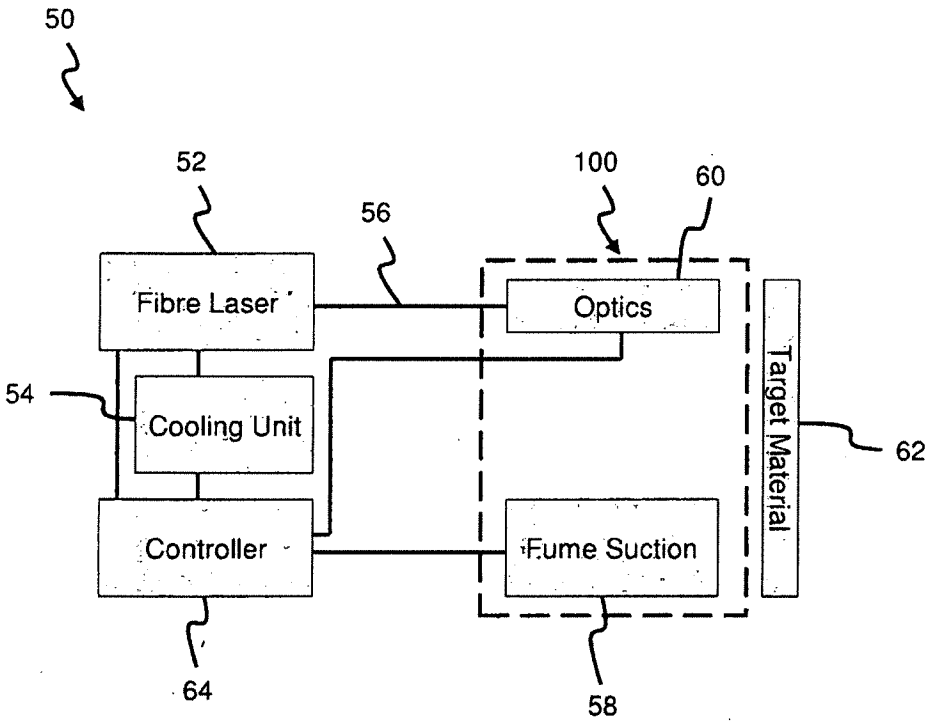

50
52
56
100
60
Fibre Laser
Optics
54
Cooling Unit
Target Material
62
Controller
Fume Suction
64
58

