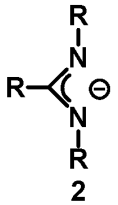
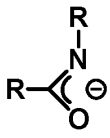
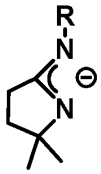
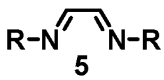
Amine  1

Amidinate  2

Amidate  3

Iminopyrrolidinate  4

Diazabutadiene  5

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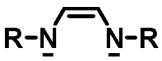
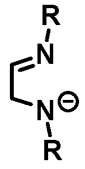
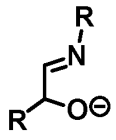
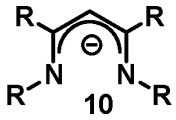
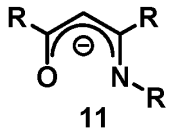
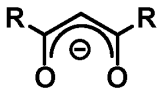
 7

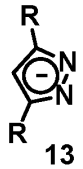
Beta-imino amide  8

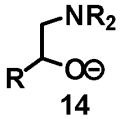
Alpha-imino alkoxide  9

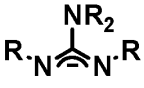
Beta-diketiminate  10

Beta-ketoiminate  11

Beta-diketonate  12

Pyrazolate  13

Beta-amino alkoxide  14

Guanidinidate  15

Amide  16

Imide 17

Figure 1A

Thioether SR_2

18

Thiolate $^{\ominus}SR$

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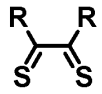
Dithiolene



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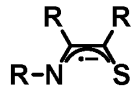
Alpha-iminothiolene



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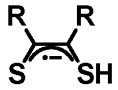

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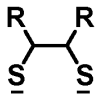
Alpha-Dithiolate



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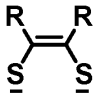

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Beta-Dithiolate

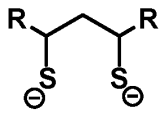

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Figure 1B

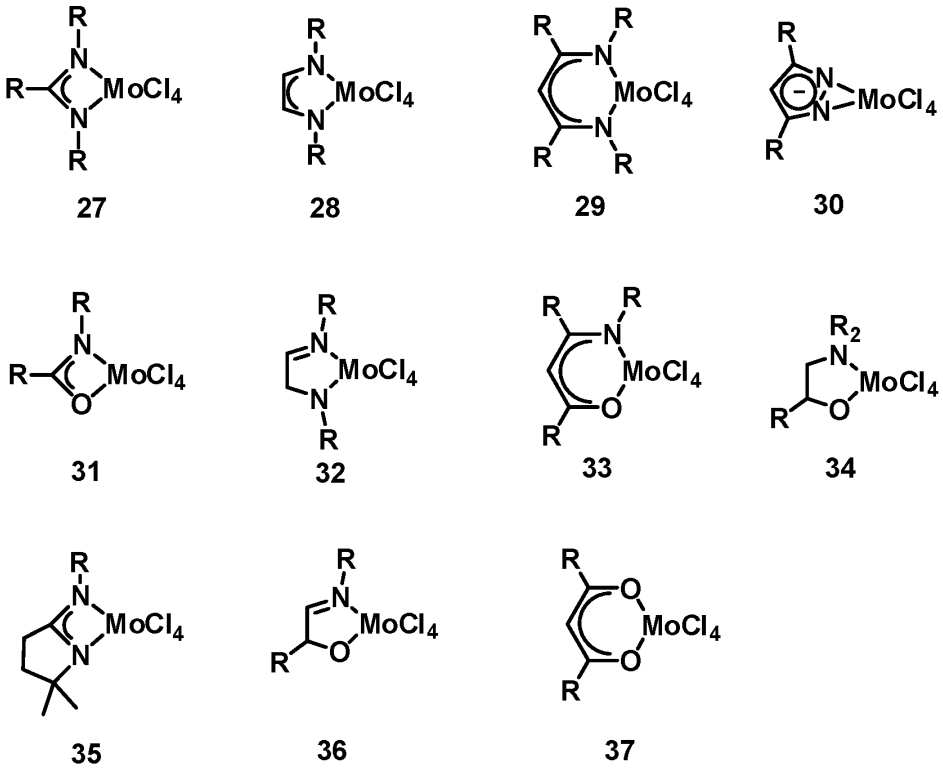
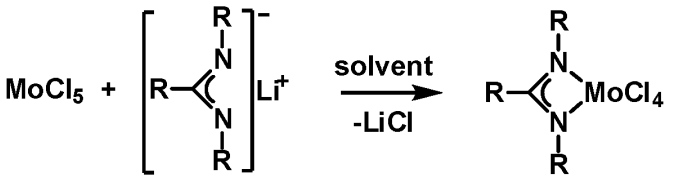
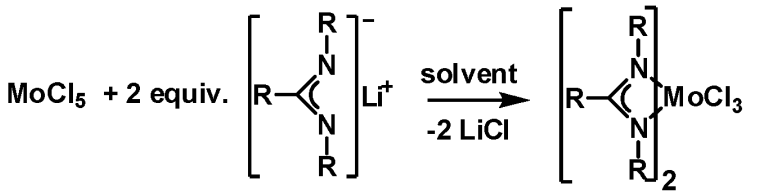


