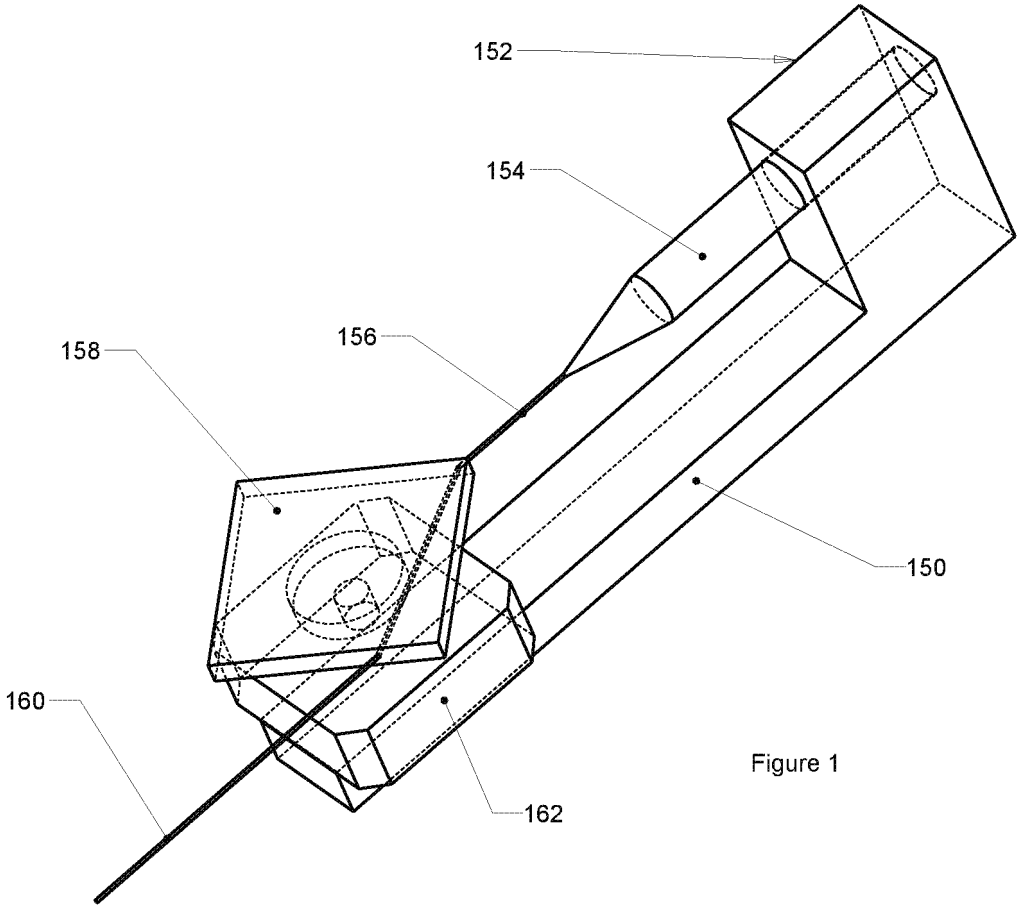


Figure 1

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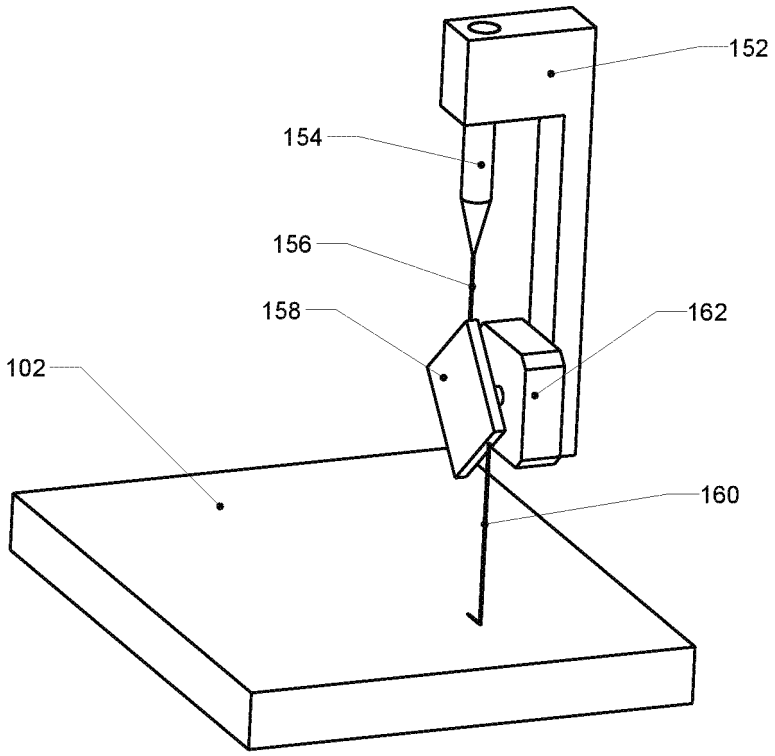


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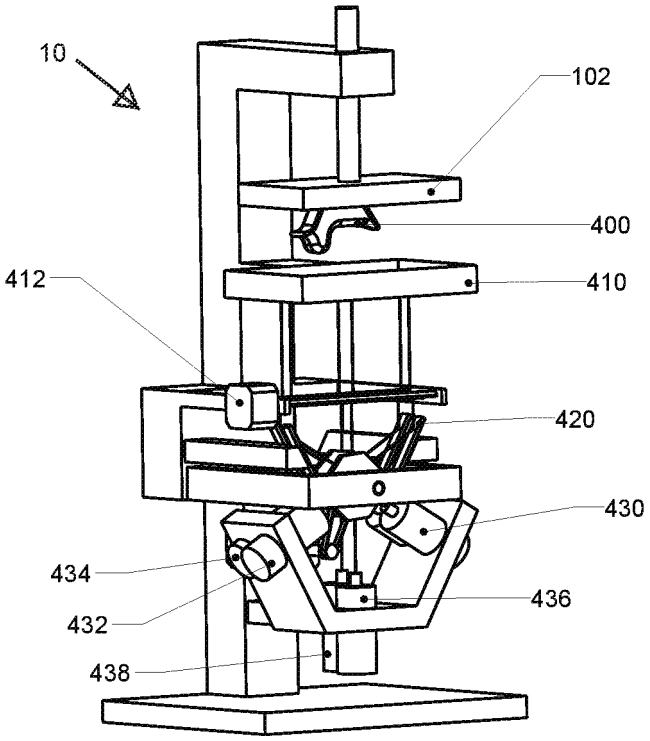


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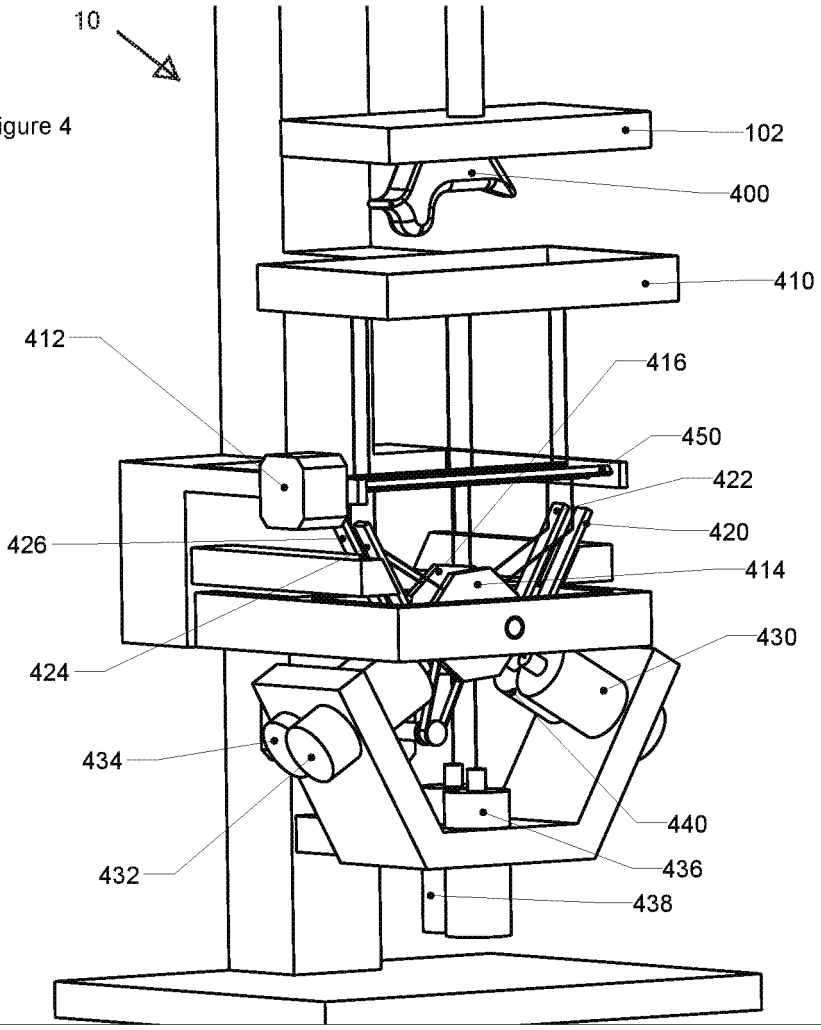
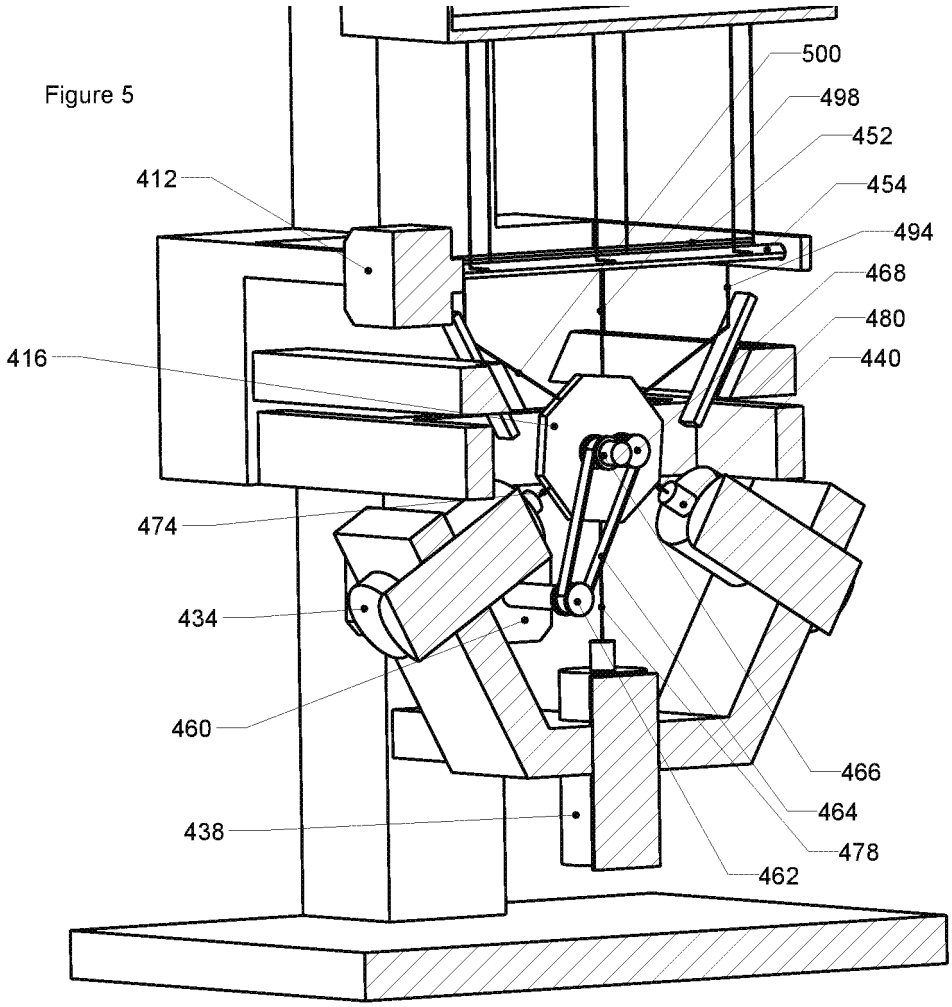

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Figure 5


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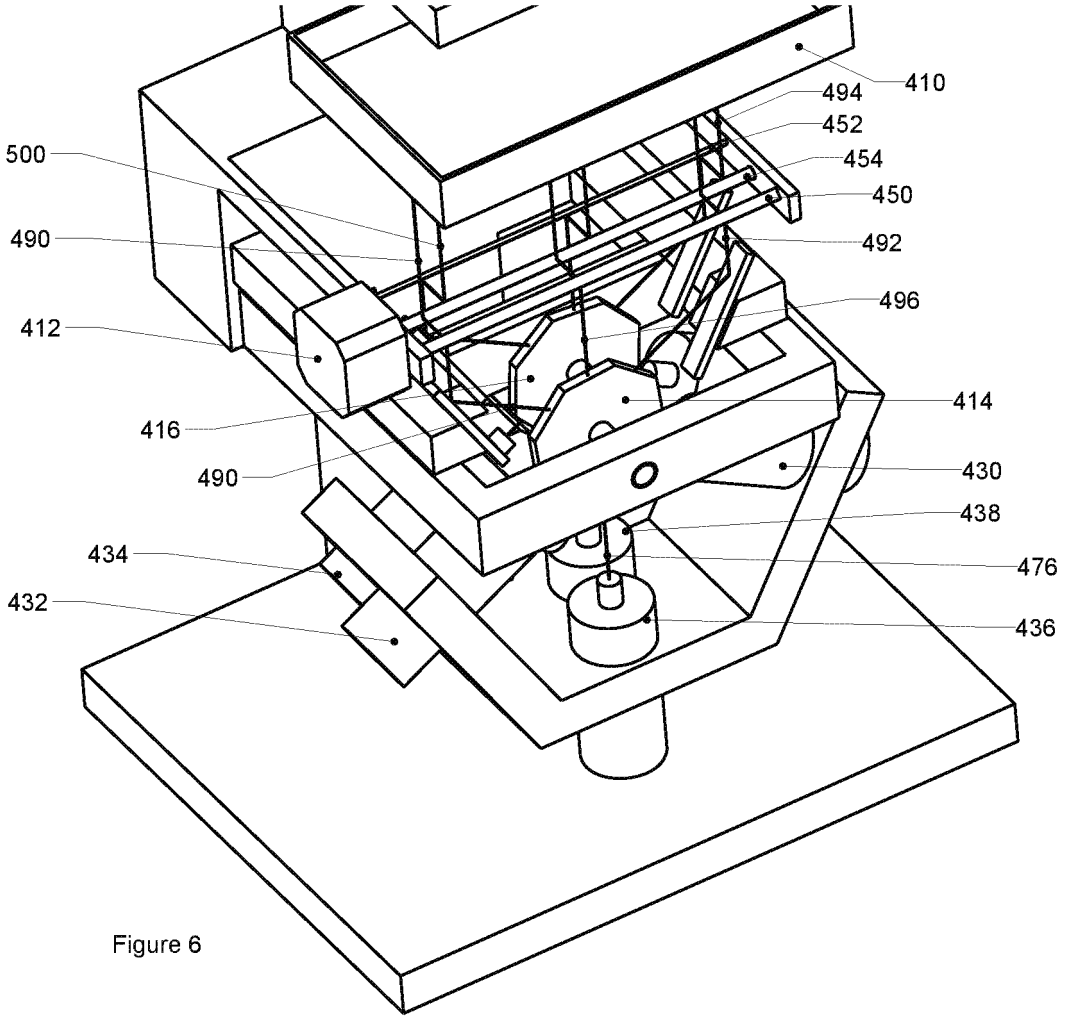

