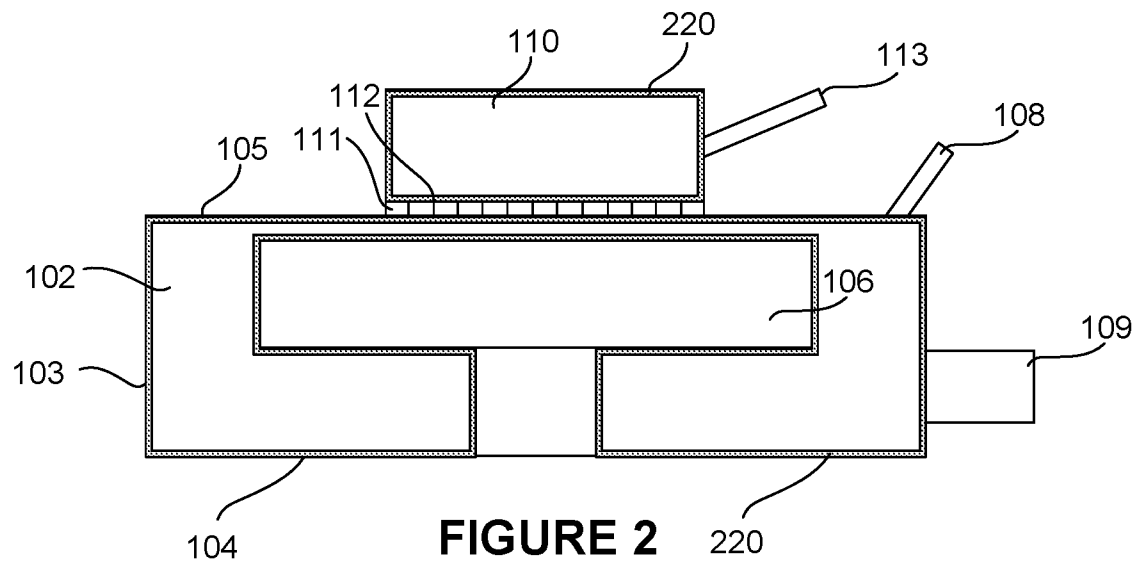
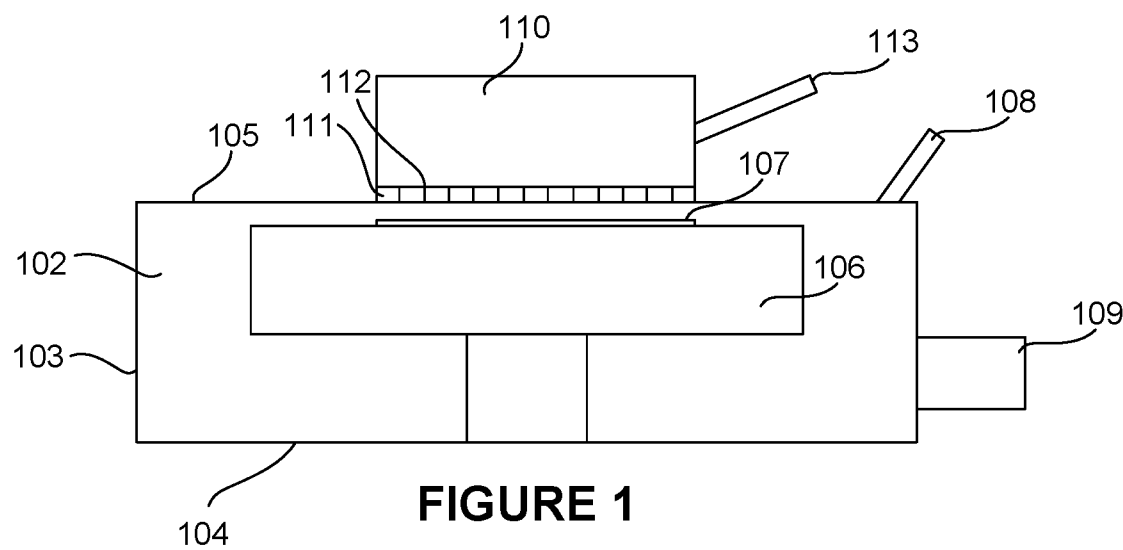