Figure 2



(Equation 1)



(Equation 2)

Figure 3

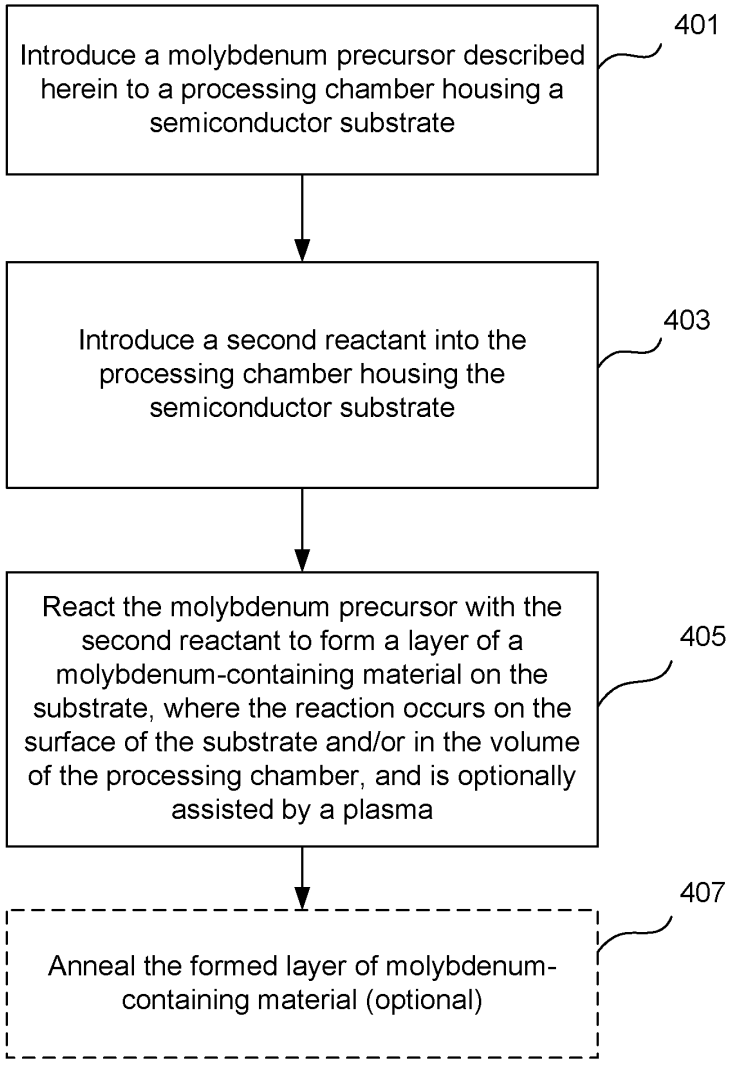

Introduce a molybdenum precursor described herein to a processing chamber housing a semiconductor substrate
401
Introduce a second reactant into the processing chamber housing the semiconductor substrate
403
React the molybdenum precursor with the second reactant to form a layer of a molybdenum-containing material on the substrate, where the reaction occurs on the surface of the substrate and/or in the volume of the processing chamber, and is optionally assisted by a plasma
405
Anneal the formed layer of molybdenum-containing material (optional)
407