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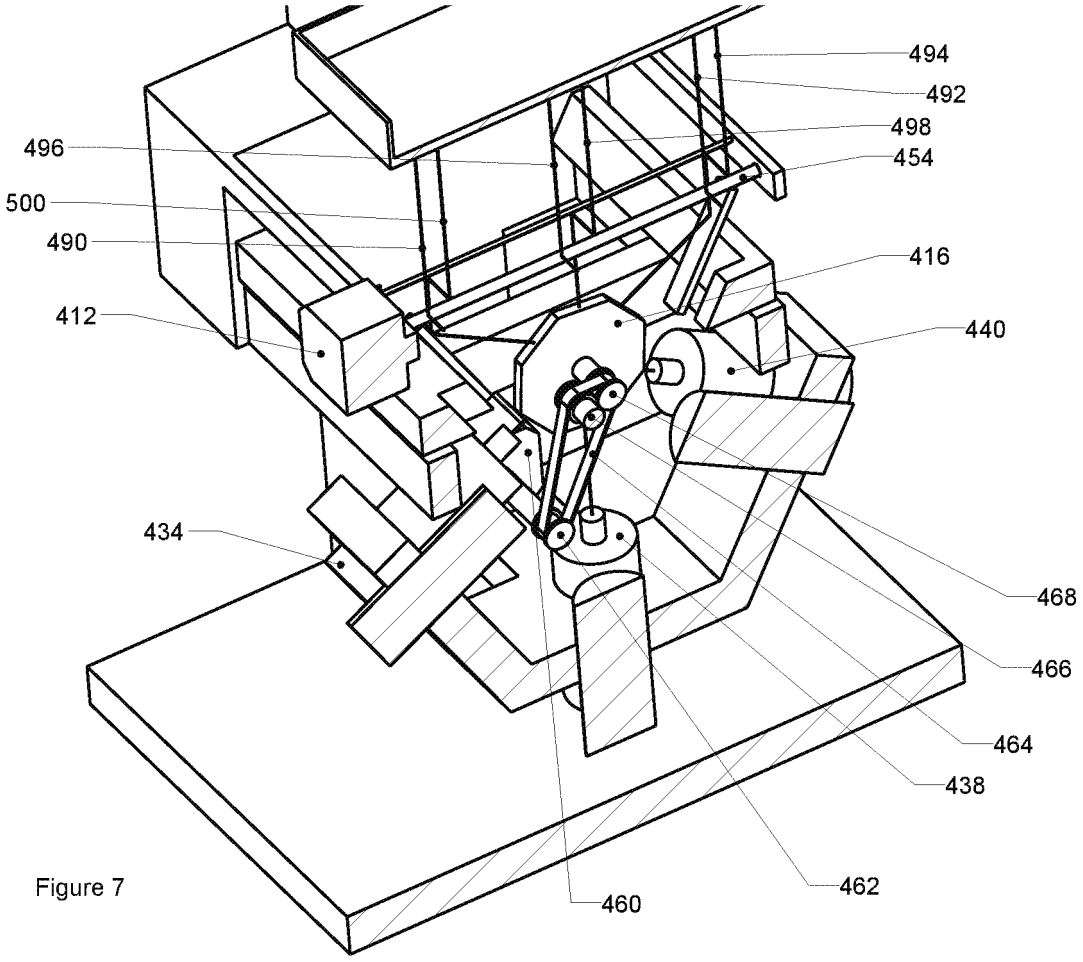
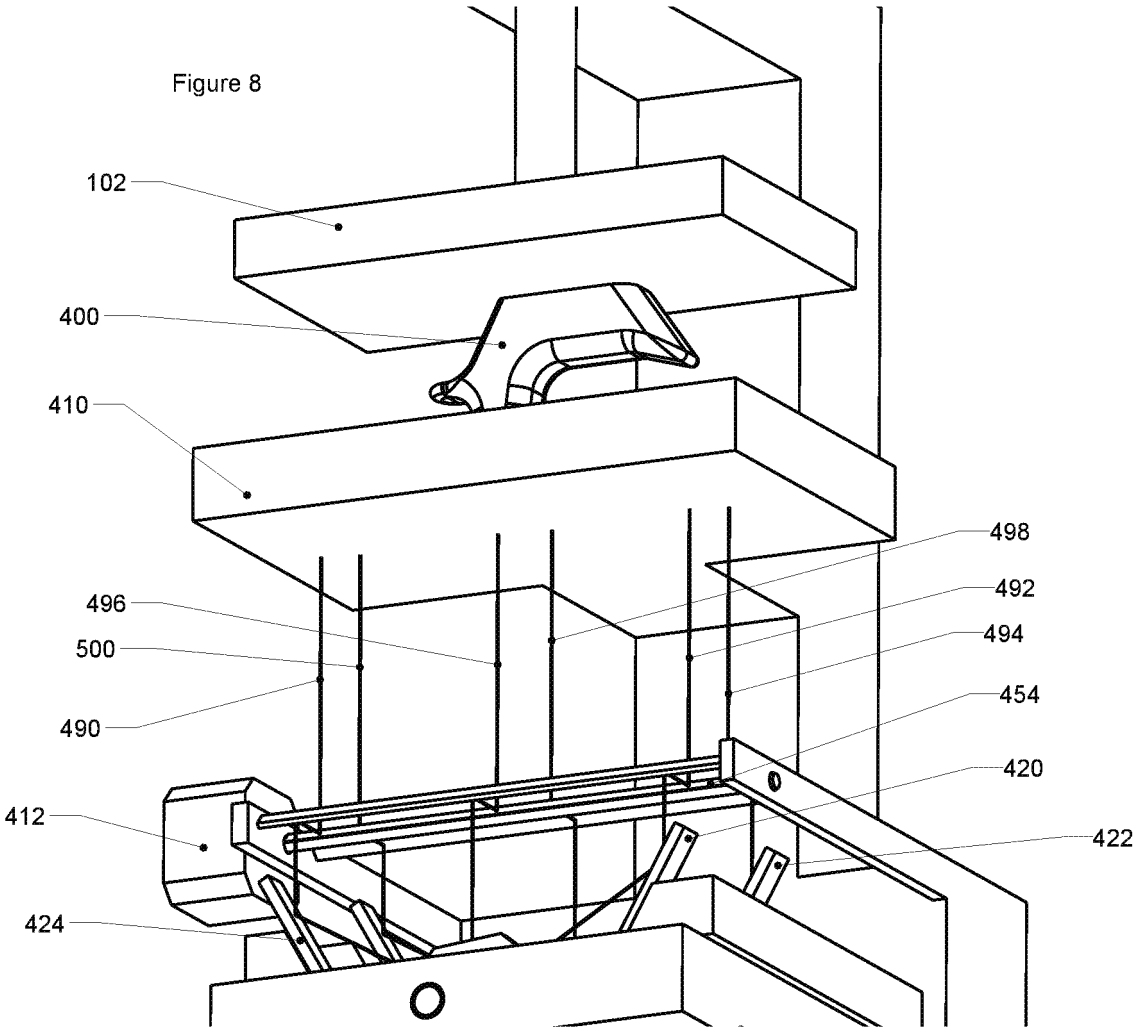

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Figure 7

Figure 8



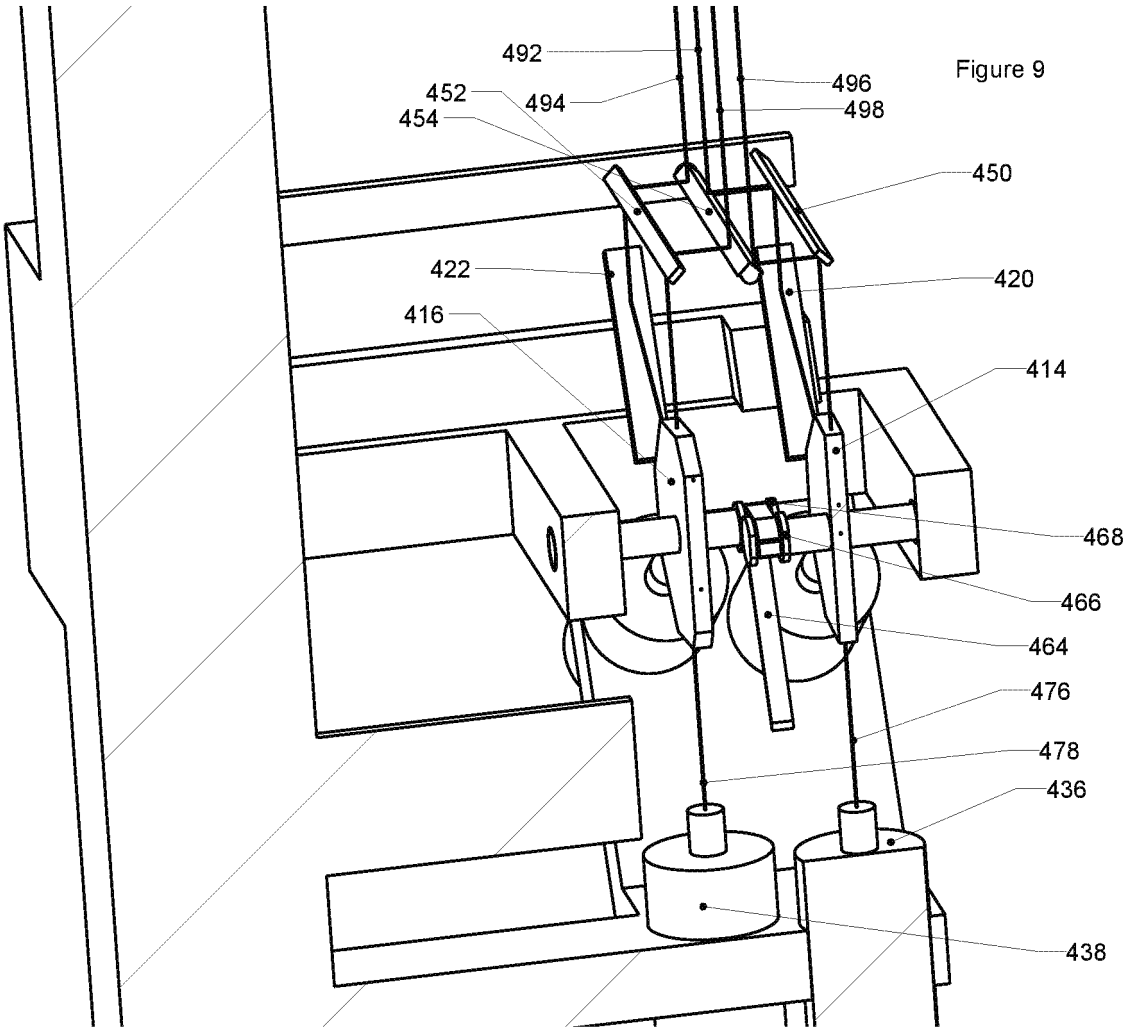

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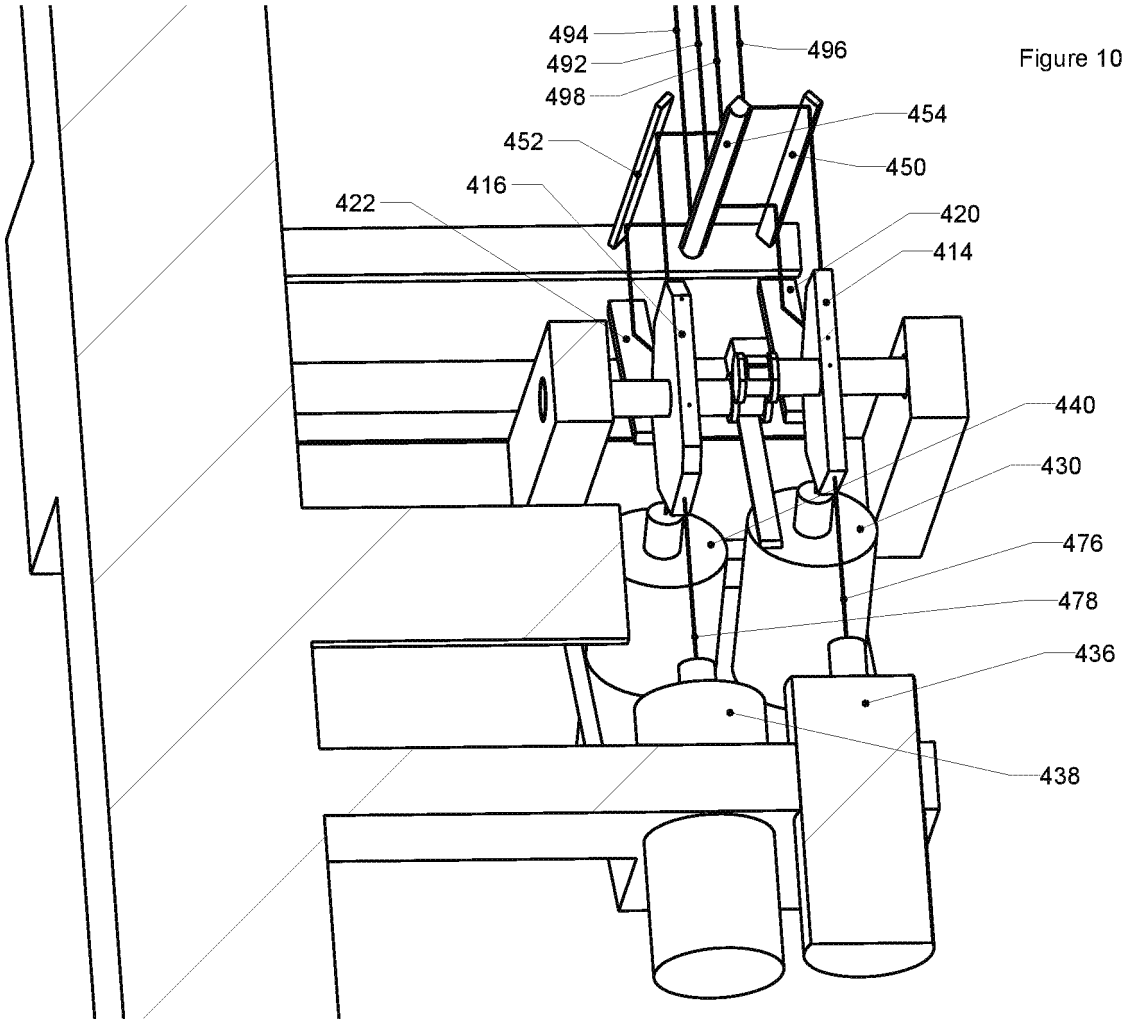

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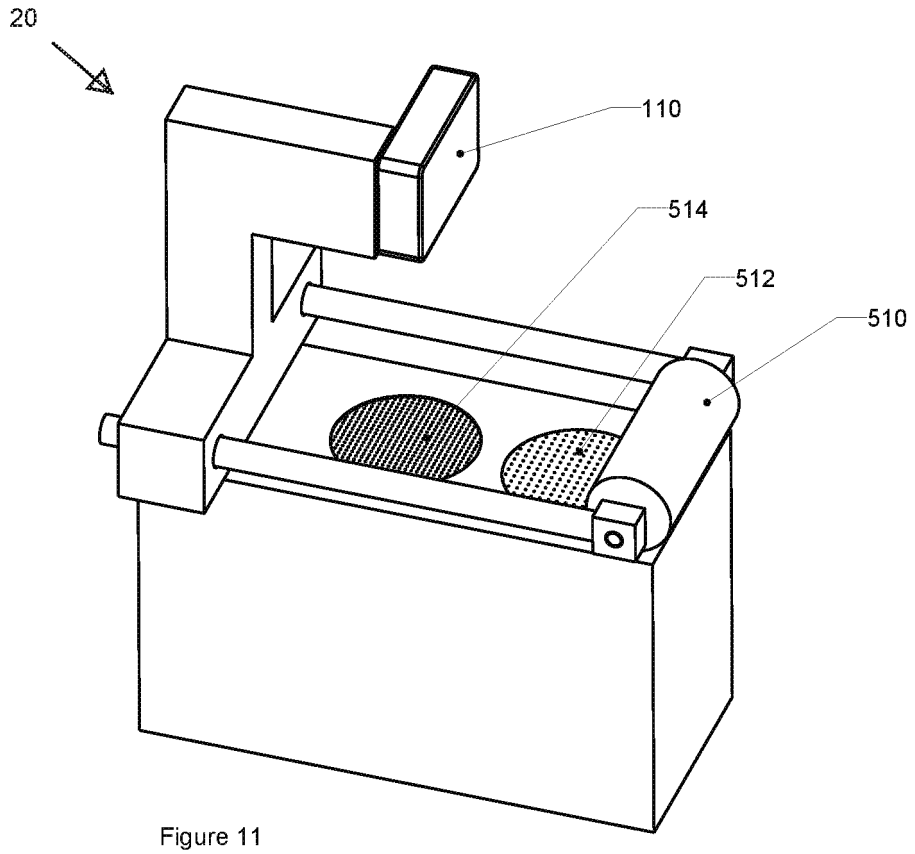


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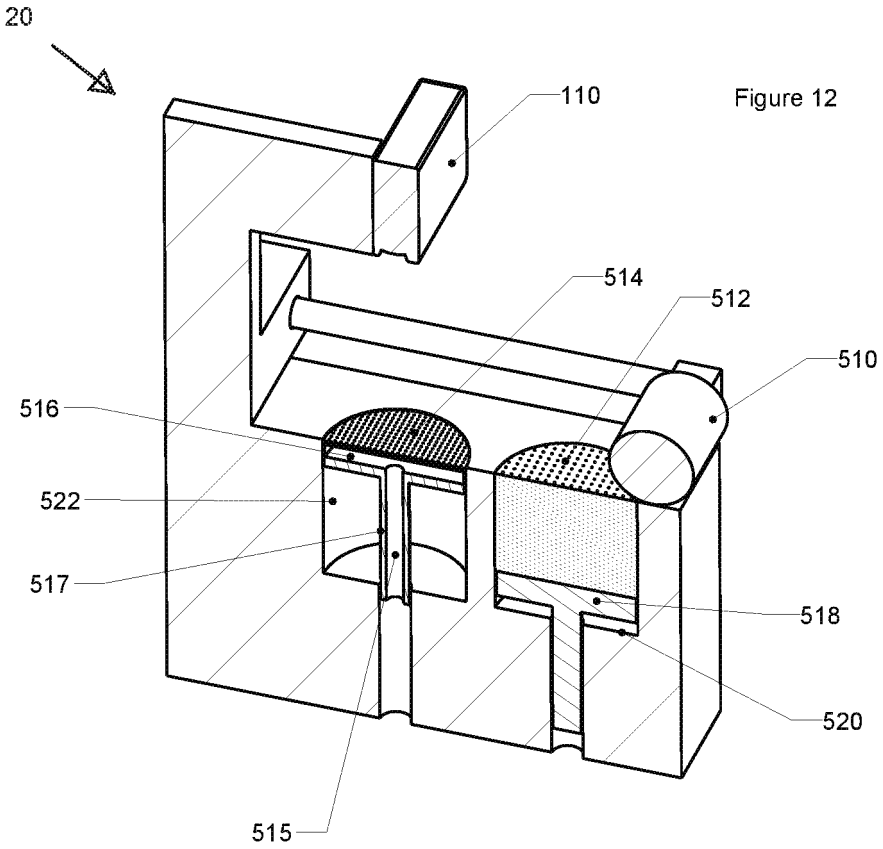
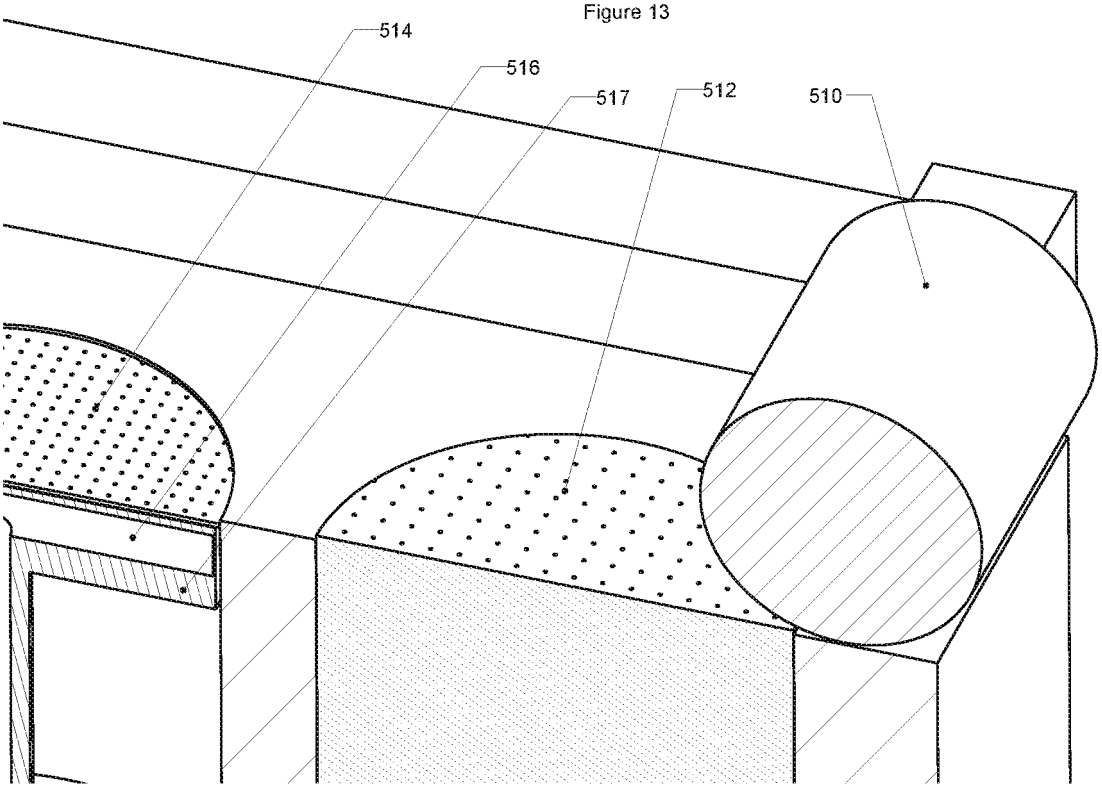


