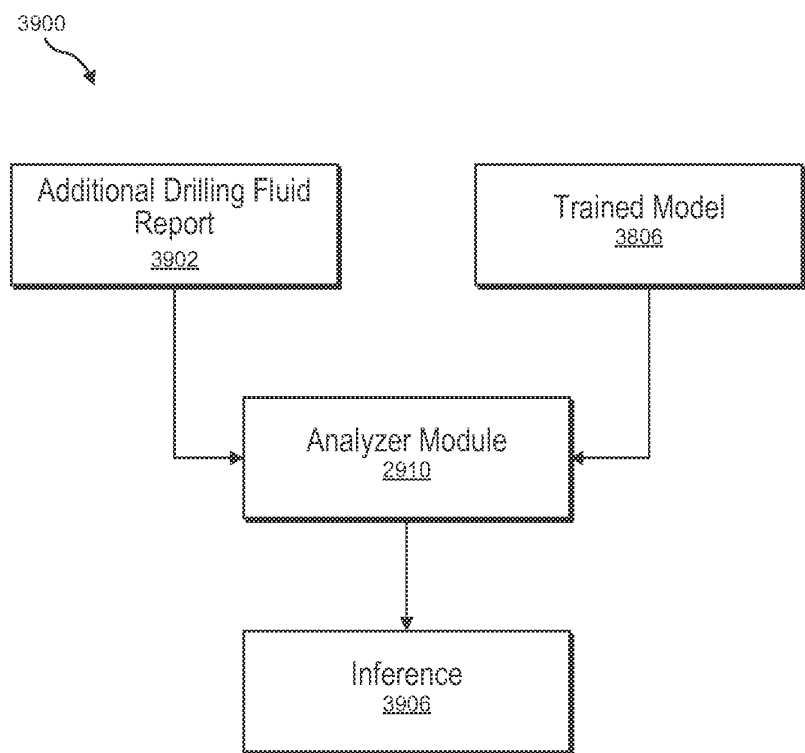


FIG. 39

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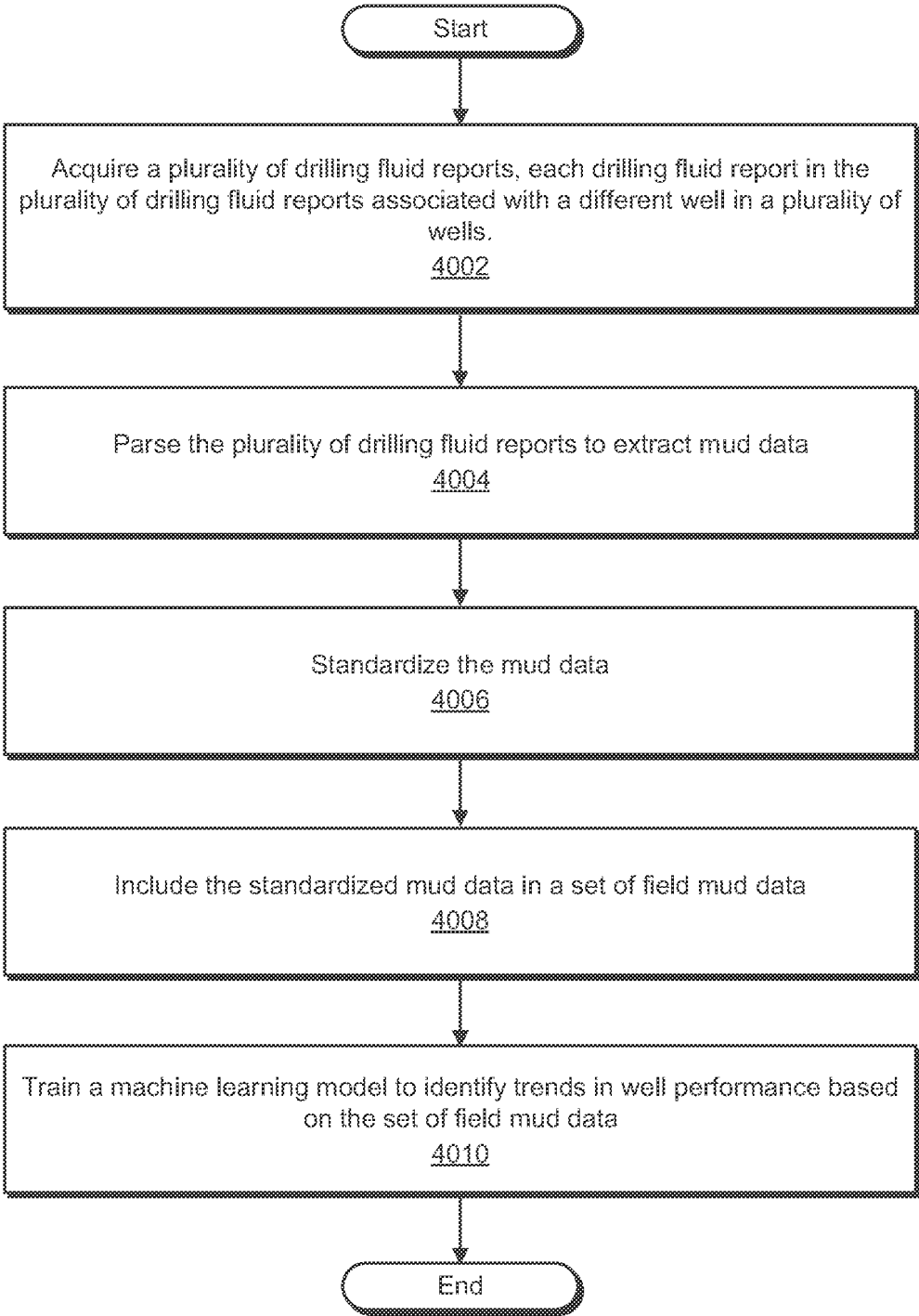