Figure 4A

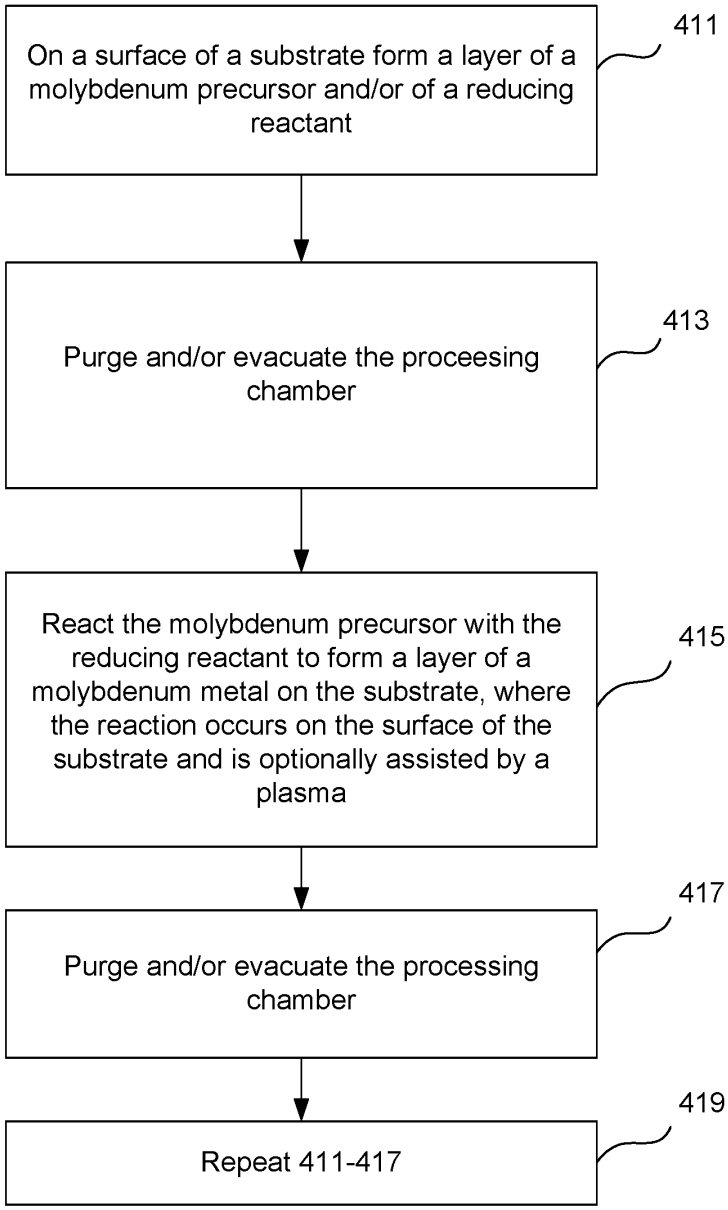

On a surface of a substrate form a layer of a molybdenum precursor and/or of a reducing reactant
411
Purge and/or evacuate the proceesing chamber
413
React the molybdenum precursor with the reducing reactant to form a layer of a molybdenum metal on the substrate, where the reaction occurs on the surface of the substrate and is optionally assisted by a plasma
415
Purge and/or evacuate the processing chamber
417
Repeat 411-417
419