Figure 12

13/56

Figure 13



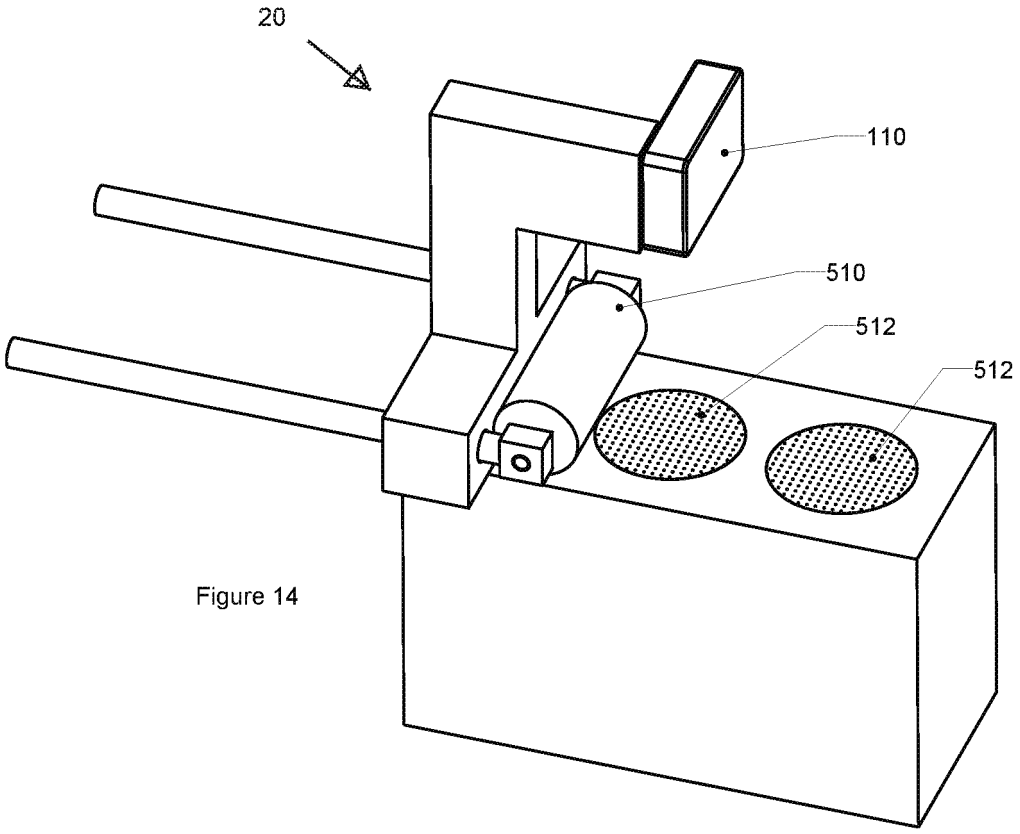


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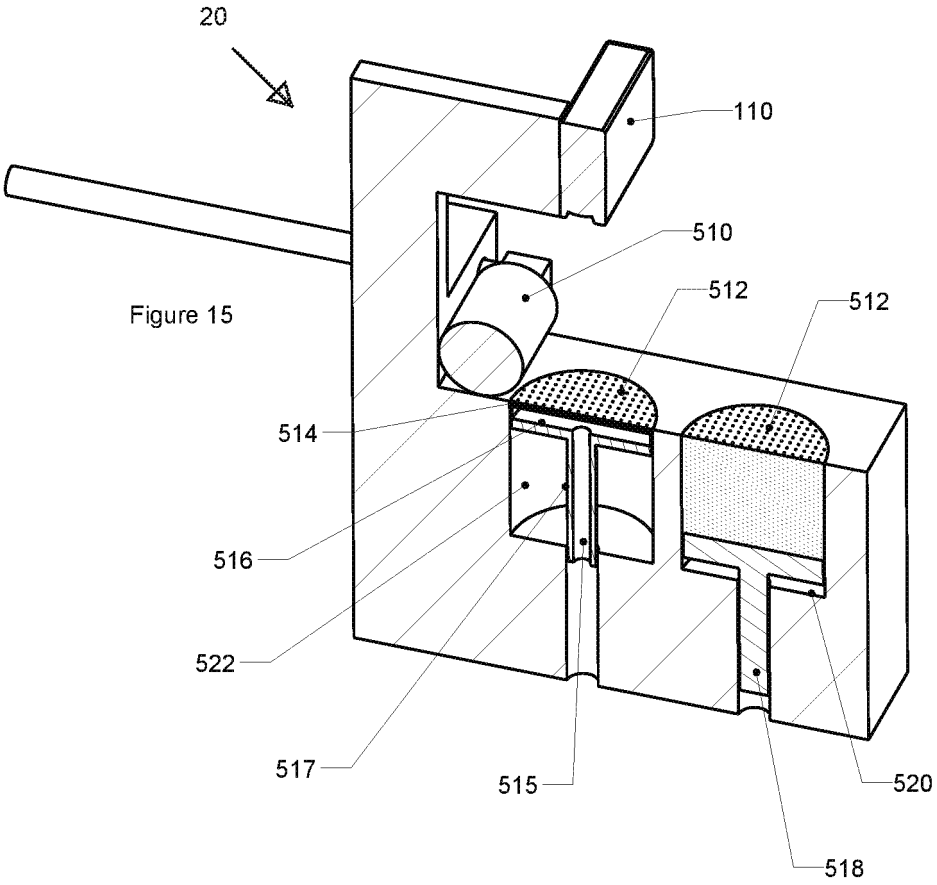


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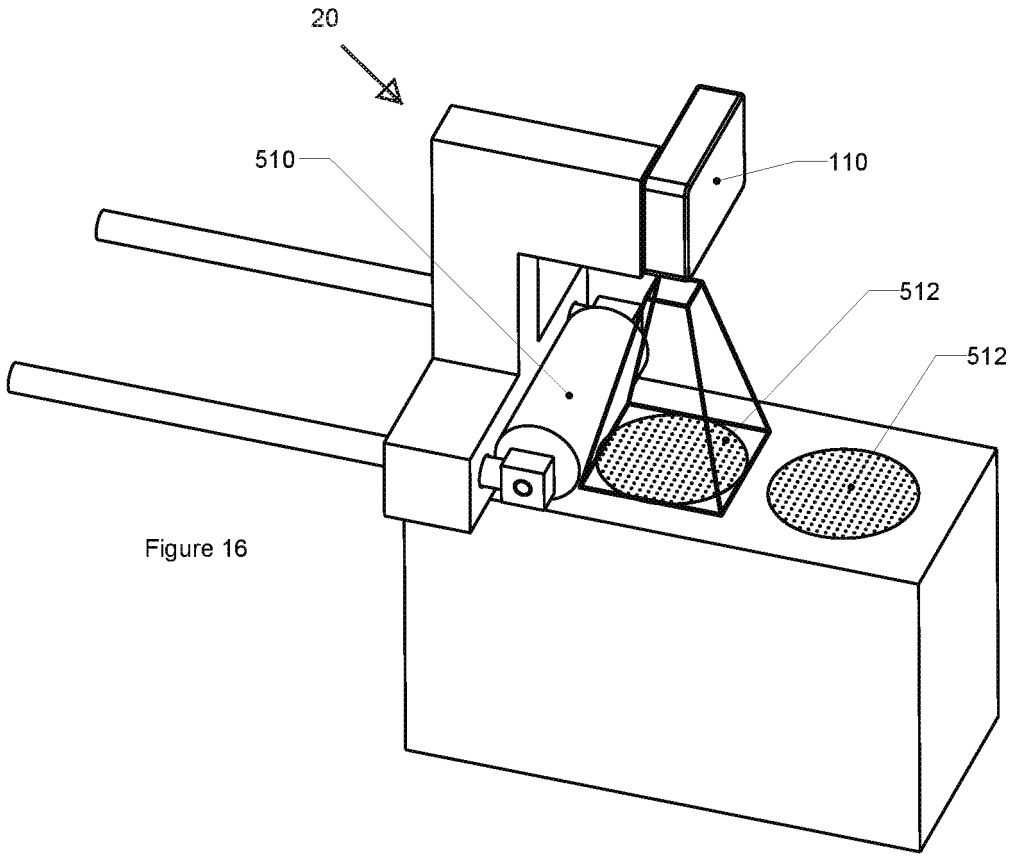


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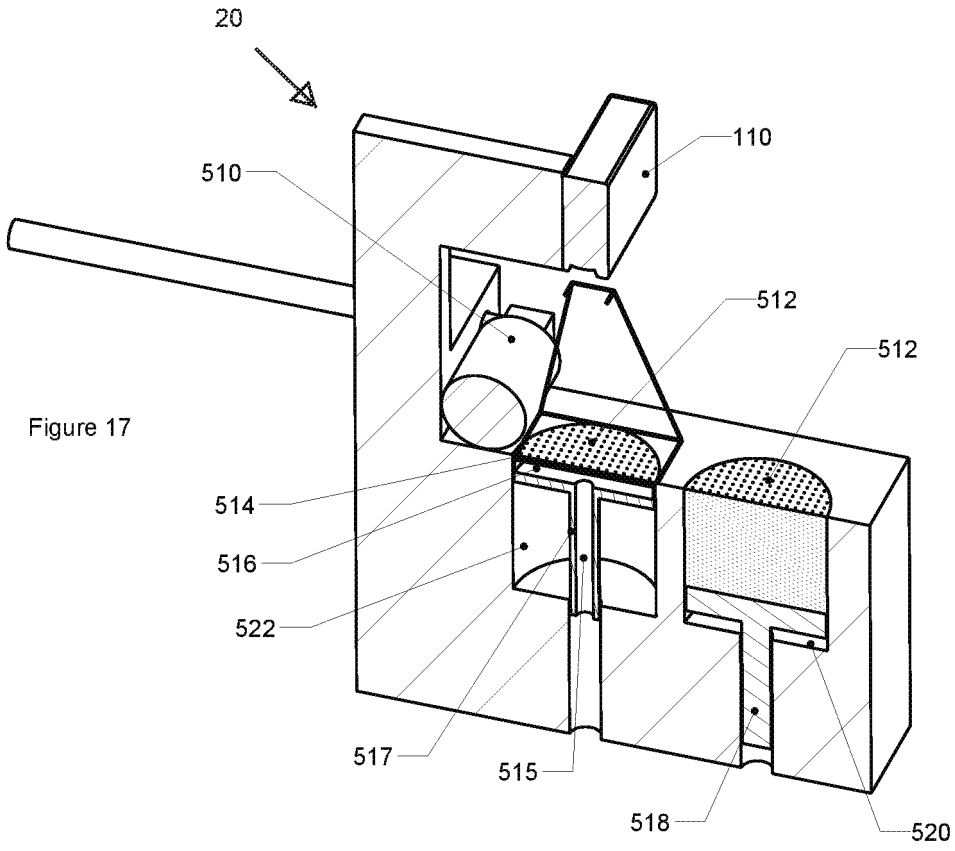


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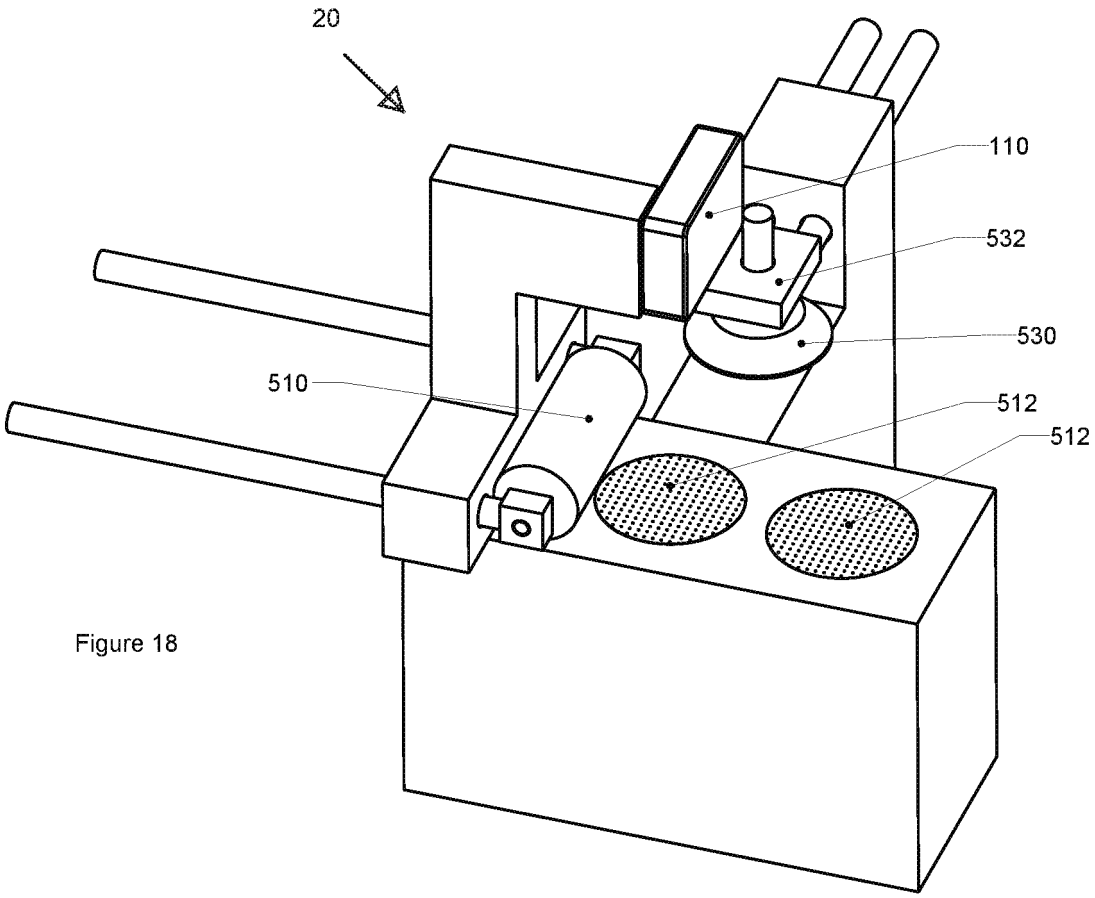


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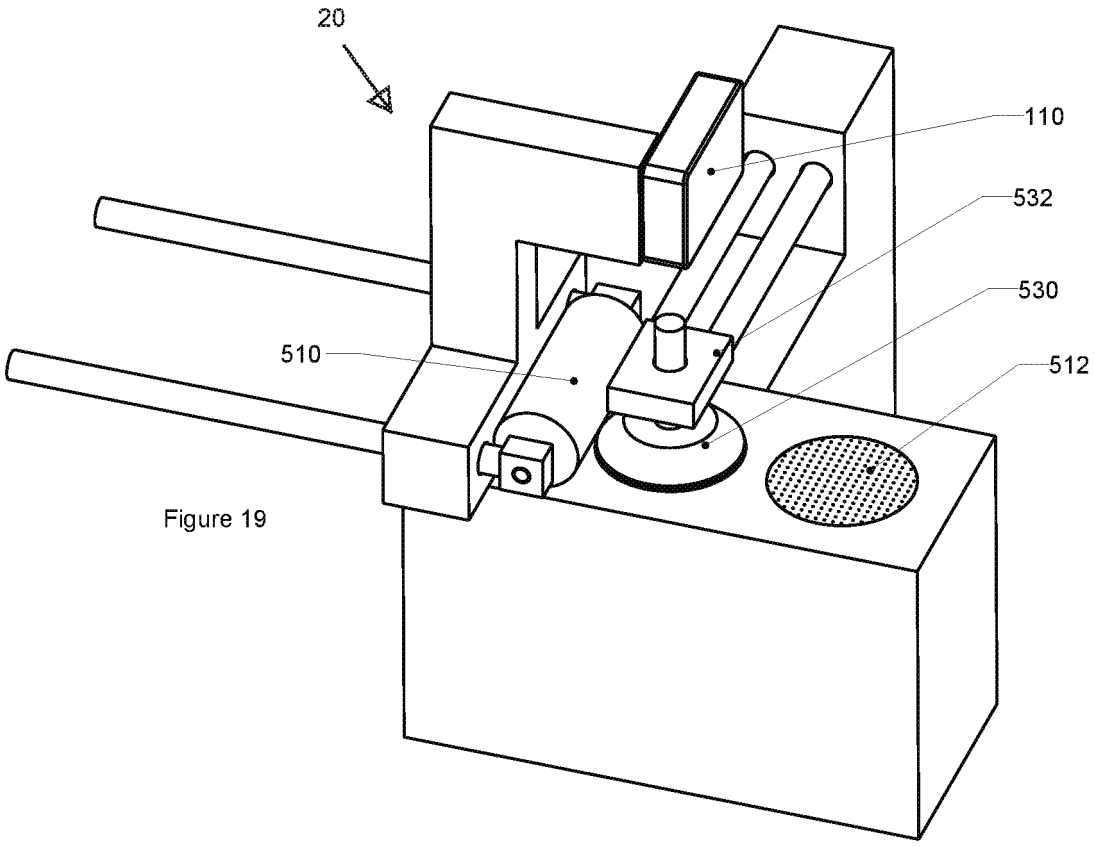