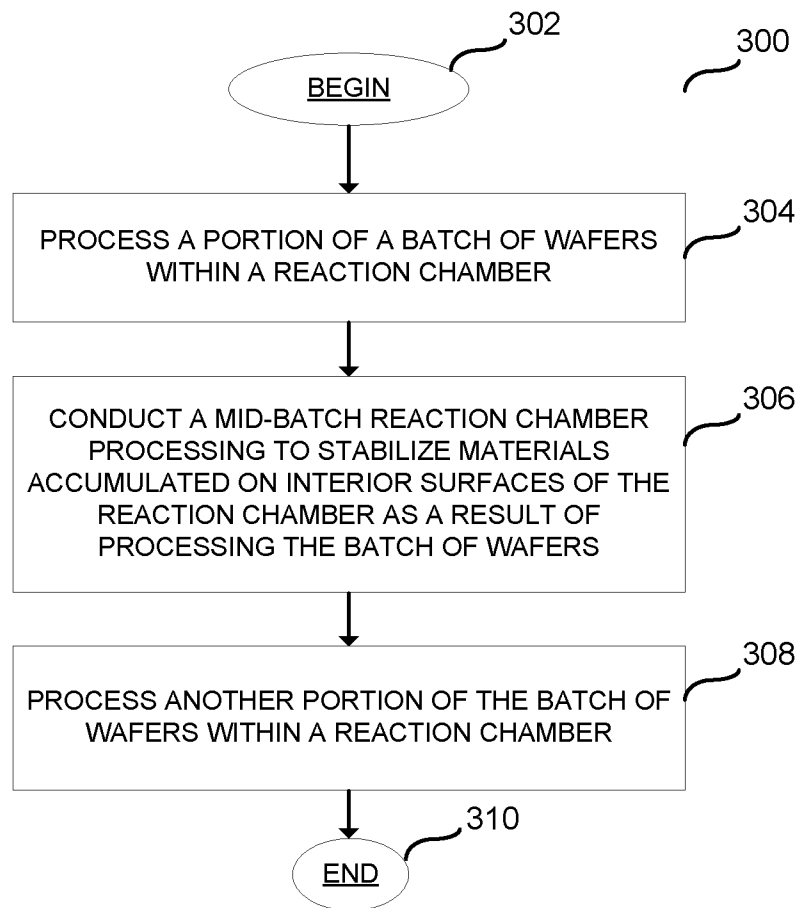
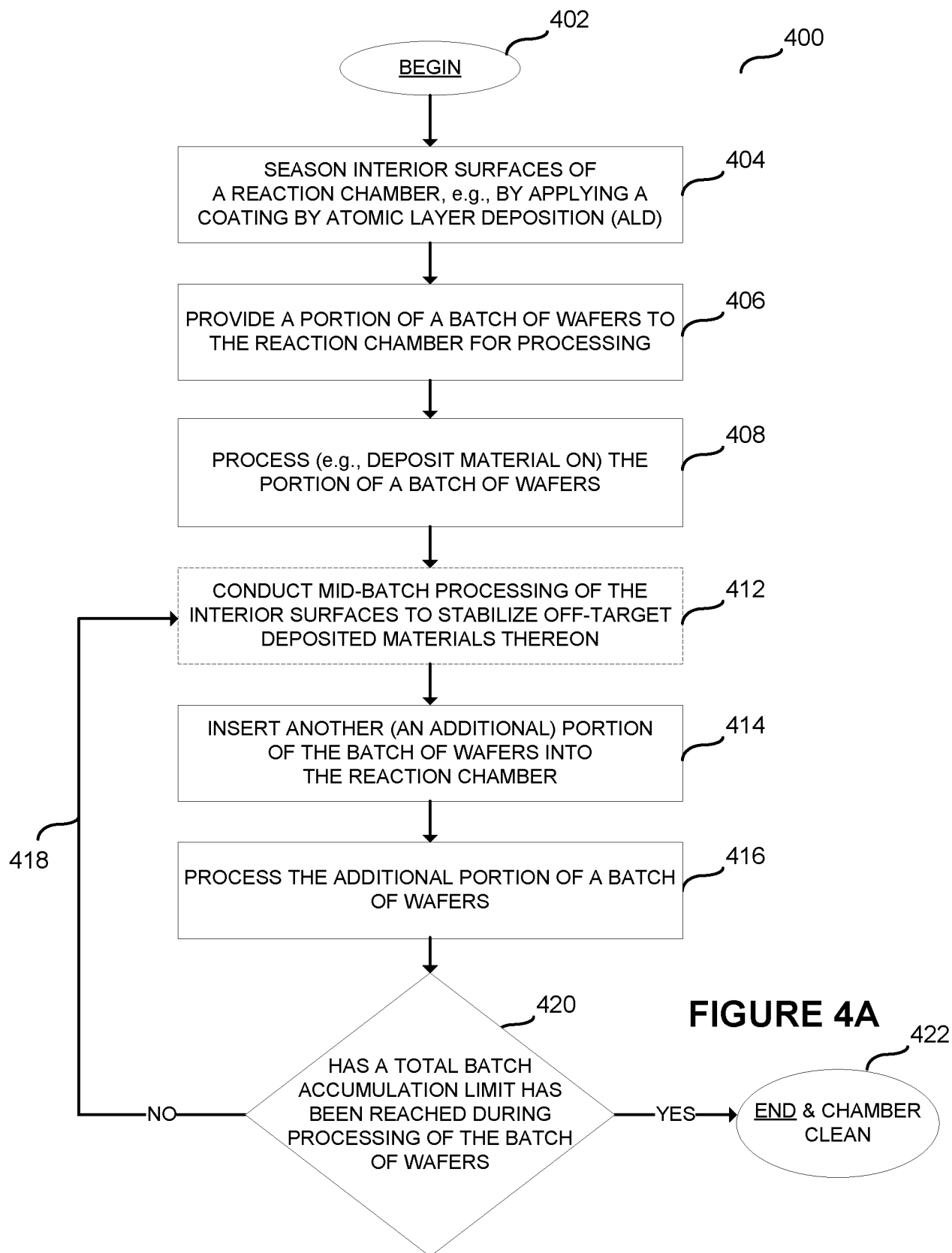