Figure 4B

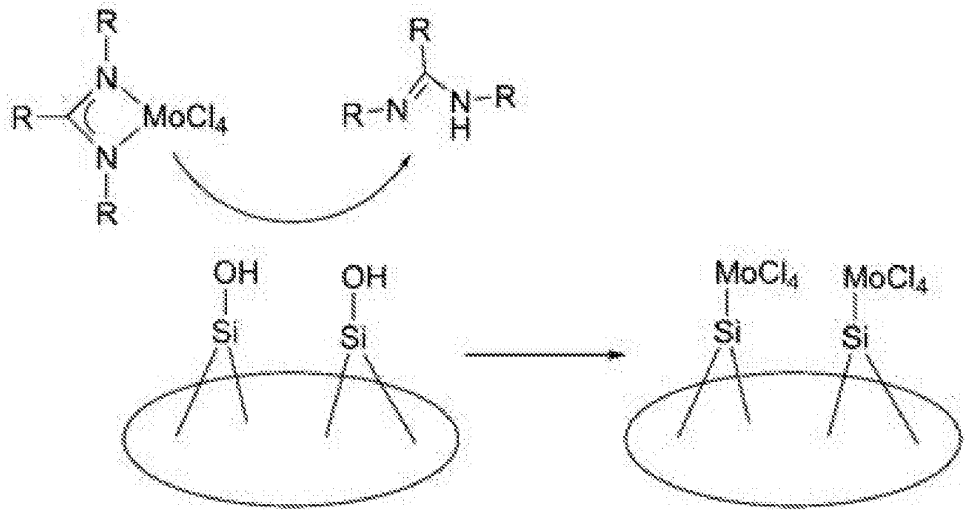


Figure 5

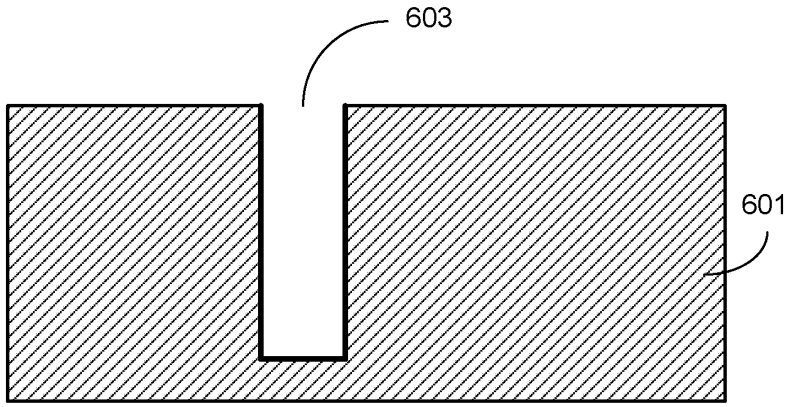


Figure 6A