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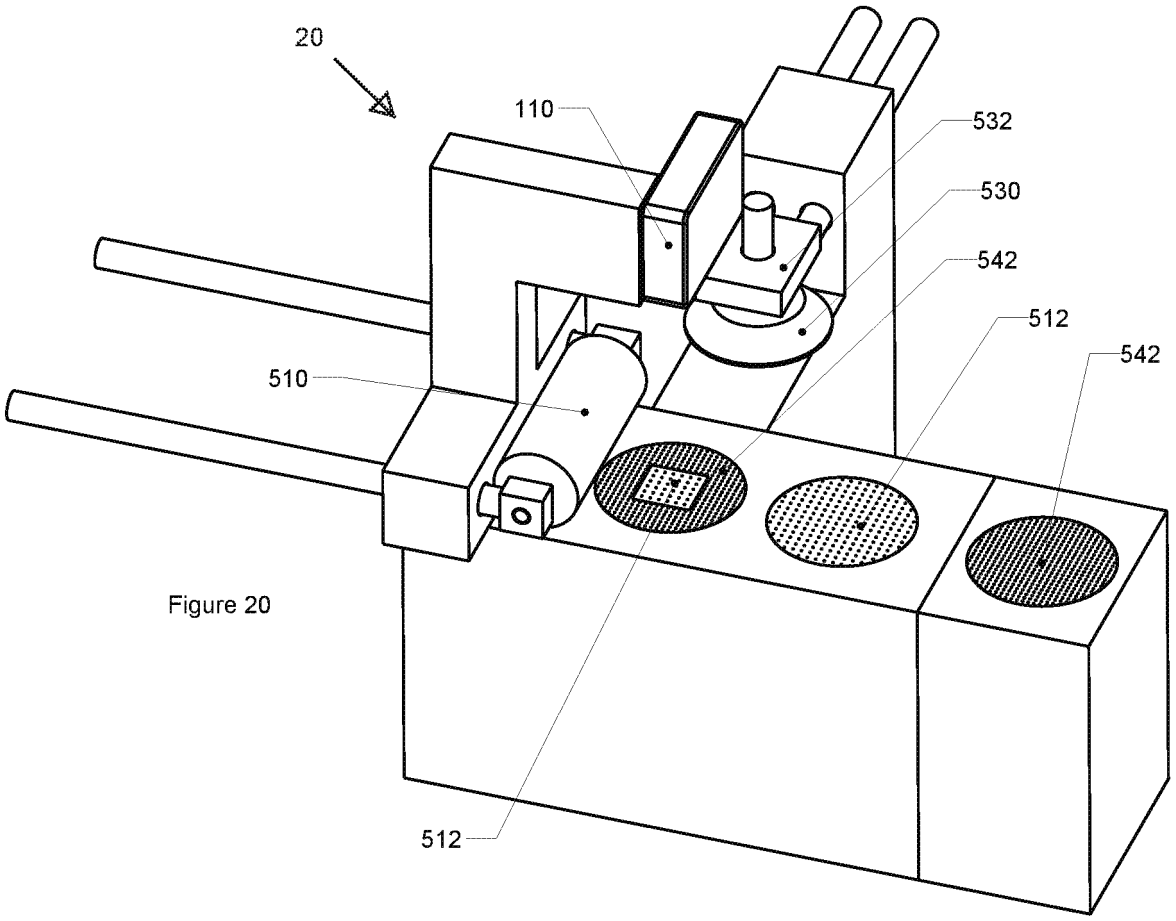


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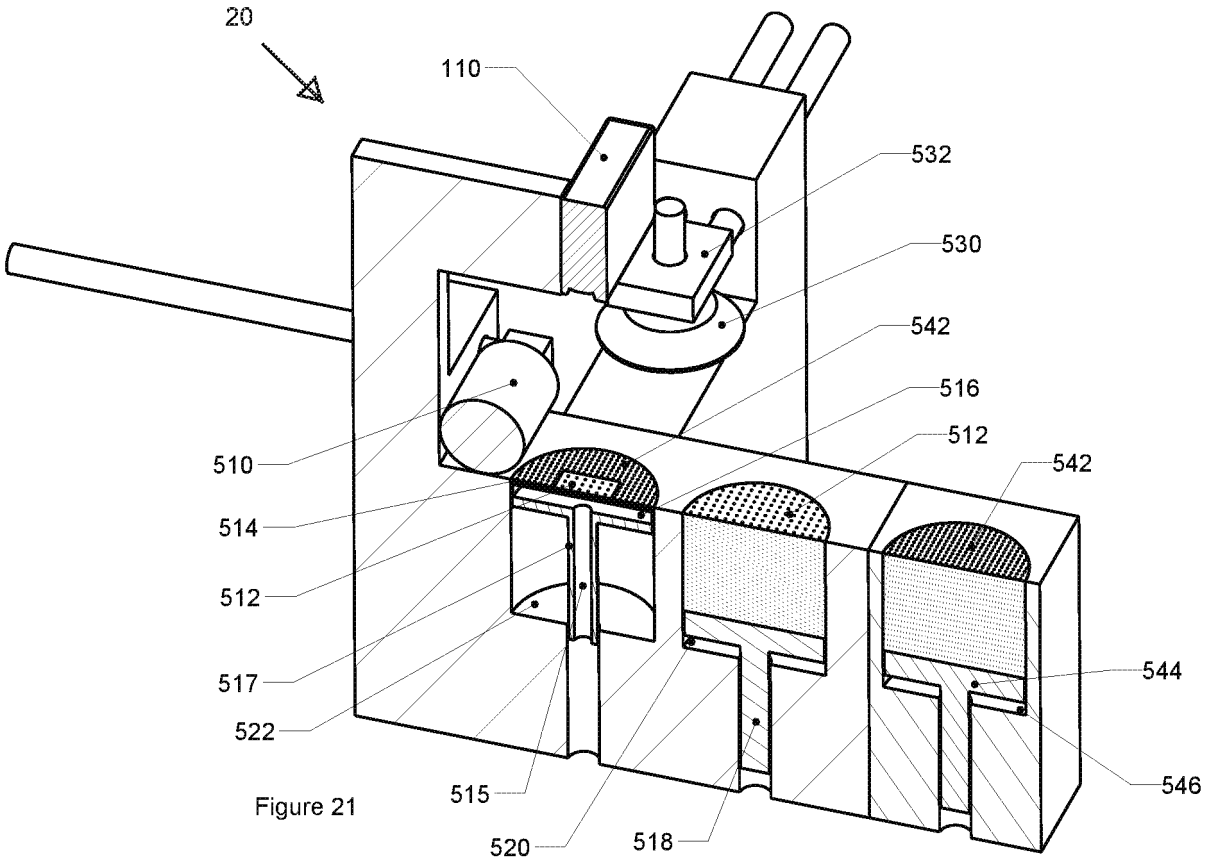

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Figure 21

Figure 22

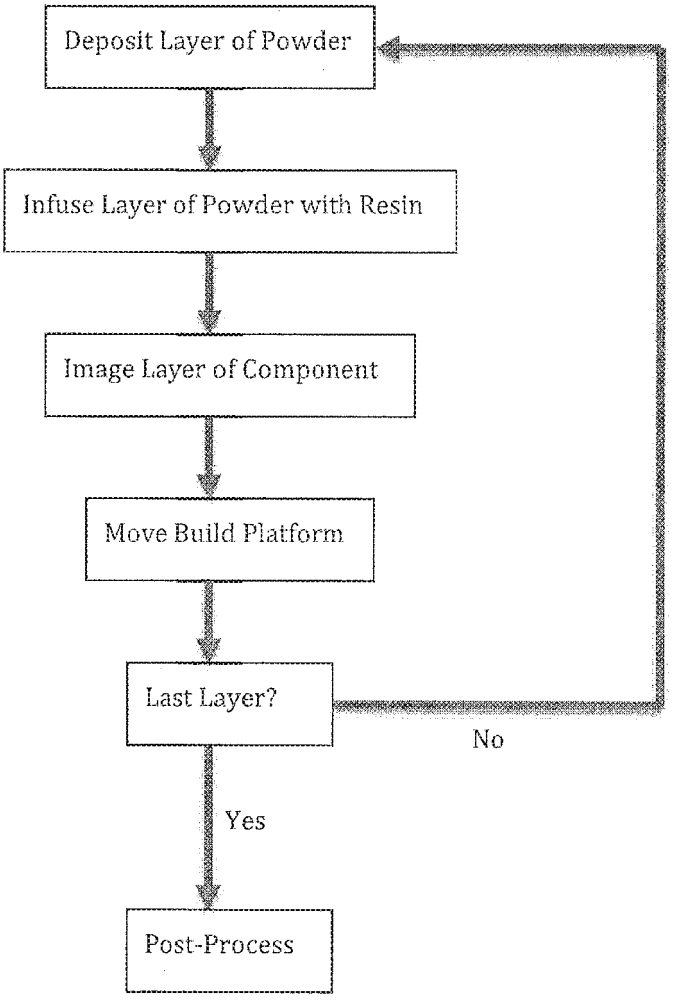

Deposit Layer of Powder
Infuse Layer of Powder with Resin
Image Layer of Component
Move Build Platform
Last Layer?
No
Yes
Post-Process

Figure 23

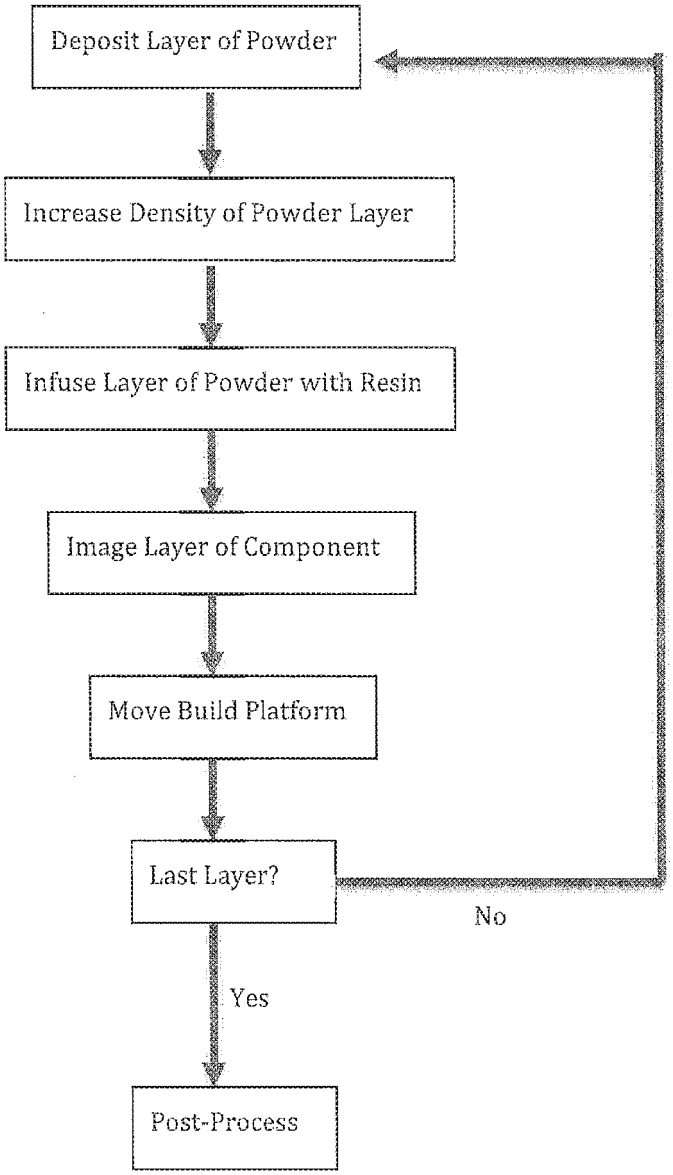
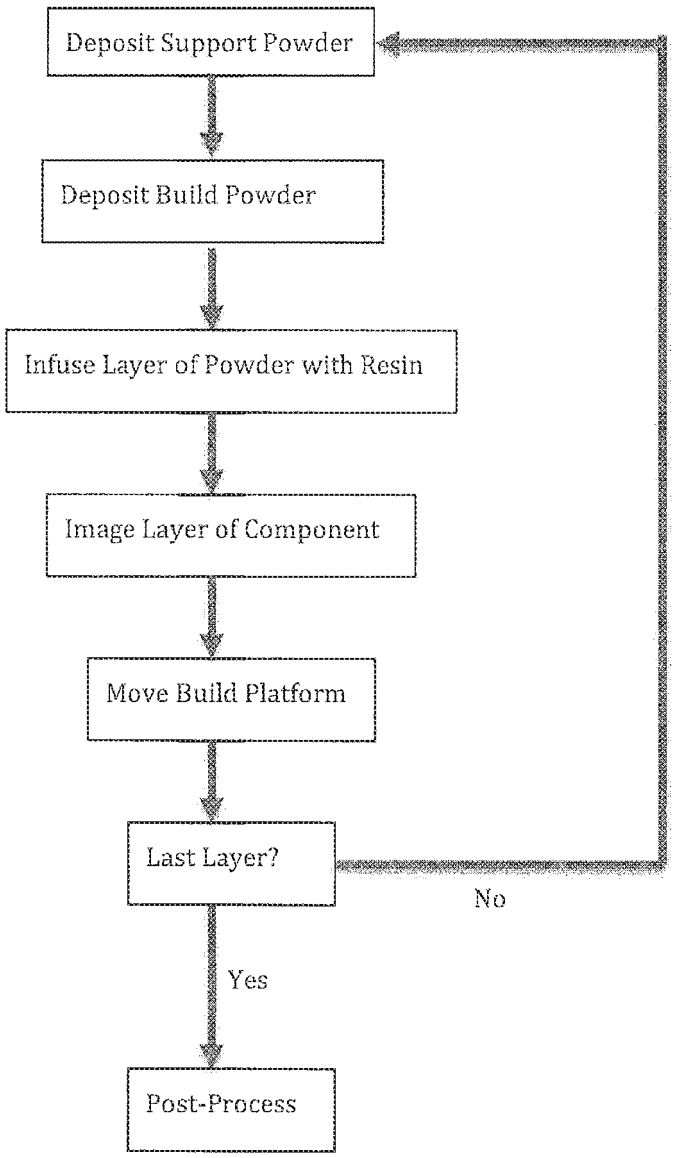

Deposit Layer of Powder
Increase Density of Powder Layer
Infuse Layer of Powder with Resin
Image Layer of Component
Move Build Platform
Last Layer?
No
Yes
Post-Process

Figure 24


Deposit Support Powder
Deposit Build Powder
Infuse Layer of Powder with Resin
Image Layer of Component
Move Build Platform
Last Layer?
No
Yes
Post-Process

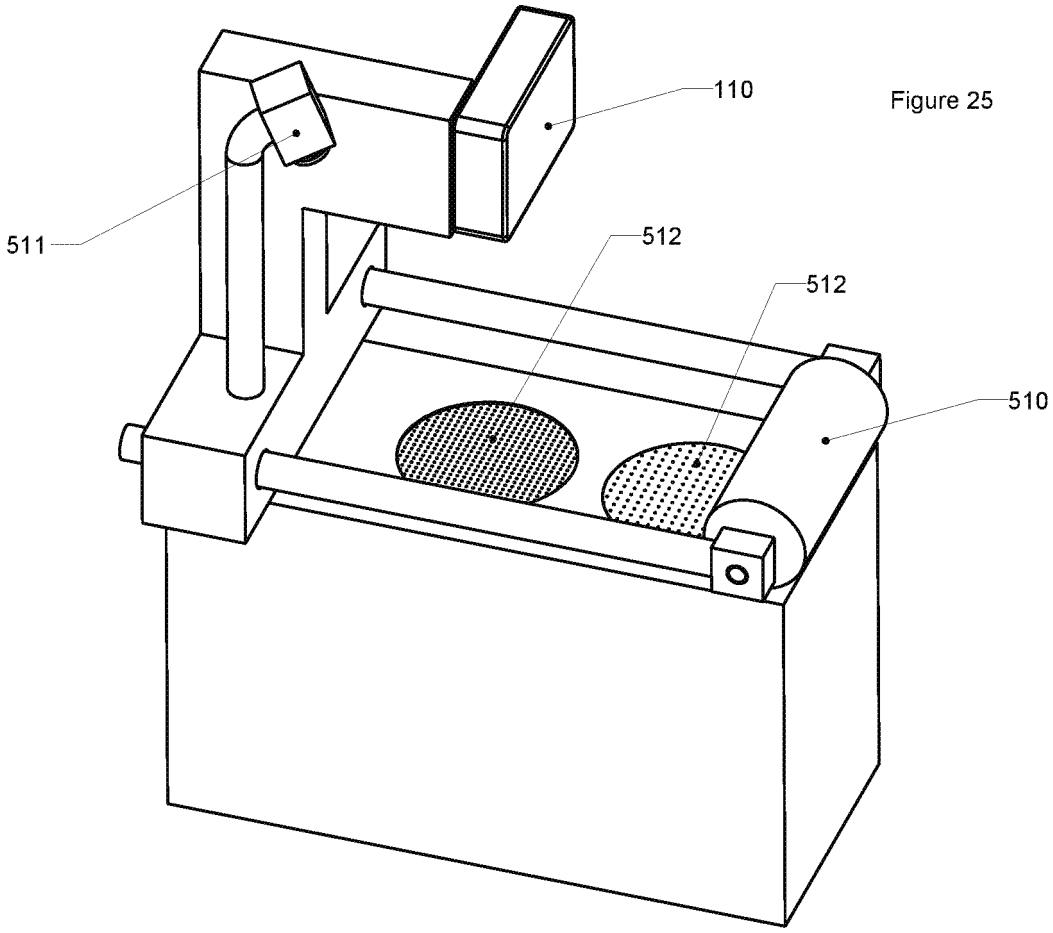


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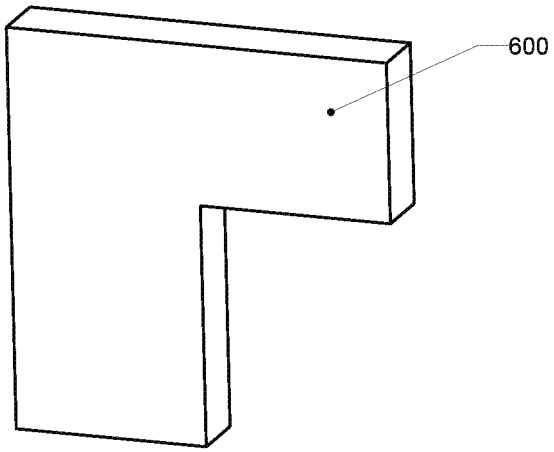
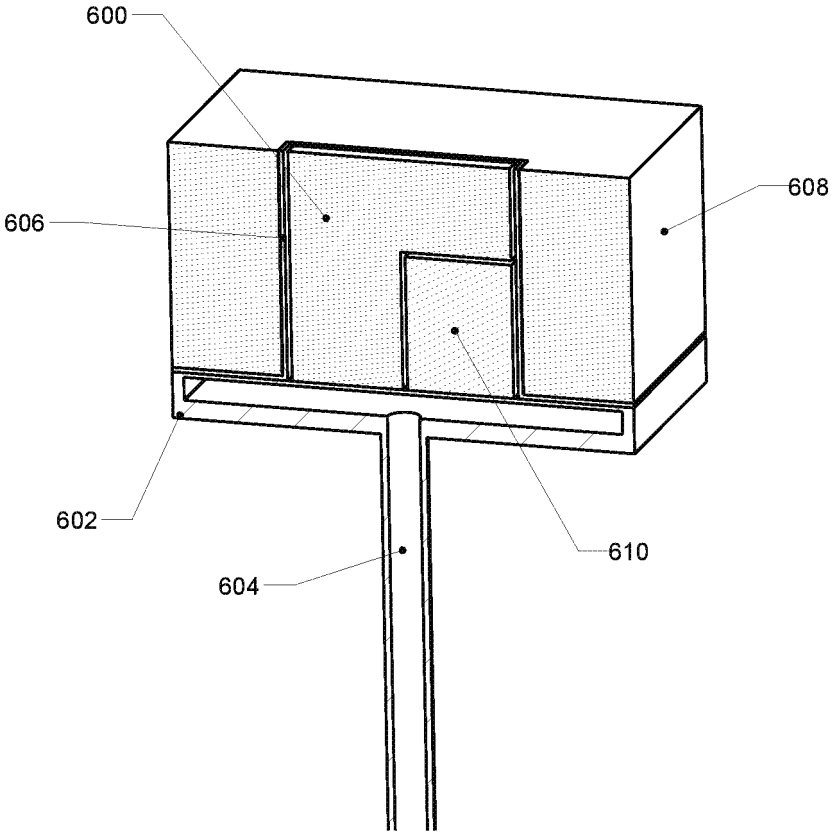