FIG. 40

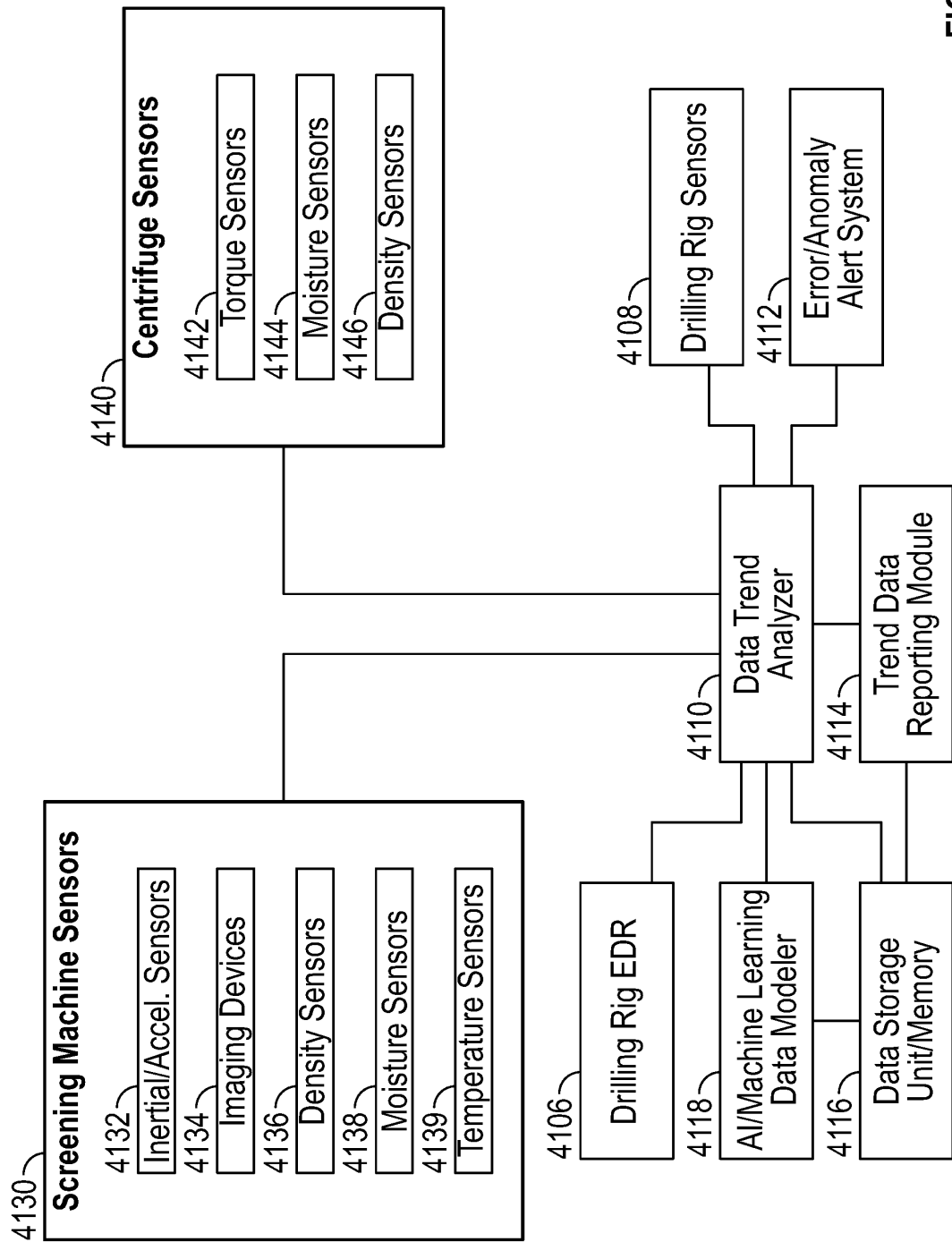


FIG. 41

<u>Derrick Shaker Monitoring System</u>	<u>Drilling Condition/Event</u>	<u>Effective Hole Cleaning</u>	<u>Packoff/Stuck Pipe</u>	<u>Inadequate Hole Cleaning</u>	<u>Hole Cleaning Efficiency at TD (Clean Up Cycle)</u>	<u>Abnormal Change in Drilling Fluid Properties</u>
<u>Trending Metrics</u>						
Shaker Load %		Constant	Decrease	Decreasing	Decrease	Increase
Drilling Torque		Constant	Increase	Increase	Decrease	Constant or Decrease
ROP		Constant	Constant or Decrease	Decrease	N/A	Constant or Decrease
Pump Rate		Constant	Constant	Constant	Constant	Constant or Decrease
Rotary RPM		Constant	Constant	Constant	Constant	Constant or Decrease
Differential Pressure (Mud Motor)		Constant	Increase	Constant or Decrease	Decrease	N/A
Standpipe Pressure		Constant	Increase	Decrease	Decrease	N/A
Weight on Bit		Constant	Increase	Increase	N/A	N/A
Flow Sensor		Constant	Constant or Decrease	Constant	Constant	Constant or Decrease