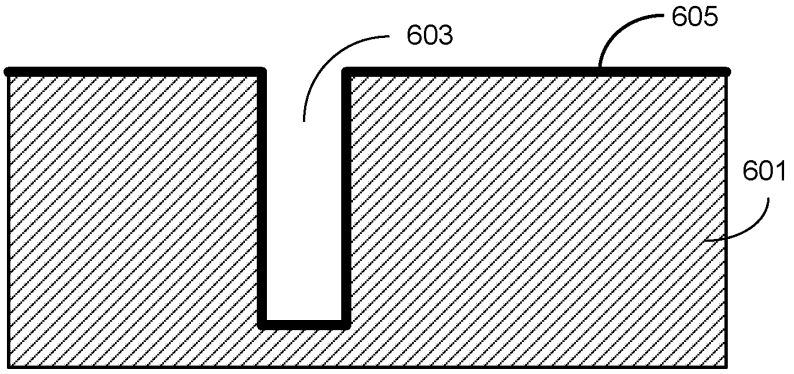


Figure 6B

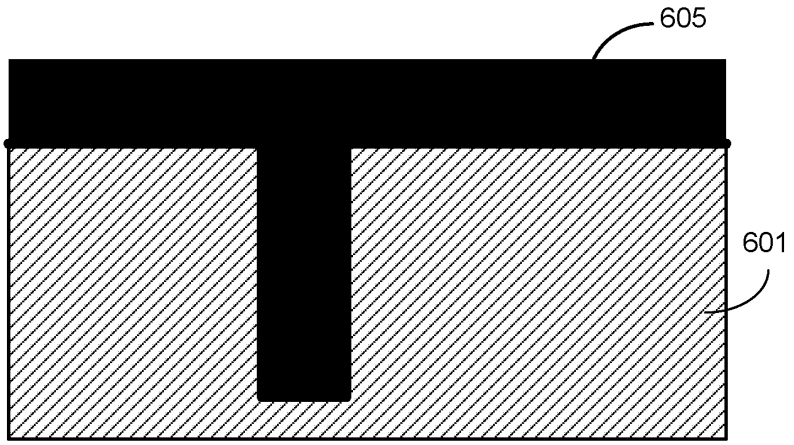
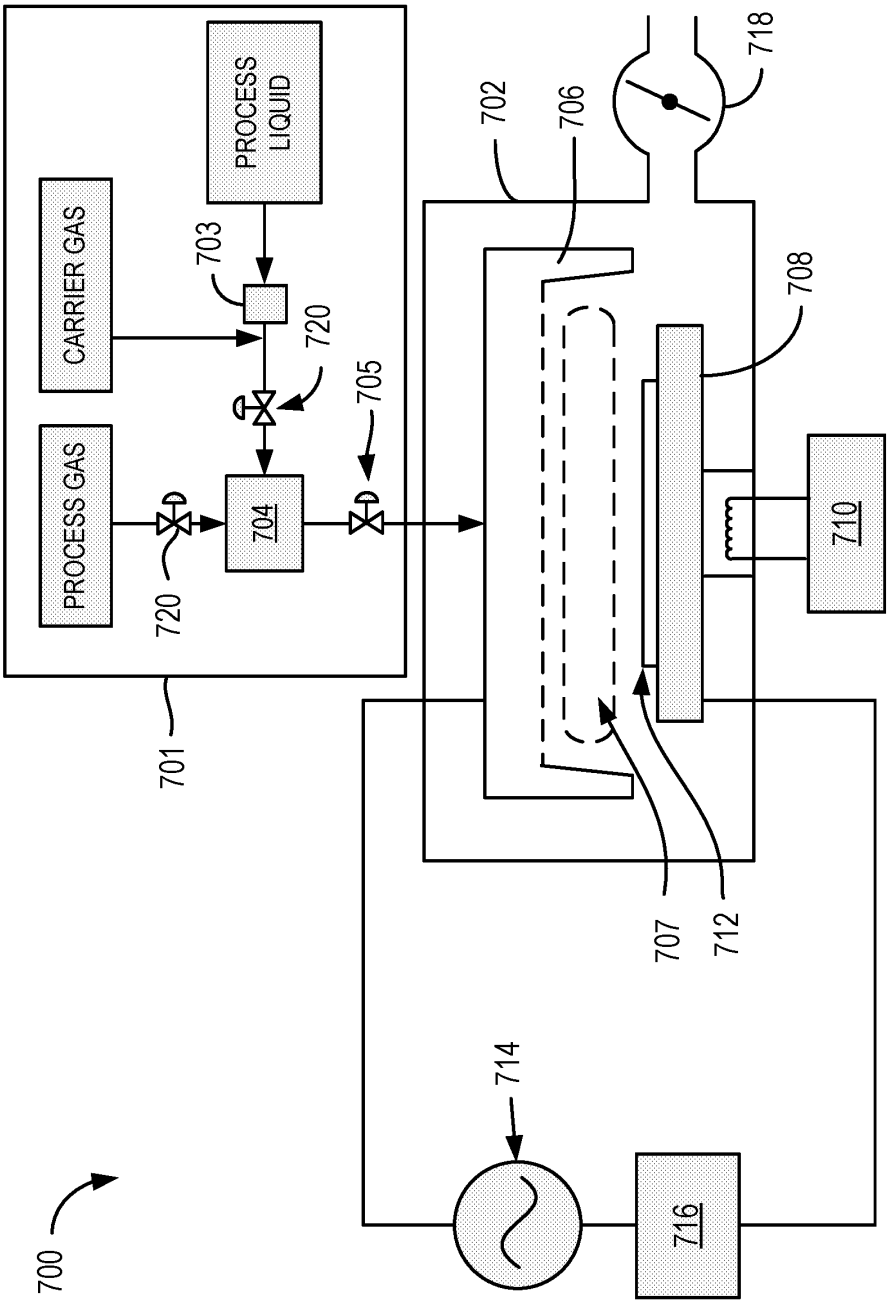