Figure 26

Figure 27



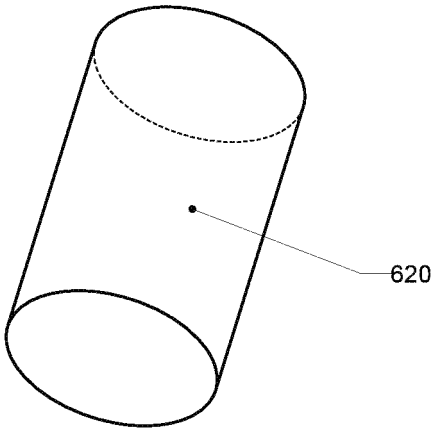


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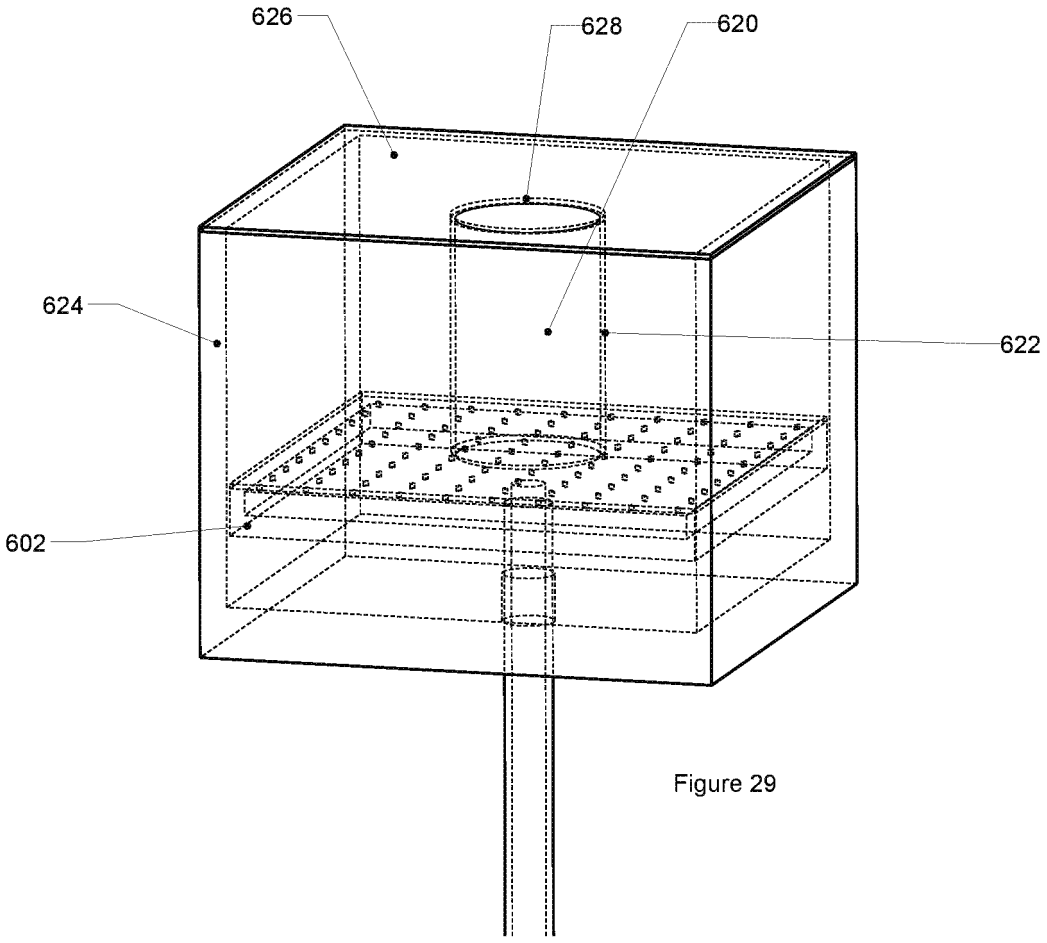


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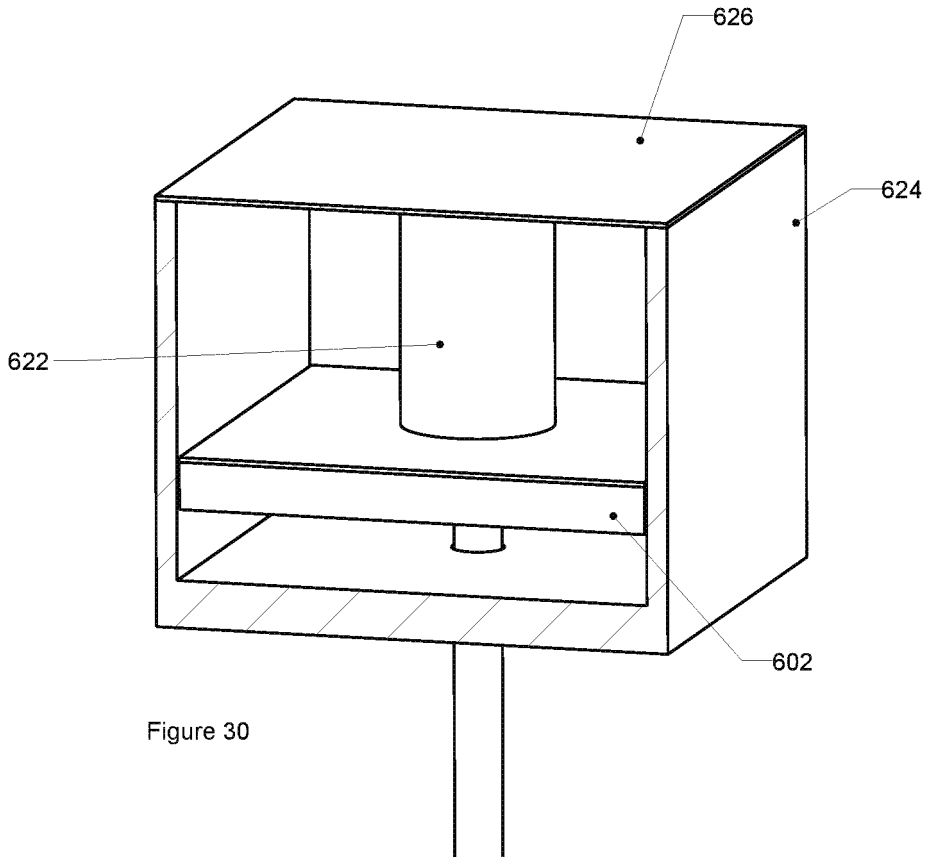


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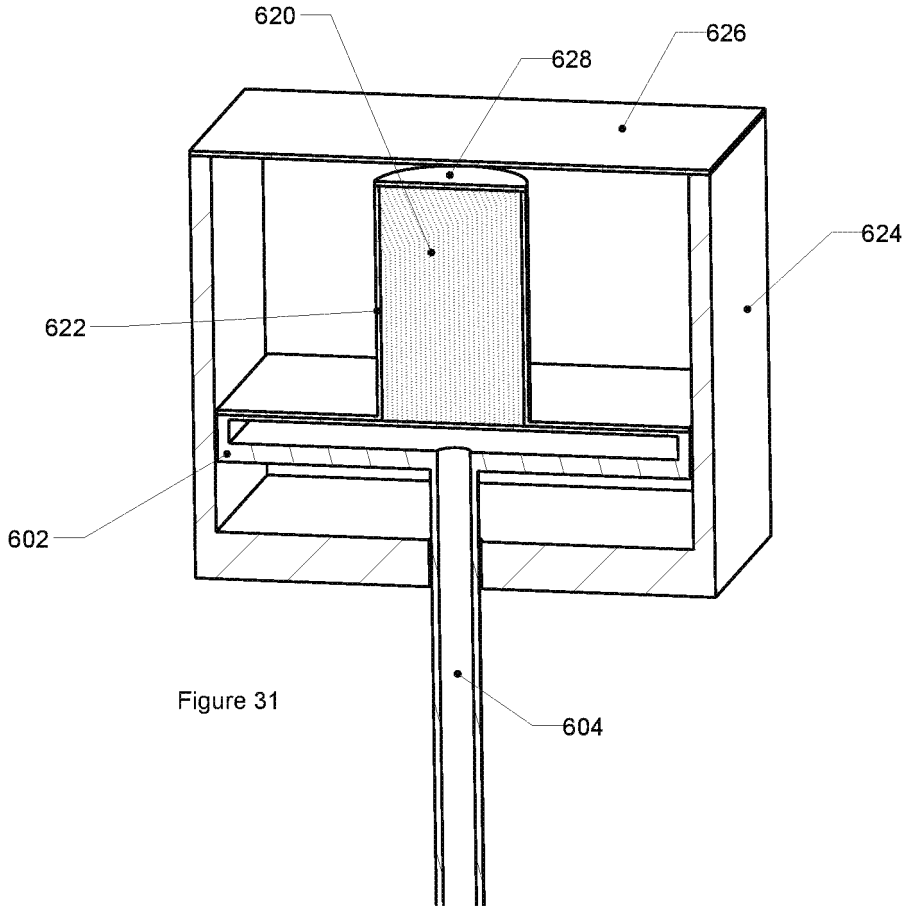


Figure 31

Figure 32

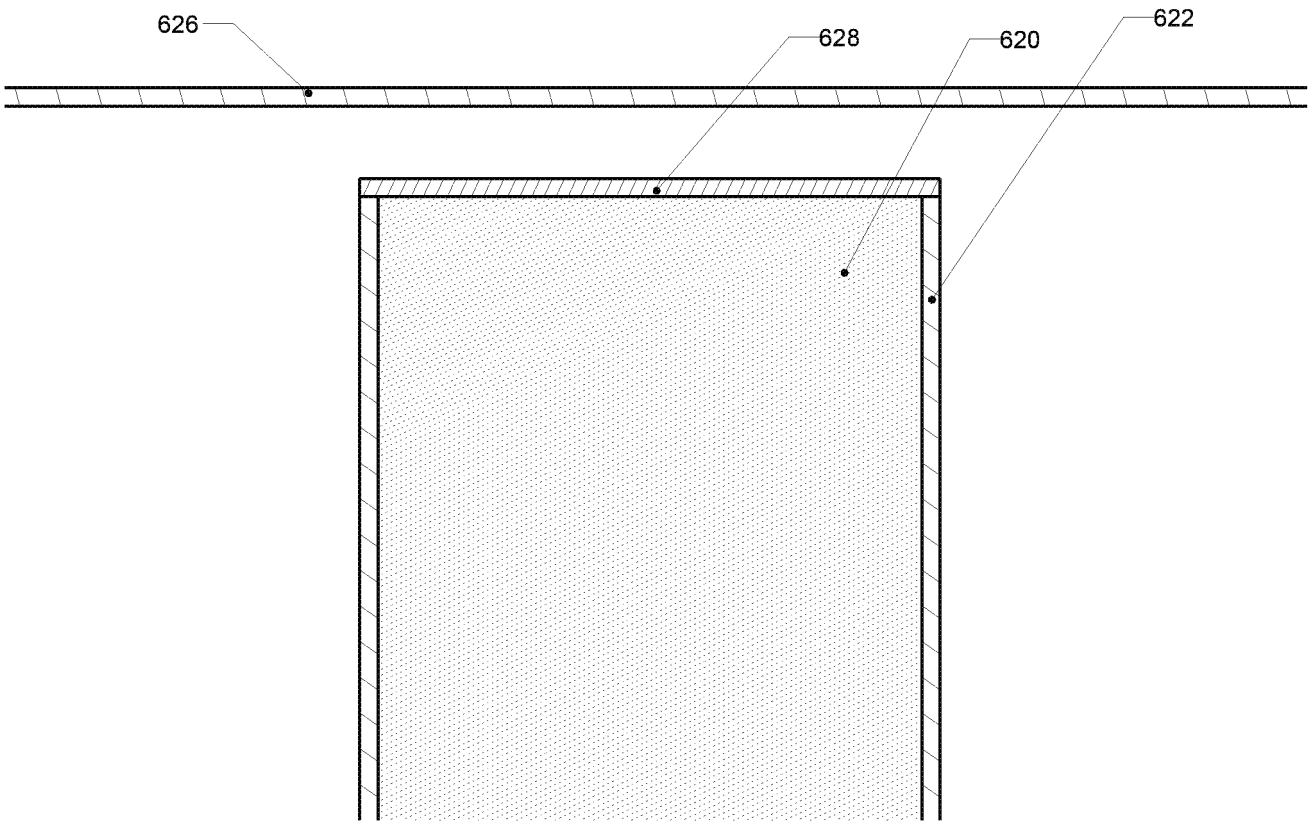


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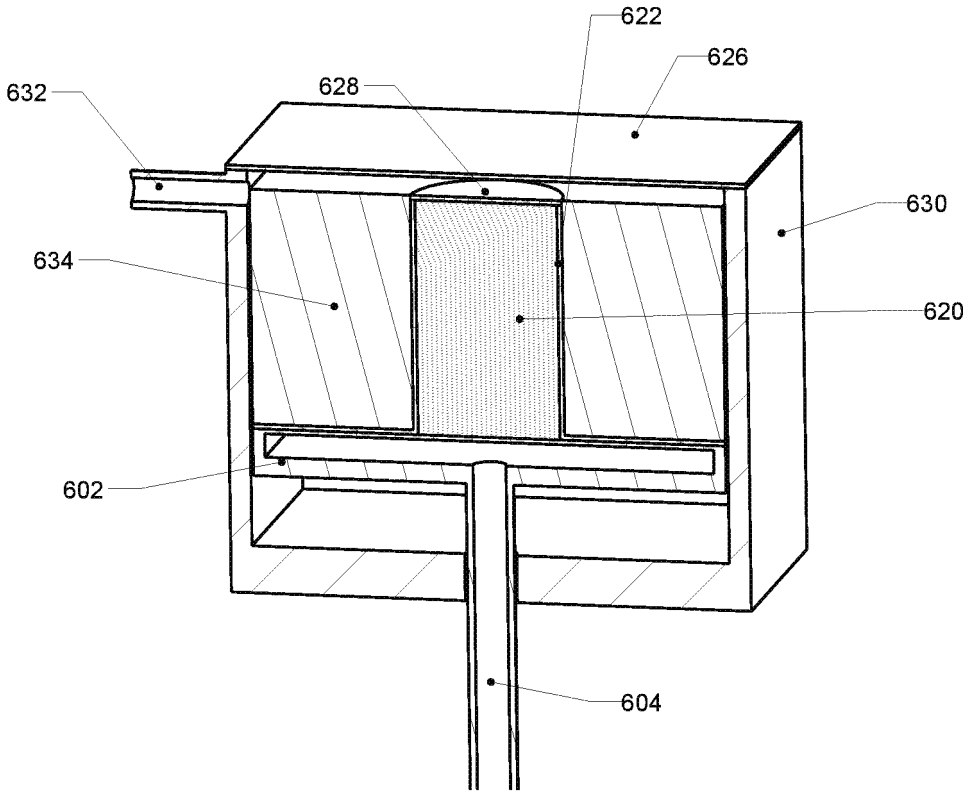


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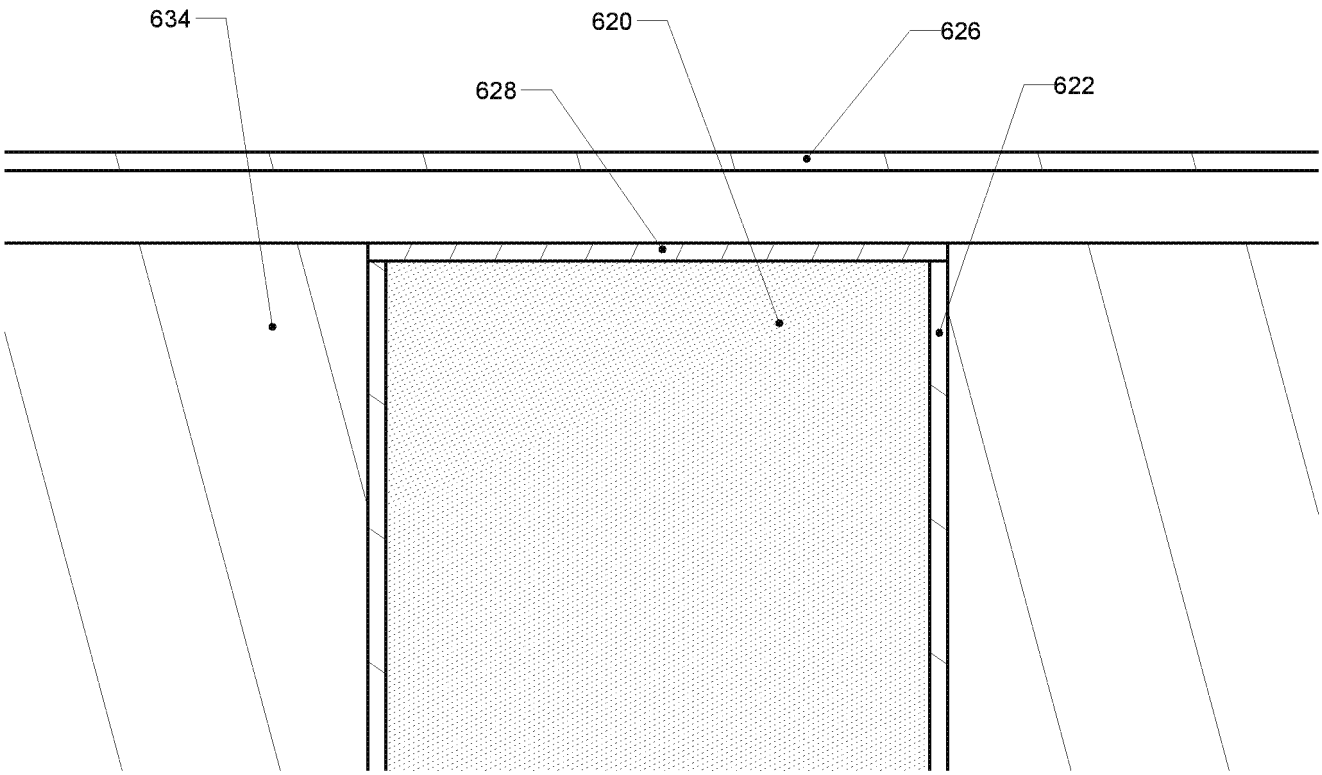