FIG. 42

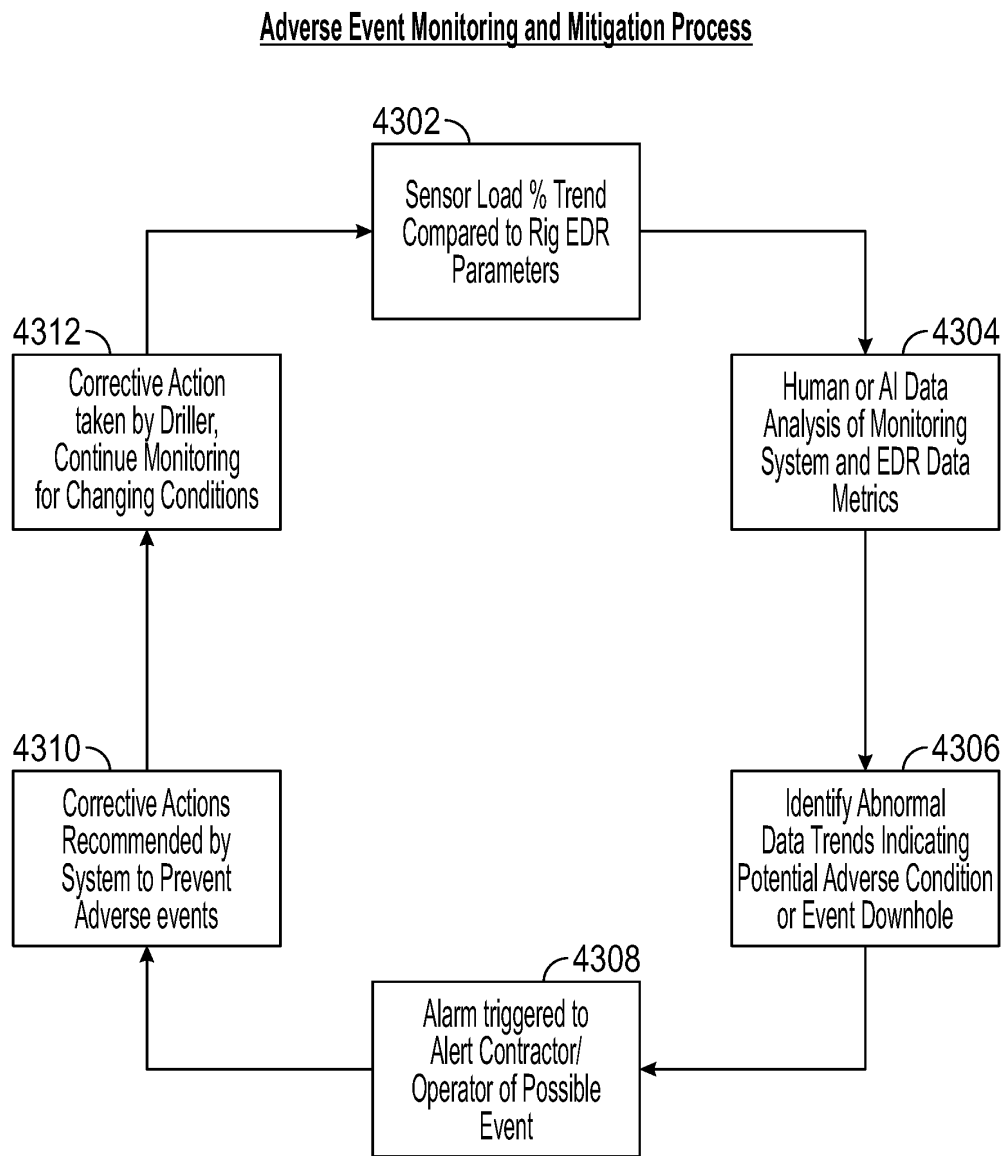


FIG. 43