Figure 1

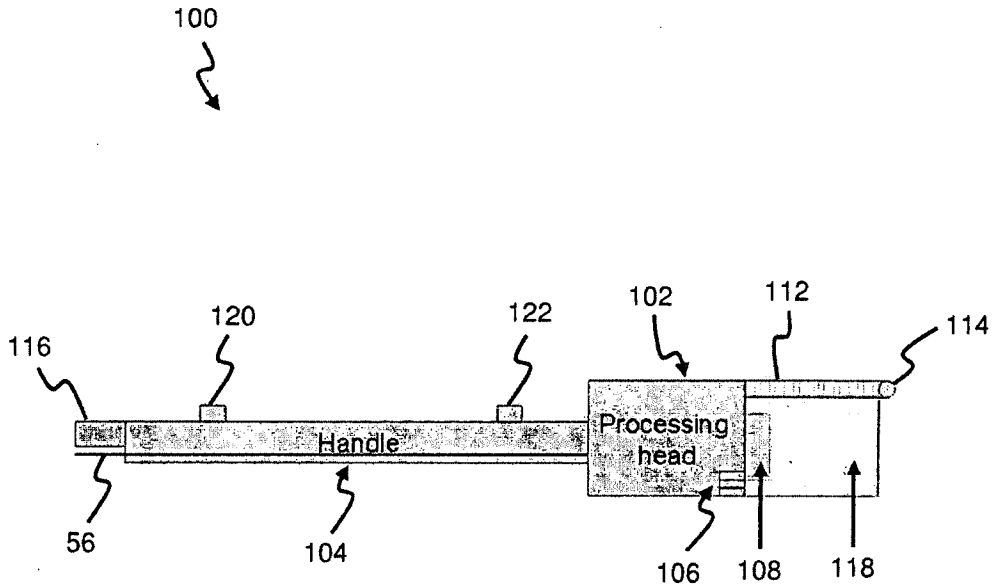

100
116
120
122
102
112
114
Handle
Processing head
56
104
106
108
118

Figure 2

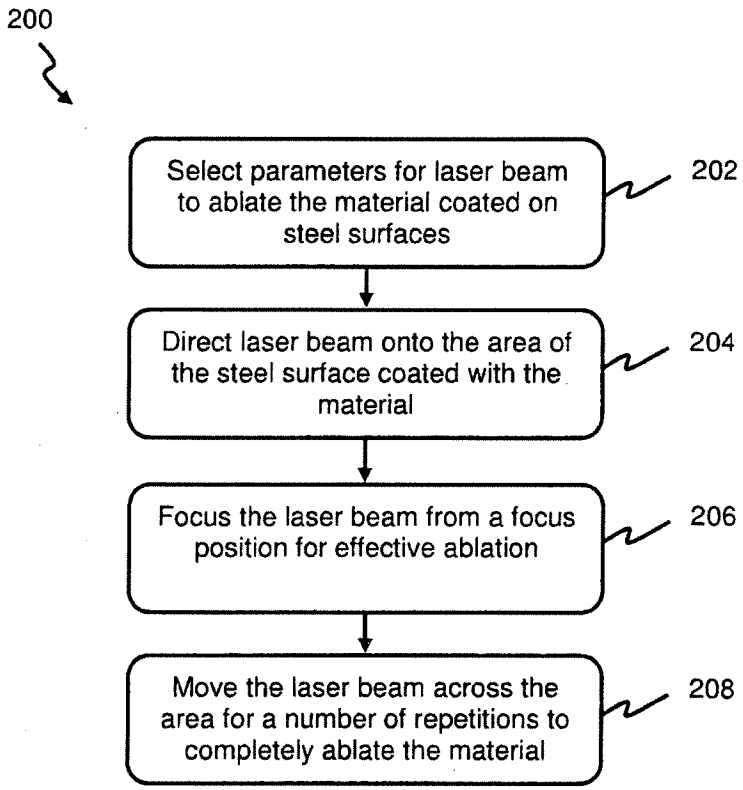

200
Select parameters for laser beam to ablate the material coated on steel surfaces
202
Direct laser beam onto the area of the steel surface coated with the material
204
Focus the laser beam from a focus position for effective ablation
206
Move the laser beam across the area for a number of repetitions to completely ablate the material
208