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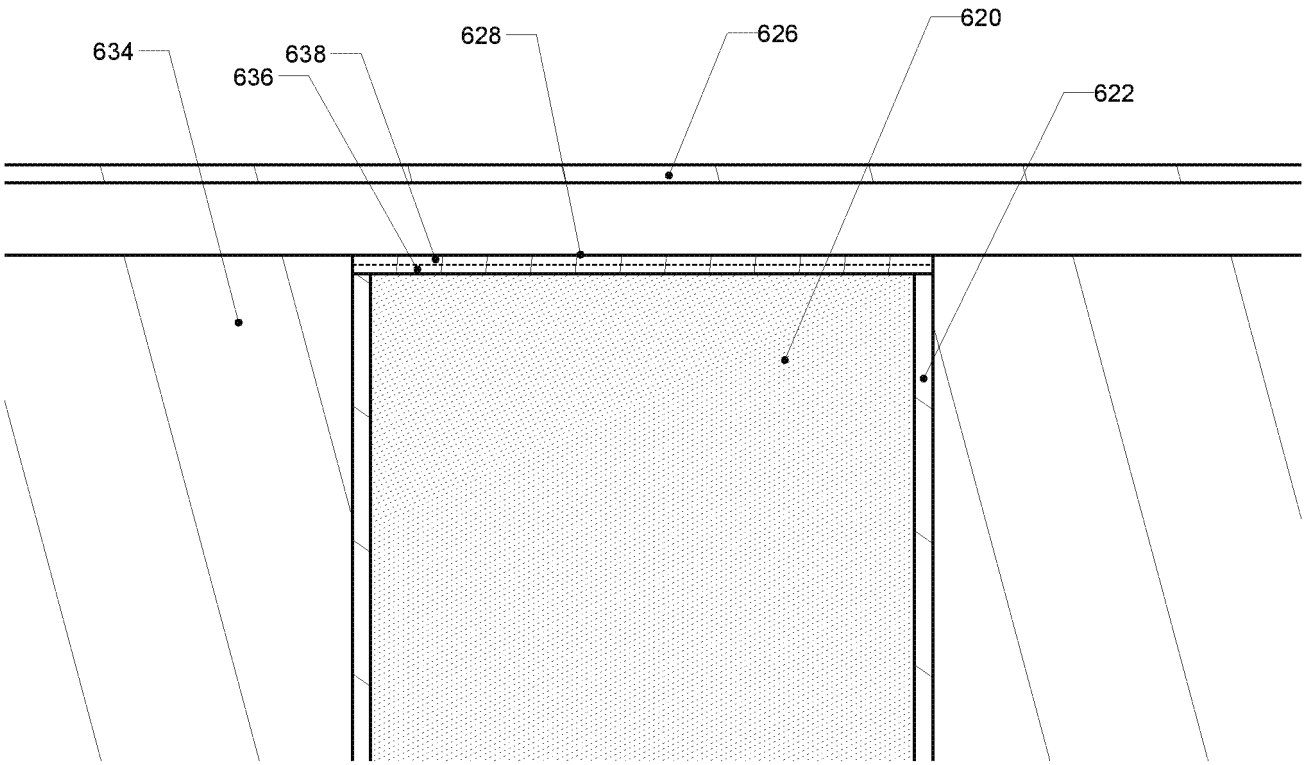


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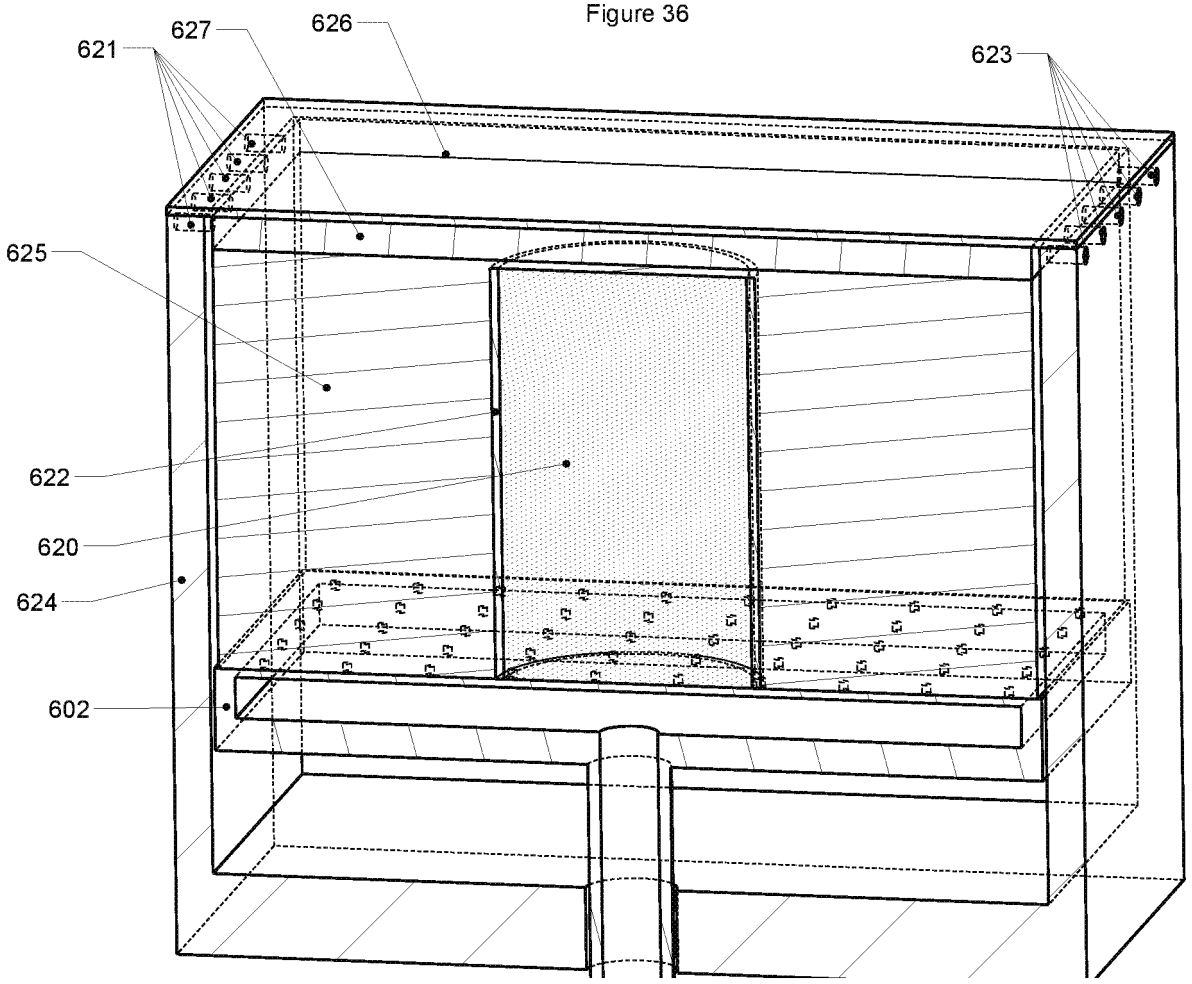
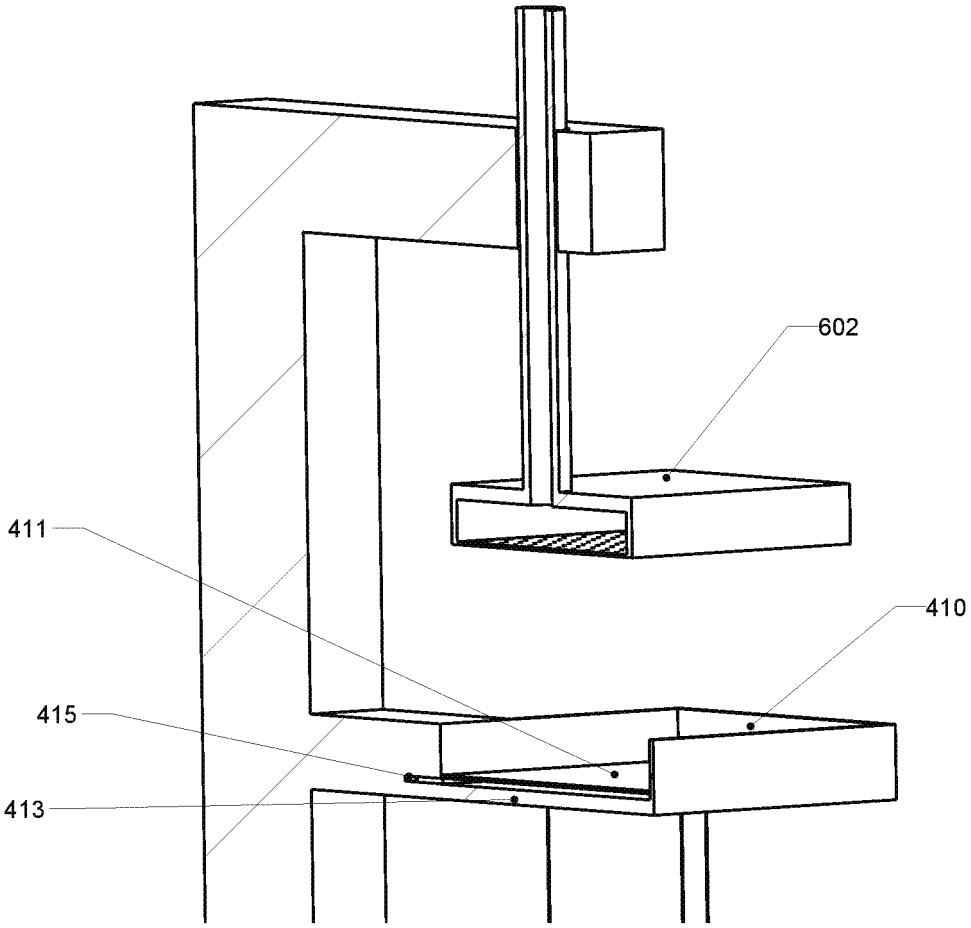


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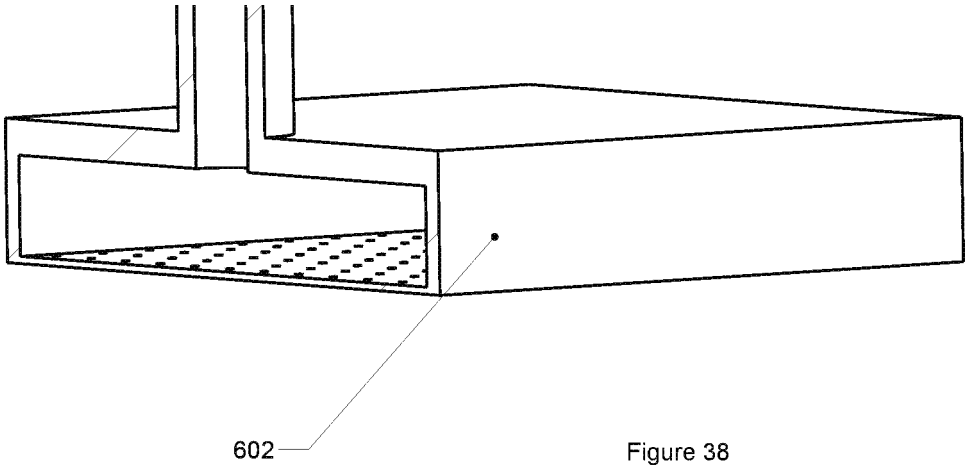


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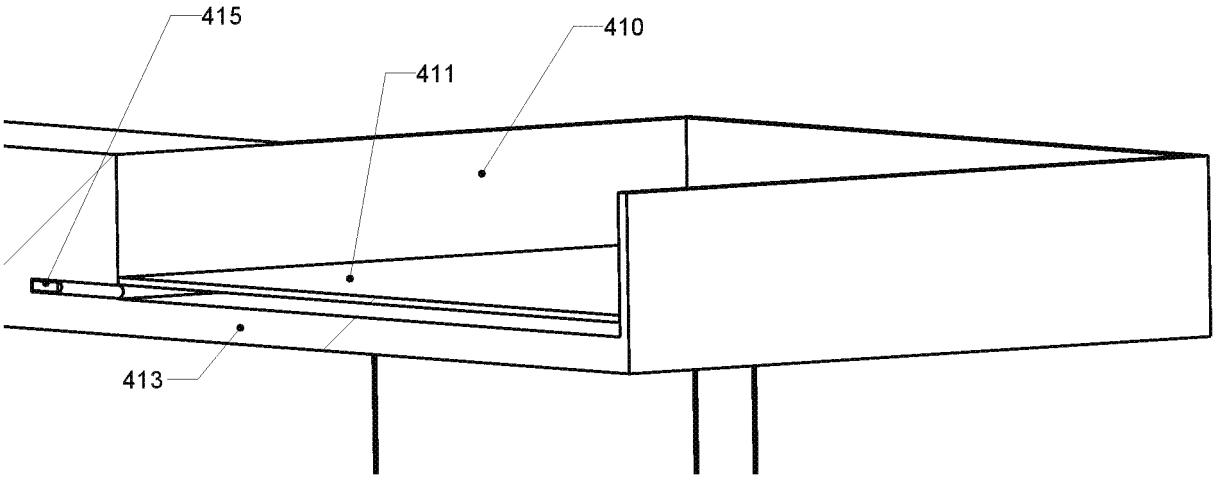


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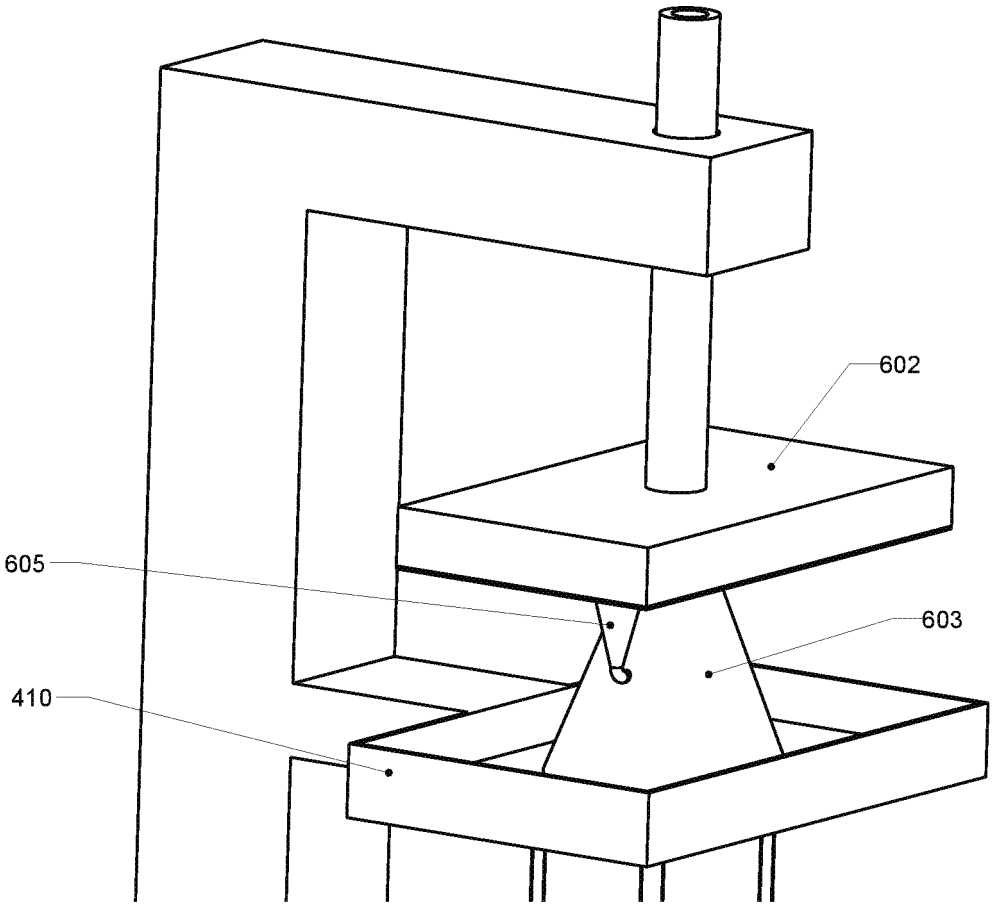


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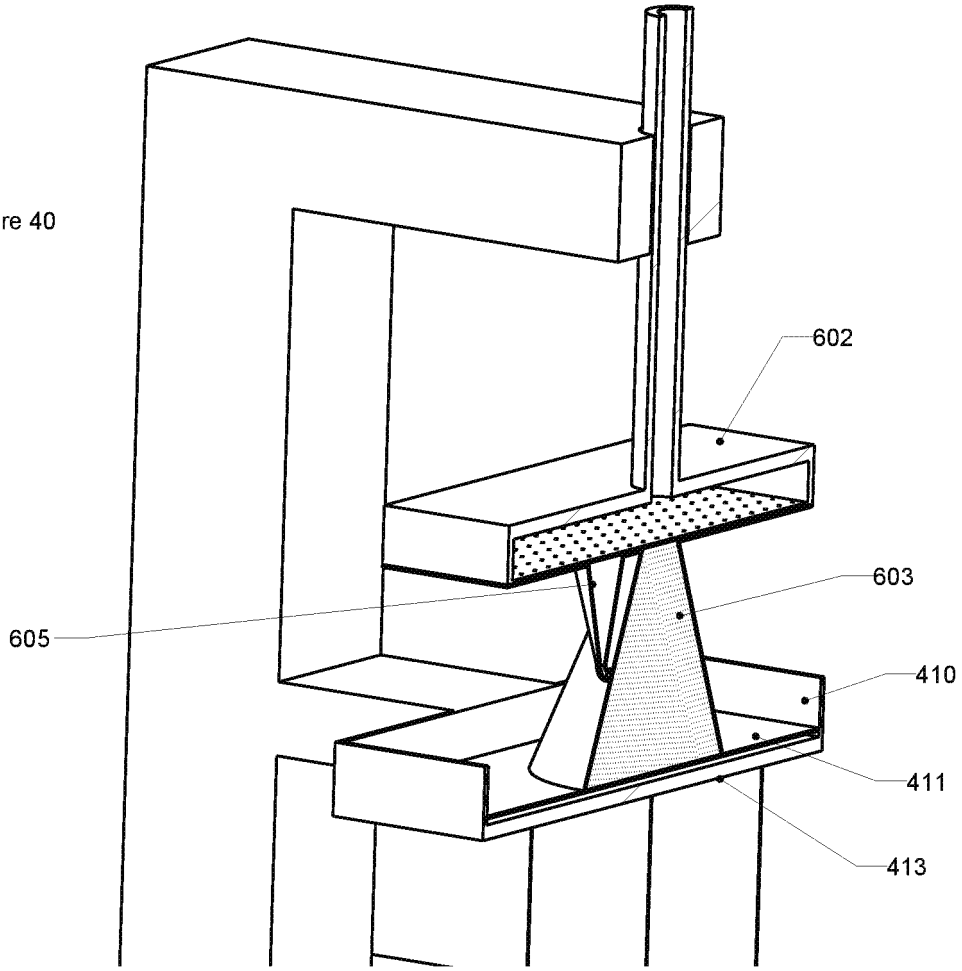