2 / 9

**FIGURE 3**

3 / 9



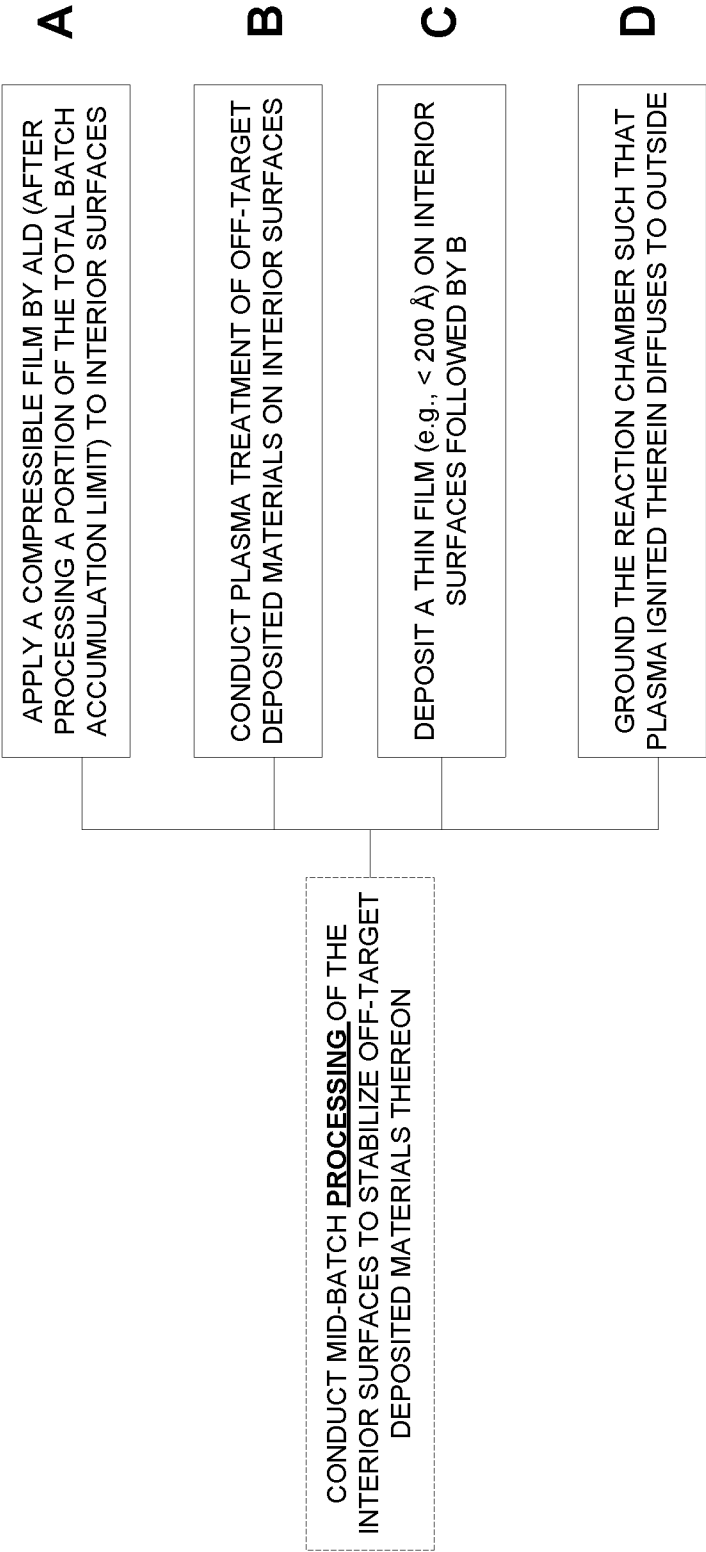


FIGURE 4B

	Parameters	Process	UCT	Mid-batch -1/2
Flow (sccm)	Precursor flow	500-3,000 sccm	500-3,000 sccm	500-3,000 sccm
	Carrier flow	1,000 - 15,000 Ar	1,000 - 15,000 Ar	1,000 - 15,000 Ar
	Oxidizer flow	1,000 - 20,000 N2O/O2	1,000 - 20,000 N2O/O2	1,000 - 20,000 N2O/O2
	Purge flow	N2 5,000 - 50,000	N2 5,000 - 50,000	N2 5,000 - 50,000
Step timings (s)	Pressure	1-10T	1-10T	1-10T
	2nd purge	N2/O2 5,000 - 50,000	N2/O2 5,000 - 50,000	N2/O2 5,000 - 50,000
	Dose time	0.01 - 1s	0.01 - 1s	0.01 - 1s
	PDP time	0.01 - 1s	0.01 - 1s	0.01 - 1s
Temp	RF time	0.1 - 20s	0.1 - 20s	0.1 - 20s
	RF purge time	0.01 - 1s	0.01 - 1s	0.01 - 1s
	Ampoule temp	30-70°C	30-70°C	30-70°C
	Gas line temp	30-70°C	30-70°C	30-70°C
Power	Ped Temp	25C - 400°C	25C - 400°C	25C - 400°C
	Chamber temp	25C - 100°C	25C - 100°C	25C - 100°C
	Top plate temp	25C - 100°C	25C - 100°C	25C - 100°C
	SHD power	500W - 7kW	500W - 7kW	3kW - 10kW
Post Treatment	Ped Power	500W - 7kW	500W - 7kW	500W - 7kW
	Frequency	200kHz or 13.56 MHz or 27MHz	200kHz or 13.56 MHz or 27MHz	200kHz - 13.56 kHz (preferably low frequency)
	Tuning mode	Frequency	Frequency	Frequency
	Post treatment	None	None	Can be combined with treatment
Post Treatment	Power			500W - 7kW
	Gas			H2 or He or Ar or N2 or O2 or combination of these