Figure 6C


PROCESS LIQUID
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PROCESS GAS
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FIG. 7

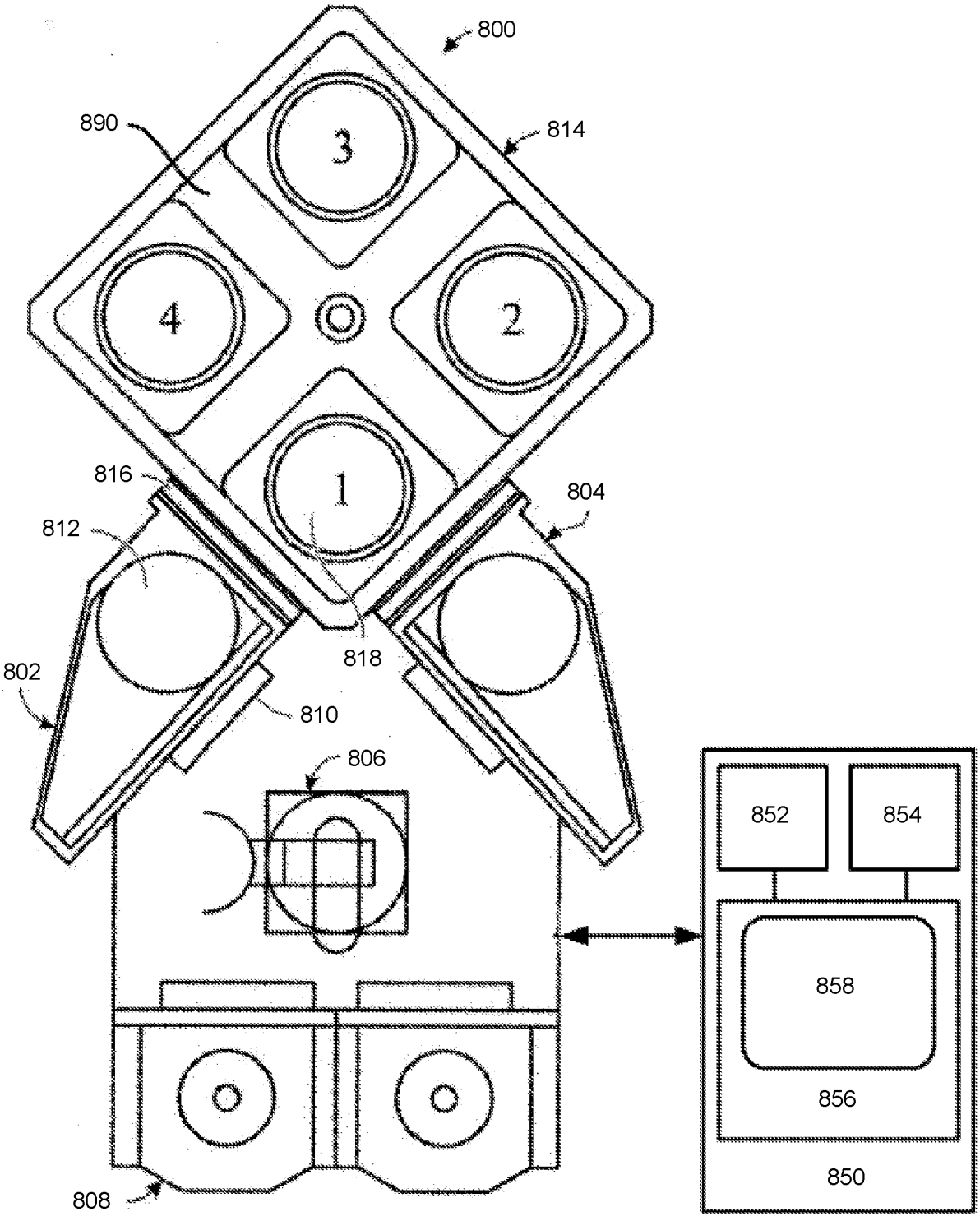
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FIG. 8