Figure 3

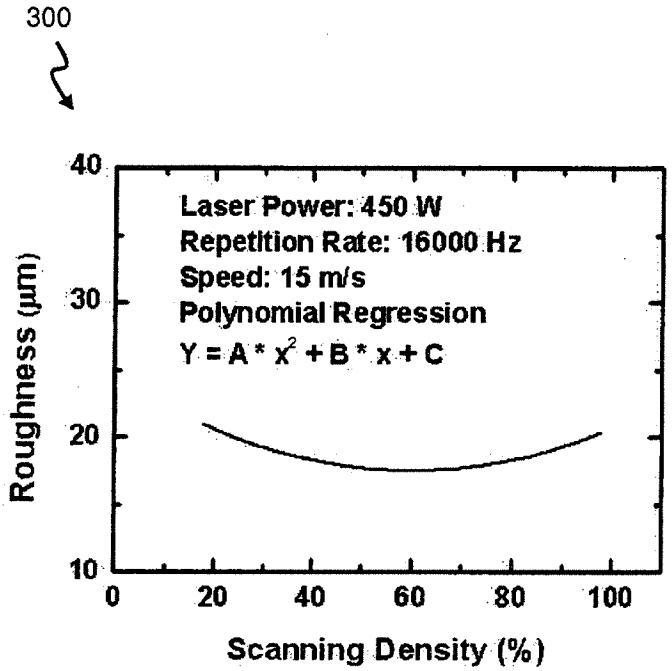


Figure 4

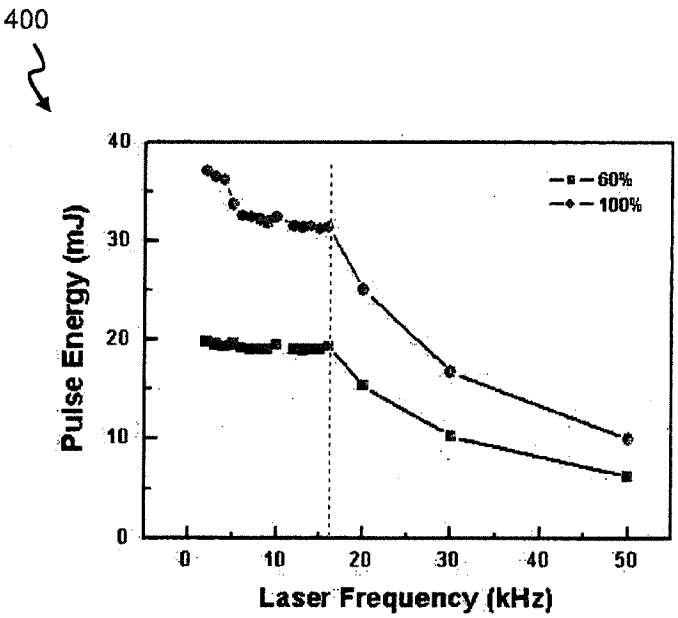


Figure 5

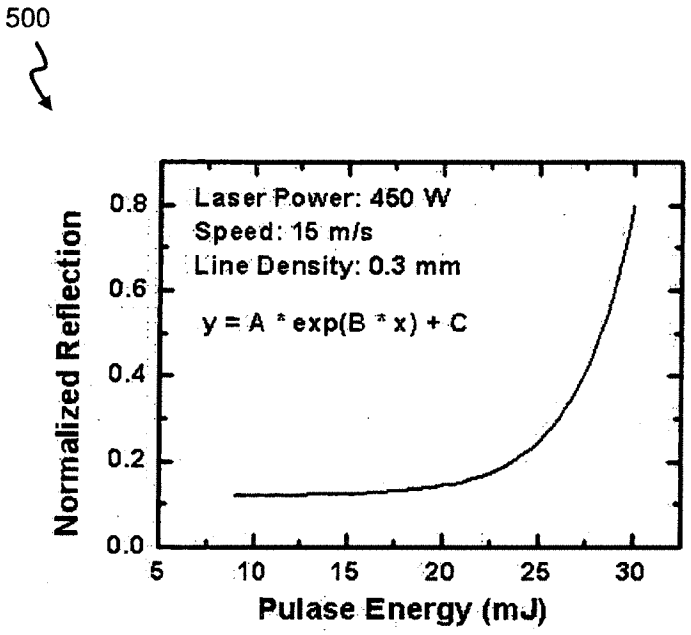


Figure 6

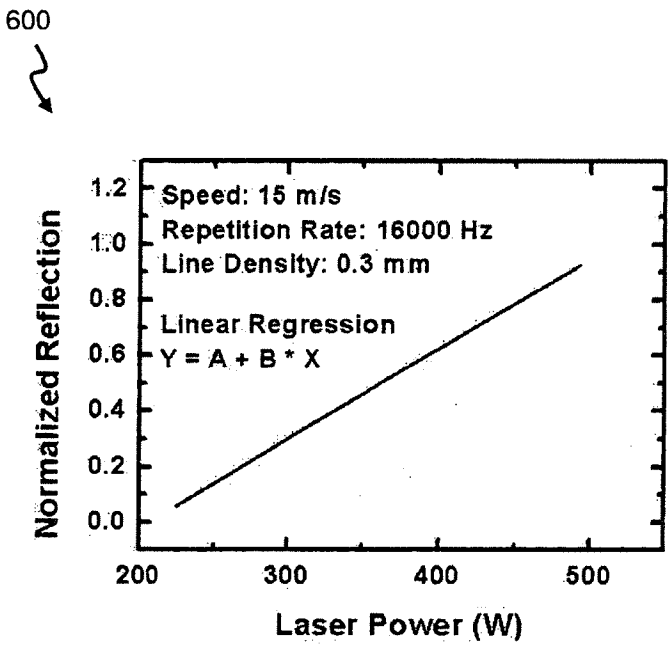


Figure 7

700

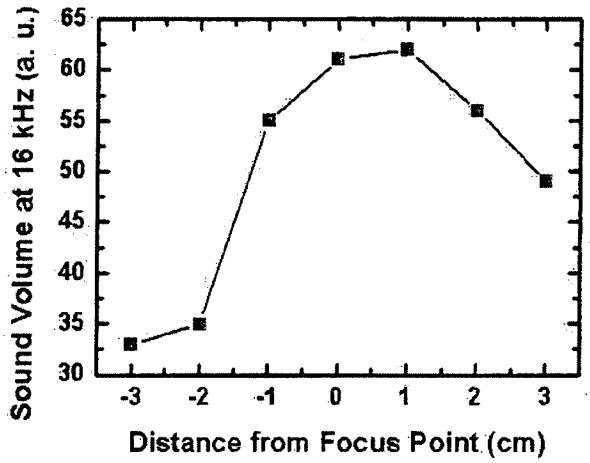