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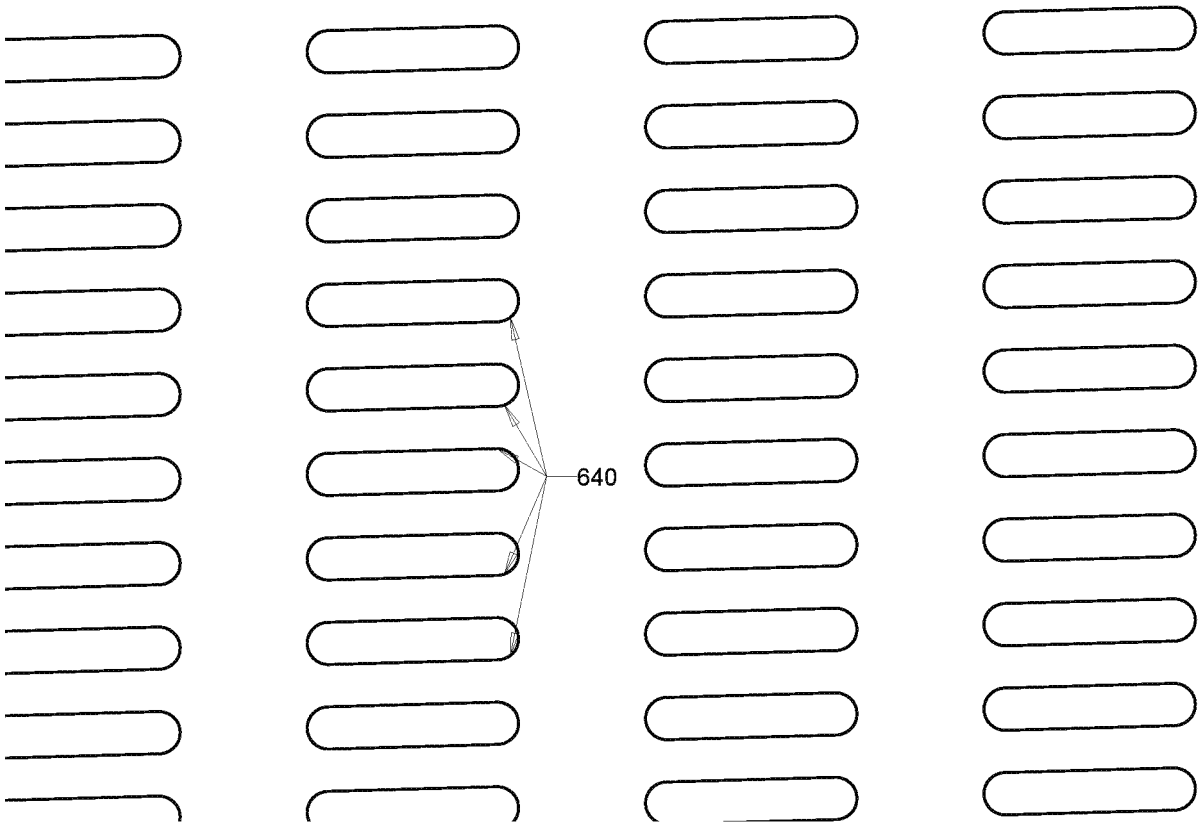


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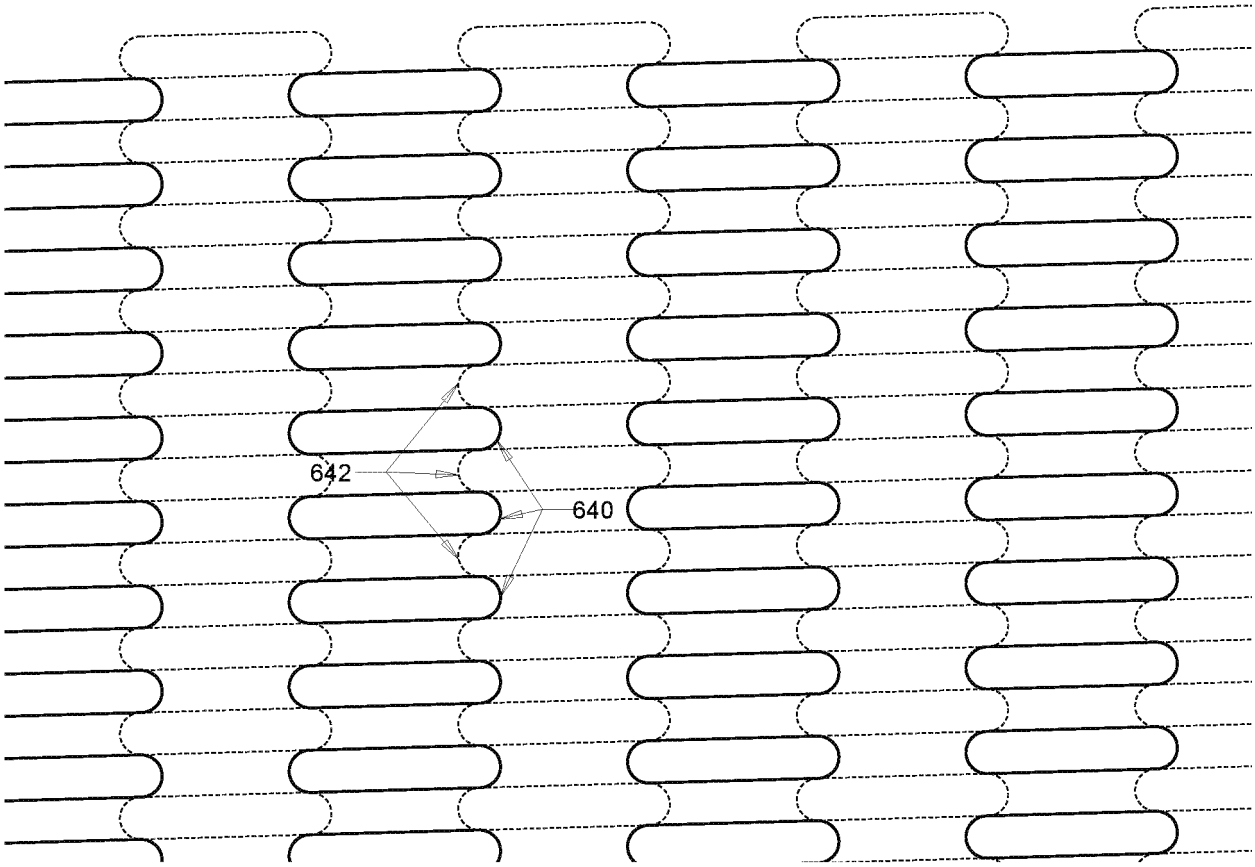


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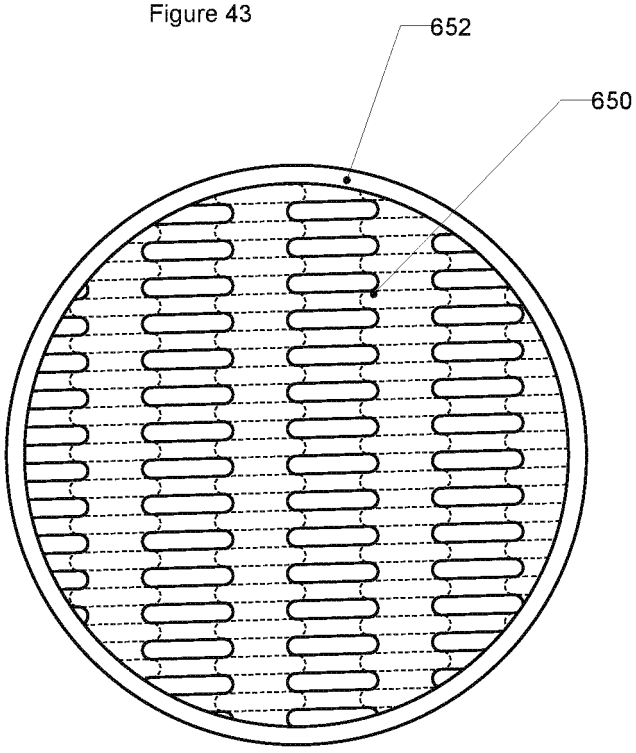


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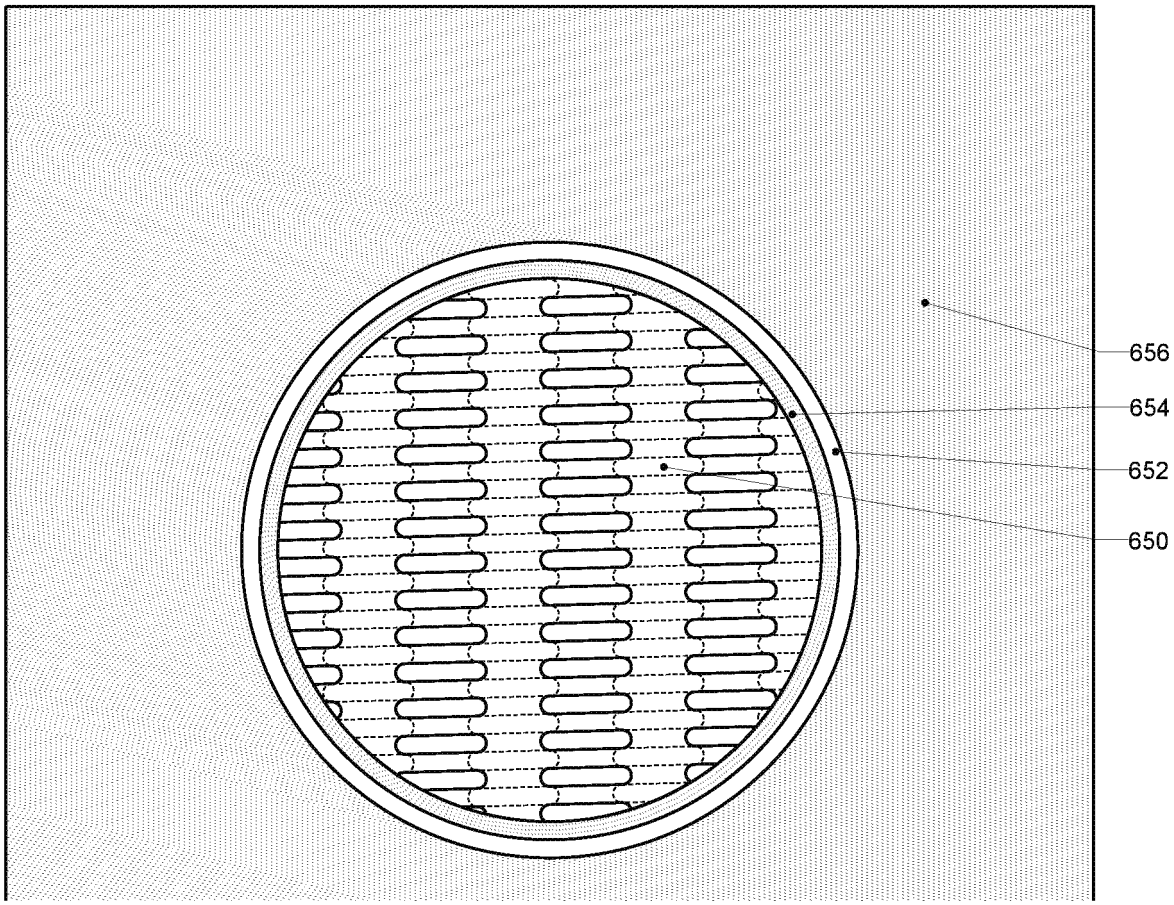


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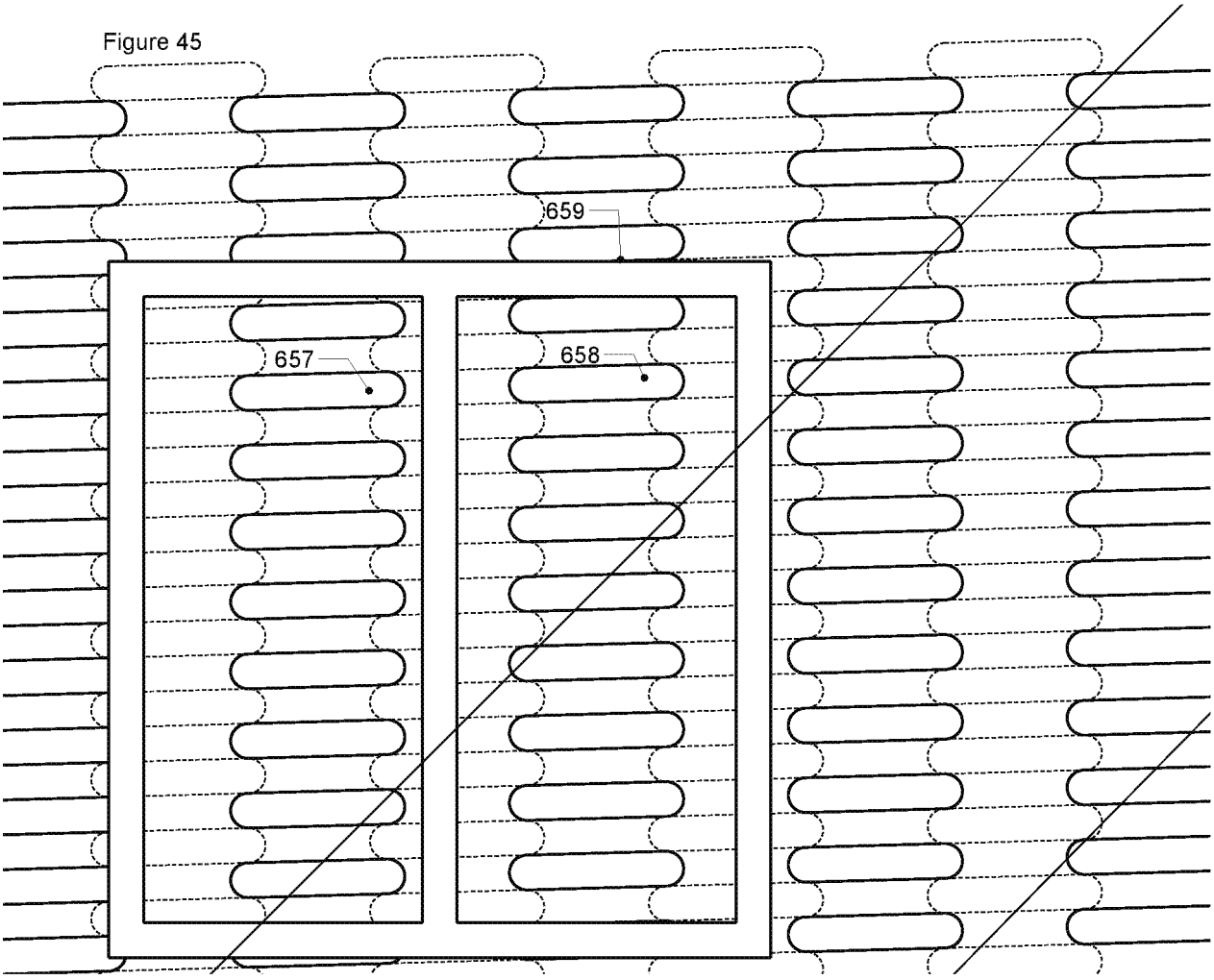


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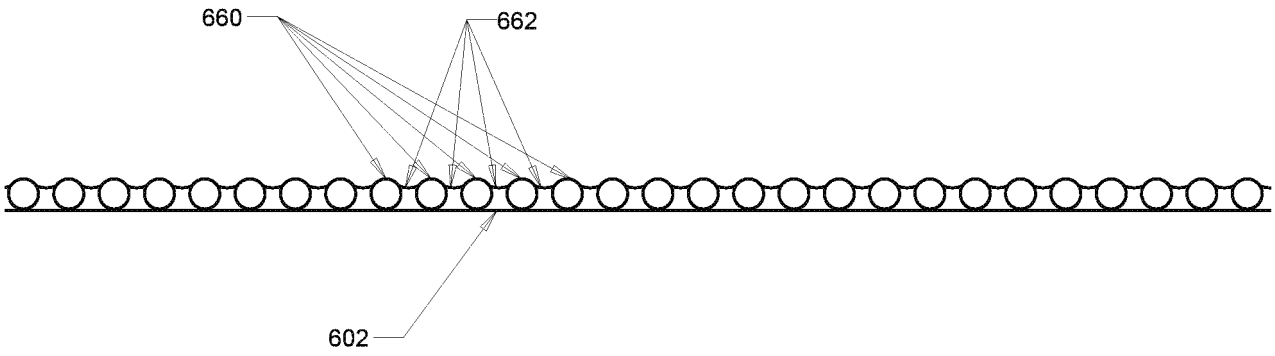


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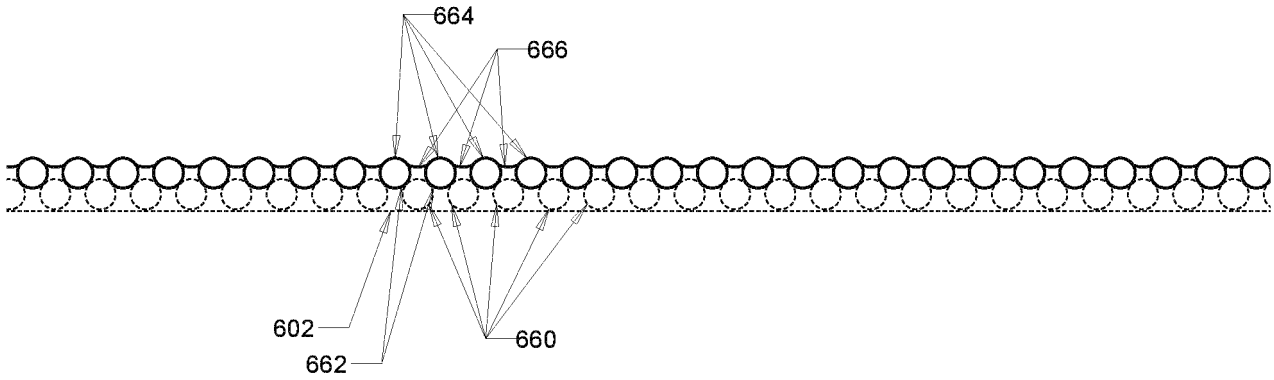