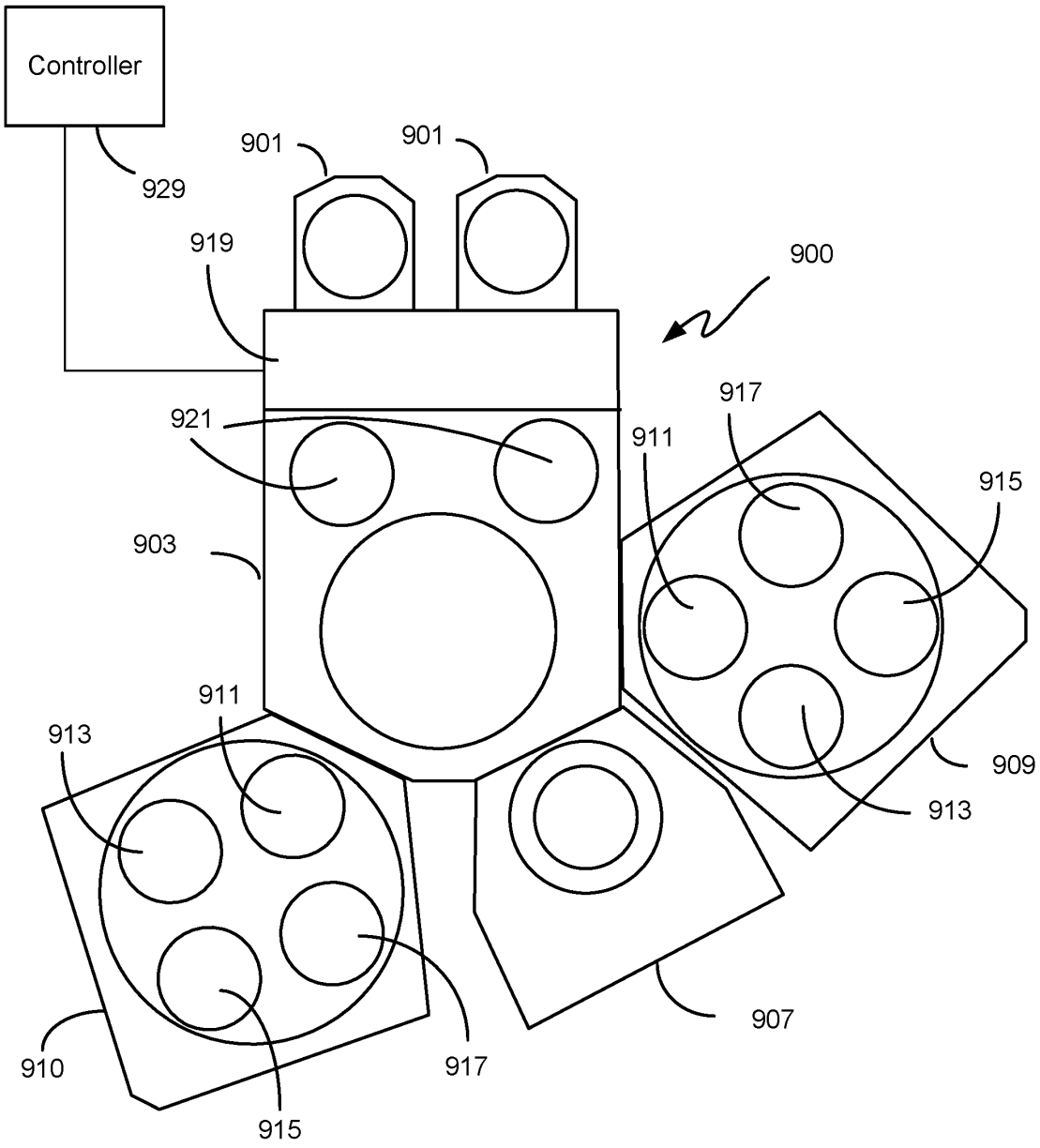
Controller
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FIG. 9