	Frequency			200kHz or 13.56 MHz or 27MHz
	Time			0.1s - 600s

FIGURE 5A

6 / 9

	Parameters	Mid-batch -3	Mid-batch -4	Comment
Flow (sccm)	Precursor flow	NA	500-3,000 sccm	
	Carrier flow	NA	1,000 - 15,000 Ar	
	Oxidizer flow	NA	1,000 - 20,000 N ₂ O/O ₂	
	Purge flow	N ₂ 5,000 - 50,000	N ₂ 5,000 - 50,000	
Step timings (s)	Pressure	1-10T	1-10T	
	2nd purge	No Flow to diffuse plasma to SHD	N ₂ /O ₂ 5,000 - 50,000	
	Dose time	NA	0.01 - 1s	
	PDP time	0.01 - 1s	0.01 - 1s	
Temp	RF time	0.1 - 600s	0.1 - 20s	
	RF purge time	0.01 - 60s	0.01 - 1s	
	Amoule temp	30-70C	30-70C	
	Gas line temp	30-70C	30-70C	
Power	Ped Temp	25C - 400°C	25C - 400°C	
	Chamber temp	25C - 100°C	25C - 100°C	
	Top plate temp	25C - 100°C	25C - 100°C	
	SHD power	500W - 7kW	500W - 7kW (Chamber will be grounded)	Either SHD power or ped
Post Treatment	Ped Power	500W - 7kW	500W - 7kW (Chamber will be grounded)	Either SHD power or ped
	Frequency	200KHz or 13.56 MHz or 27MHz	200KHz or 13.56 MHz or 27MHz	
	Tuning mode	Frequency	Frequency	
	Post treatment	Yes (based on above parameters) - No Dep.	Can be combined with treatment	
Post Treatment	Power	500W - 7kW	500W - 7kW	
	Gas	H ₂ or He or Ar or N ₂ or O ₂ or combination of these	H ₂ or He or Ar or N ₂ or O ₂ or combination of these	
	Frequency	200KHz or 13.56 MHz or 27MHz	200KHz or 13.56 MHz or 27MHz	
	Time	0.1s - 600s	0.1s - 600s	