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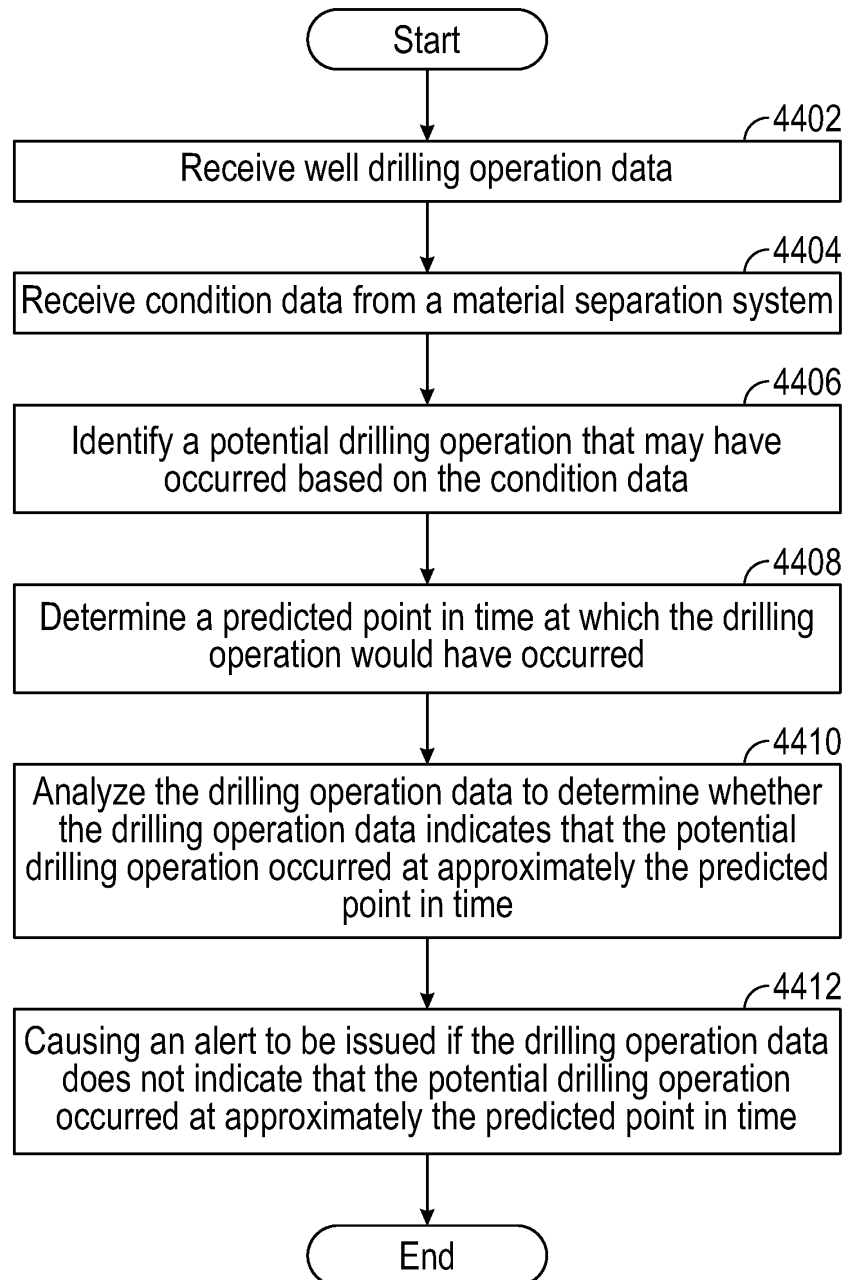