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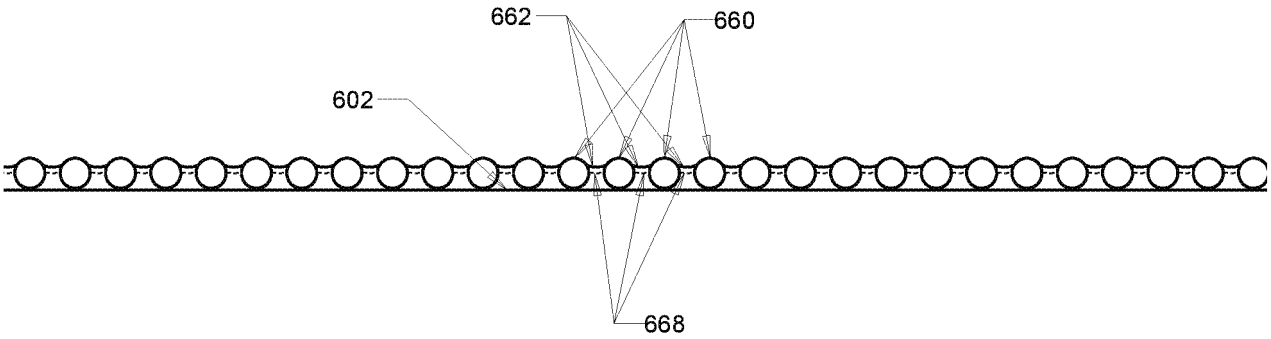
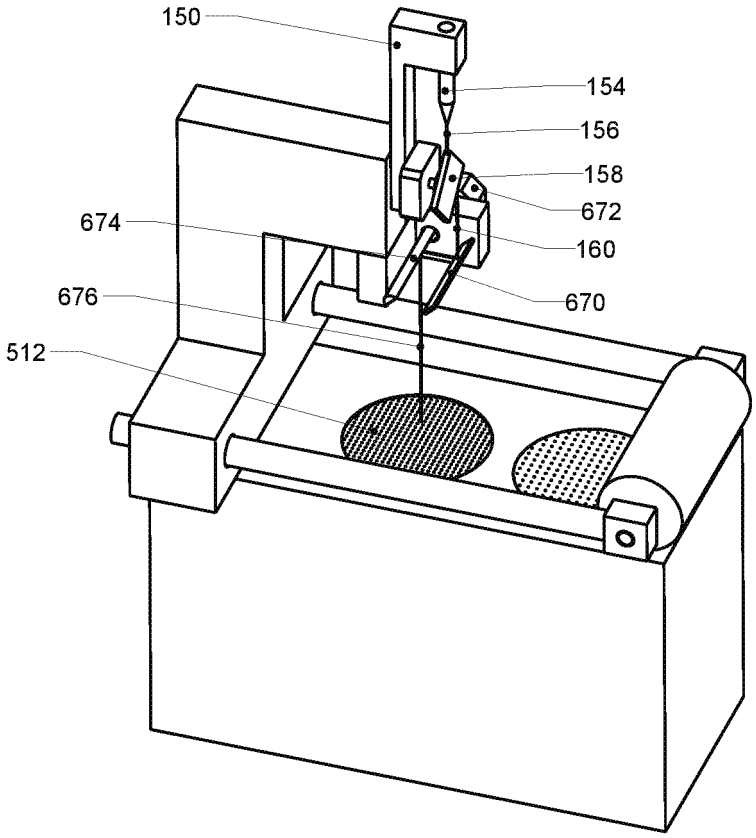


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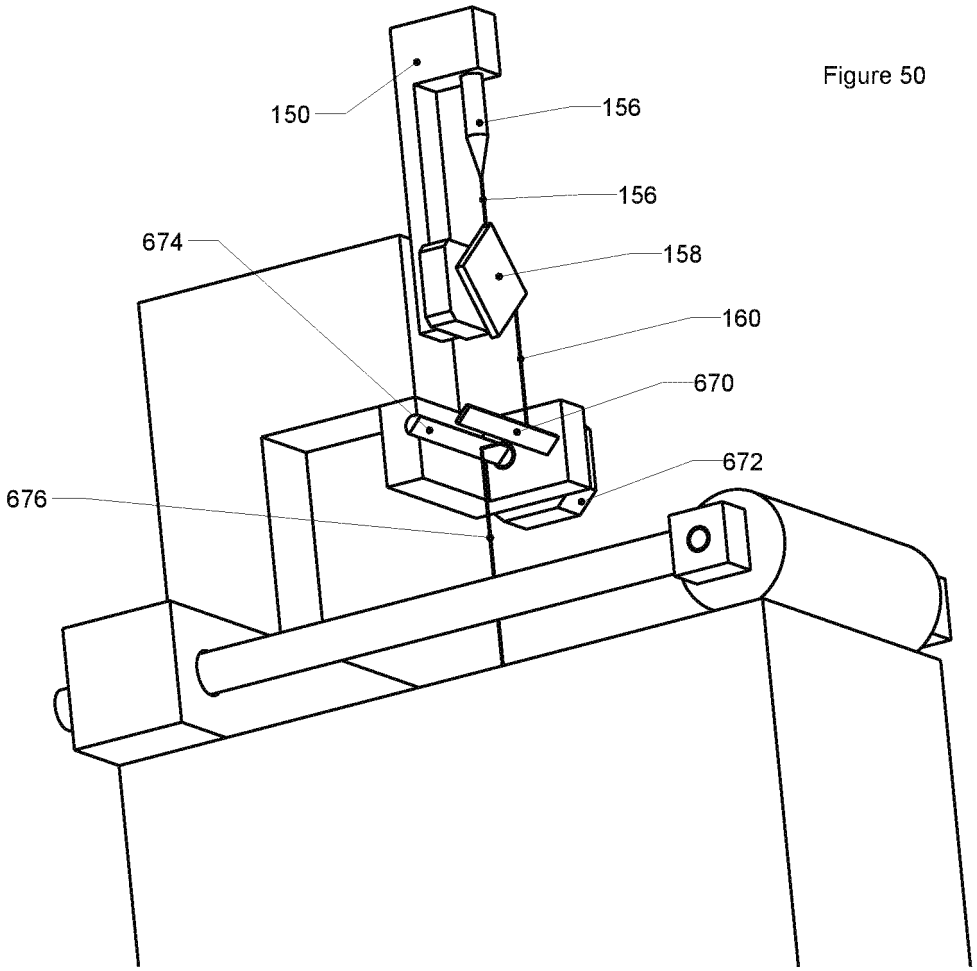


Figure 50

Figure 51

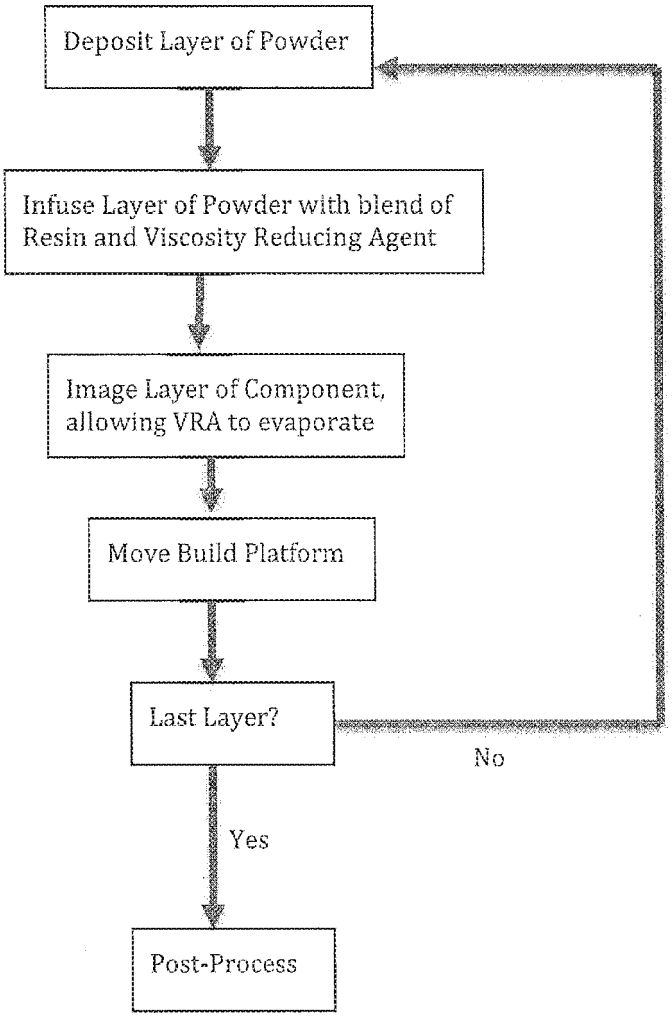

Deposit Layer of Powder
Infuse Layer of Powder with blend of Resin and Viscosity Reducing Agent
Image Layer of Component, allowing VRA to evaporate
Move Build Platform
Last Layer?
No
Yes
Post-Process

Figure 52

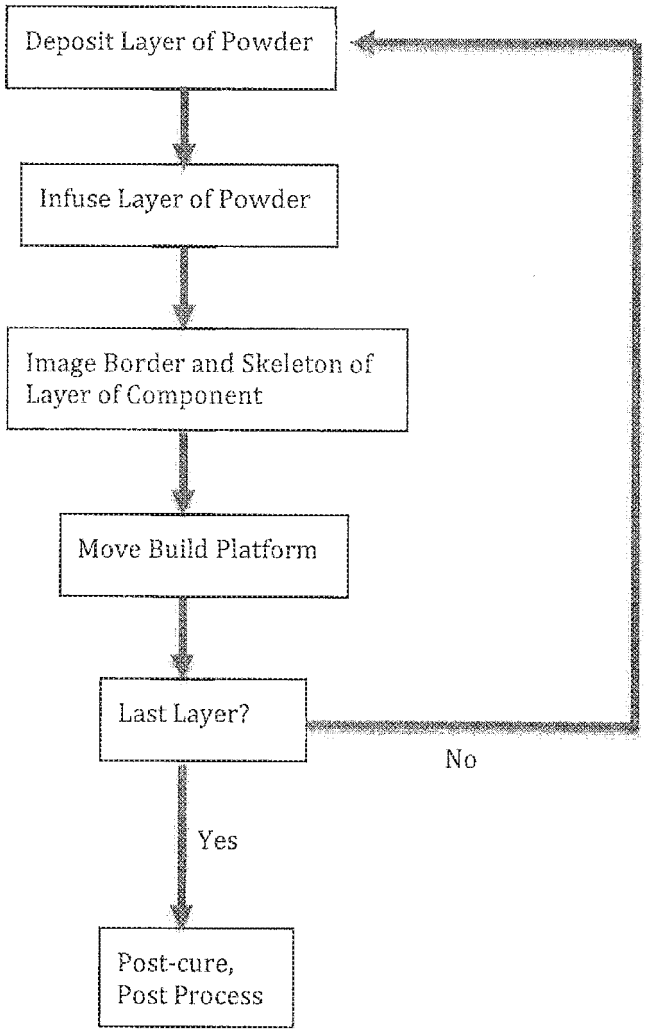

Deposit Layer of Powder
Infuse Layer of Powder
Image Border and Skeleton of Layer of Component
Move Build Platform
Last Layer?
No
Yes
Post-cure, Post Process

Figure 53

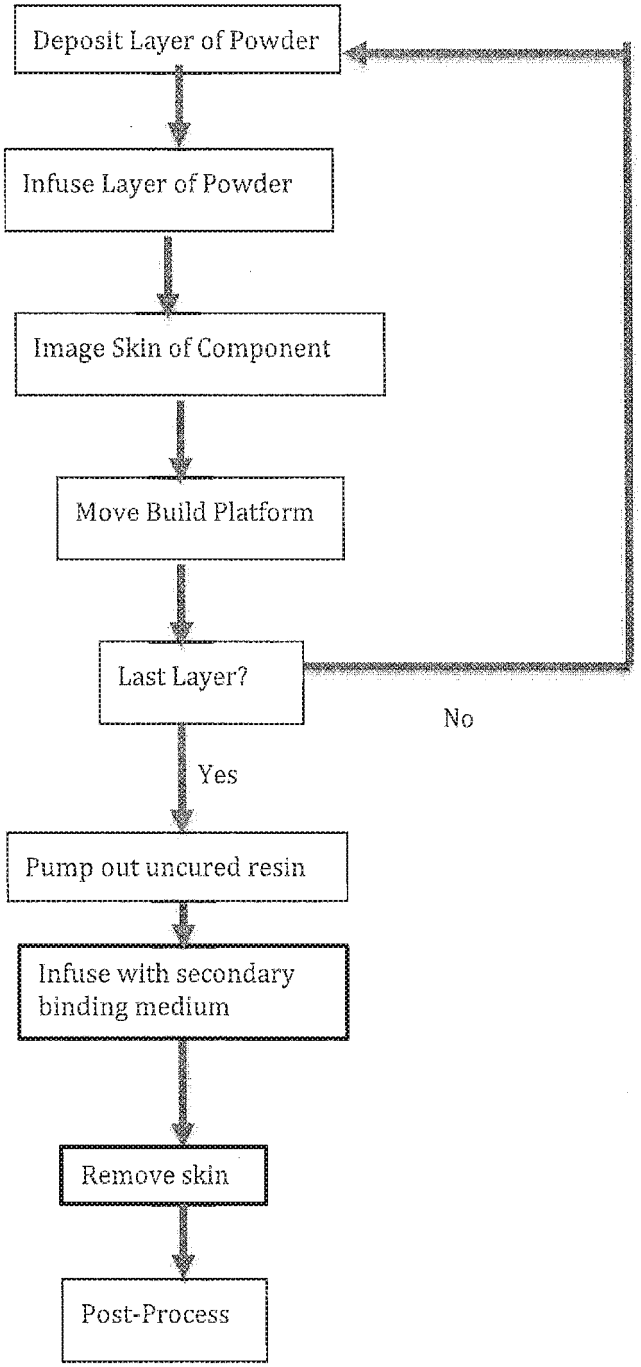

Deposit Layer of Powder
Infuse Layer of Powder
Image Skin of Component
Move Build Platform
Last Layer?
No
Yes
Pump out uncured resin
Infuse with secondary binding medium
Remove skin
Post-Process

Figure 54

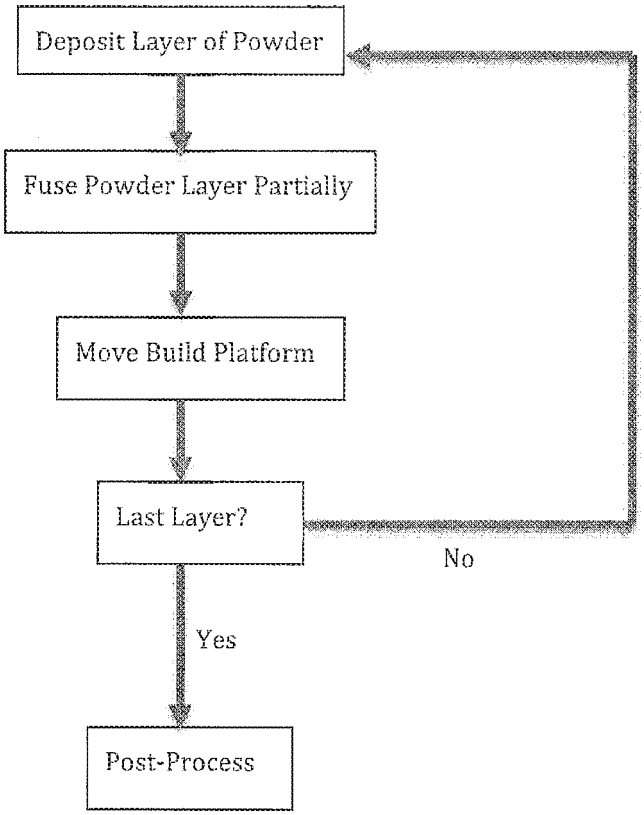

Deposit Layer of Powder
Fuse Powder Layer Partially
Move Build Platform
Last Layer?
No
Yes
Post-Process

Figure 55

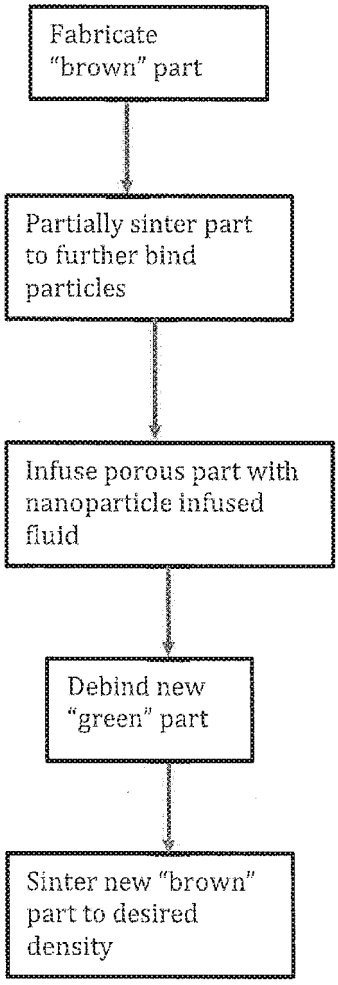
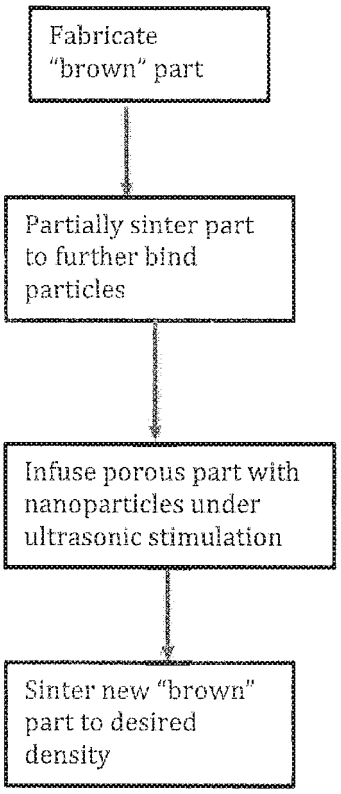

Fabricate "brown" part
Partially sinter part to further bind particles
Infuse porous part with nanoparticle infused fluid
Debind new "green" part
Sinter new "brown" part to desired density

Figure 56


Fabricate "brown" part
Partially sinter part to further bind particles
Infuse porous part with nanoparticles under ultrasonic stimulation
Sinter new "brown" part to desired density