FIGURE 5B

7 / 9

	Remote Clean Recipe
HP Clean	HP Clean
Power	Remote source
Pressure	1-5T
He	
O2	
Ar	1,000-5,000 sccm
N2	
NF3	1,000-10,000 sccm
Pedestal temp	25°C - 400°C
LP Clean	LP Clean
Power	Remote source
Pressure	0.01- 5T
He	
O2	
Ar	1,000-20,000 sccm
N2	
NF3	500-10,000 sccm
Pedestal temp	25°C - 400°C

FIGURE 6

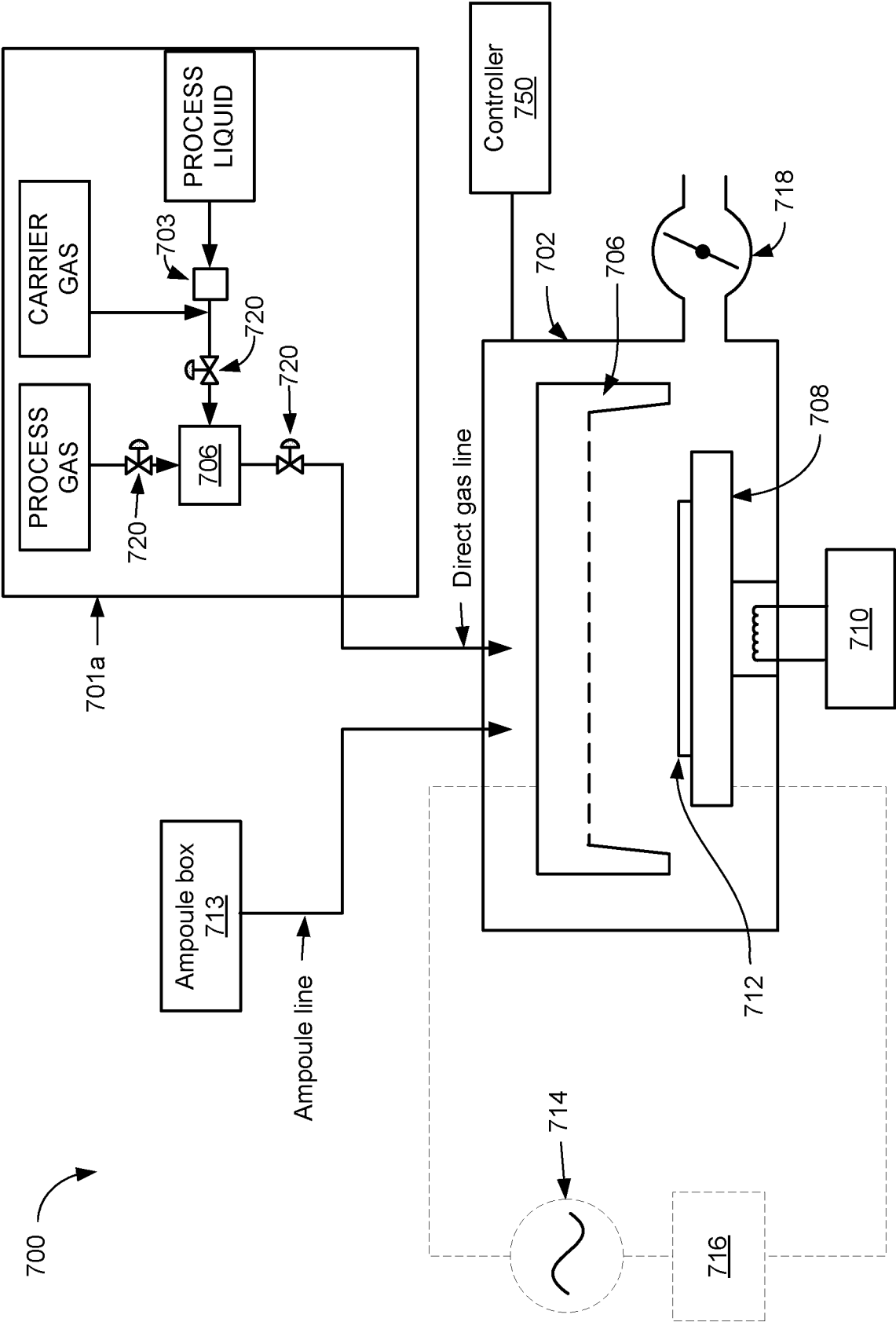


FIGURE 7

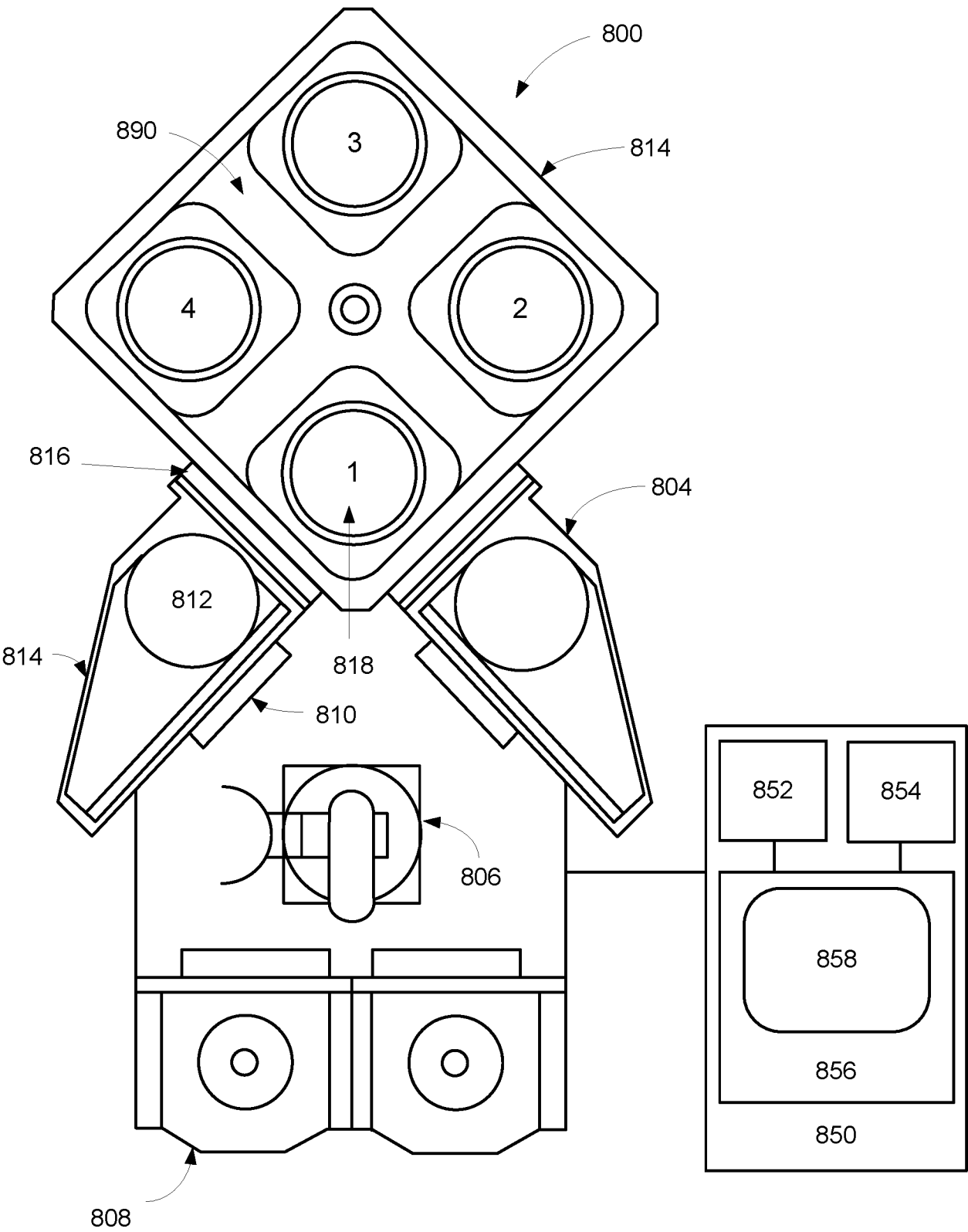


FIGURE 8