FIG. 44

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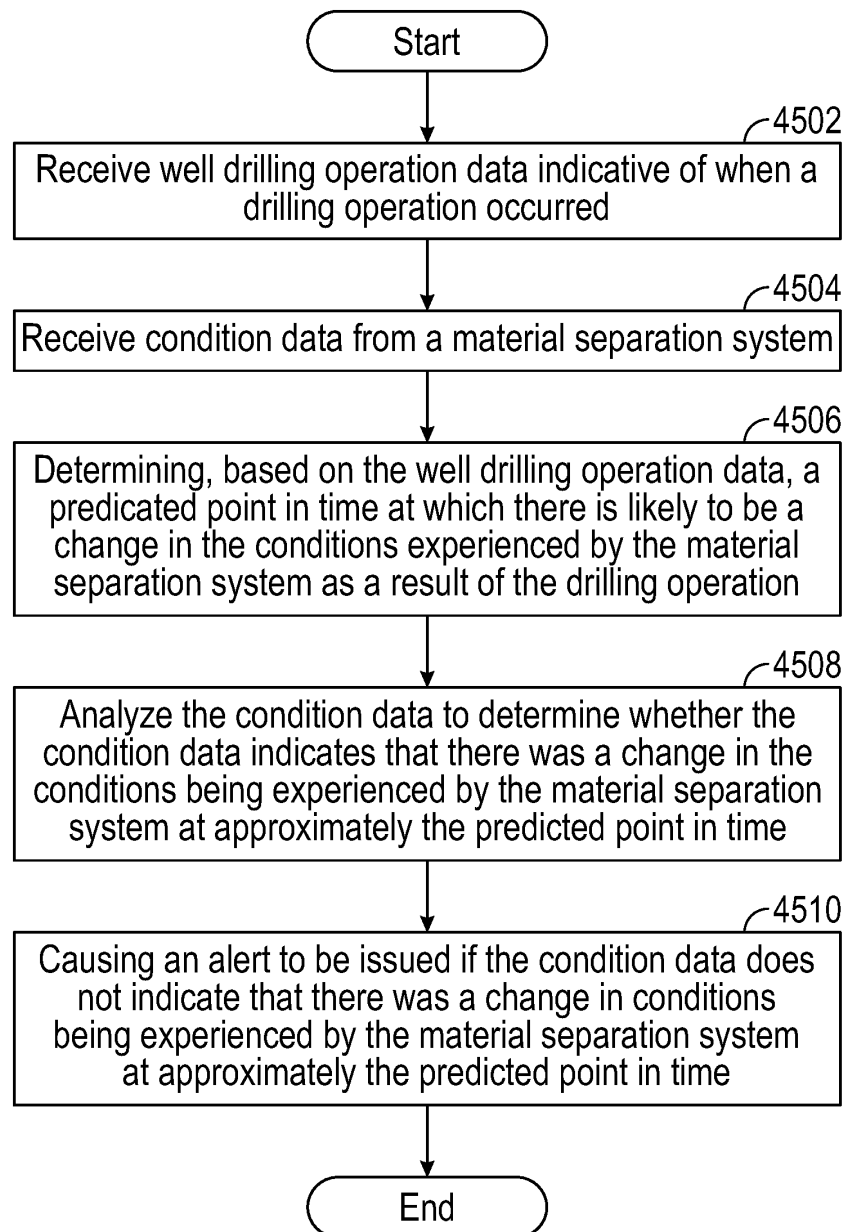


FIG. 45