Figure 8

800

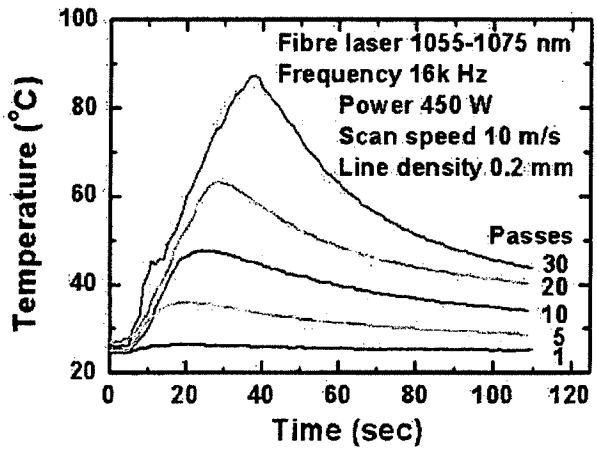


Figure 9

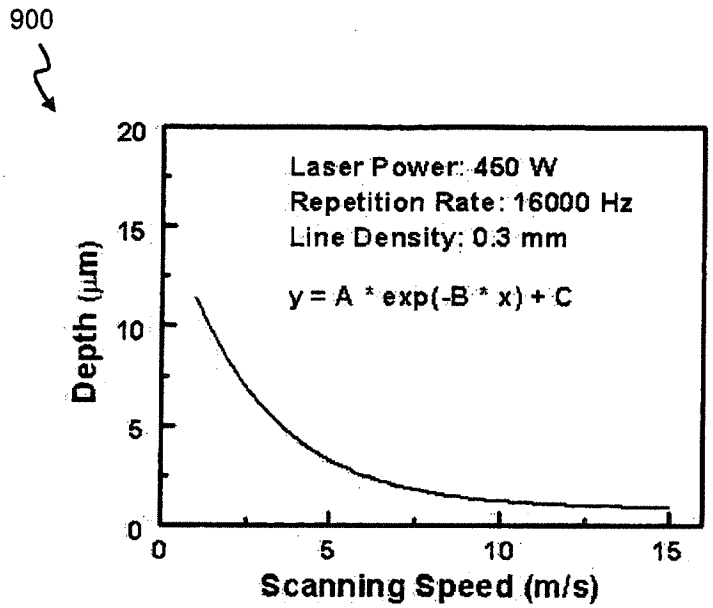


Figure 10

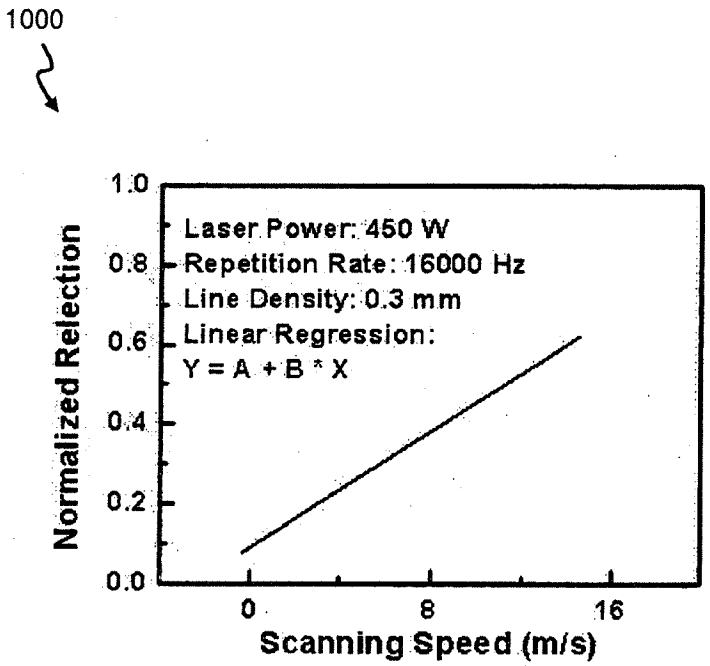


Figure 11

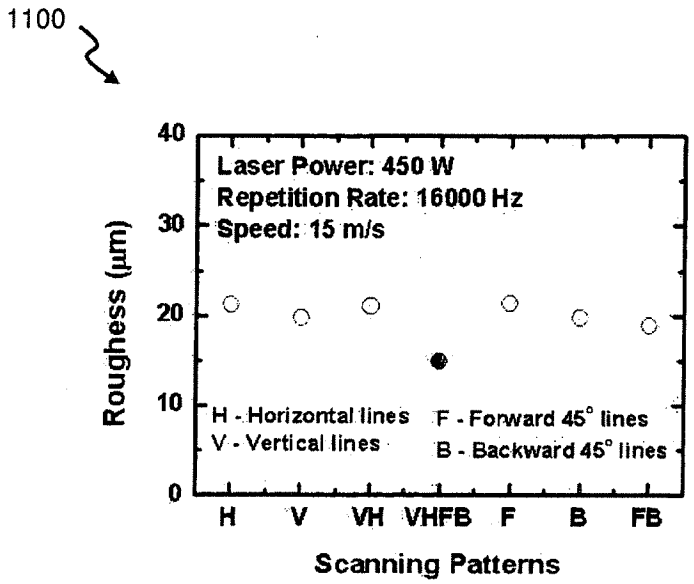


Figure 12

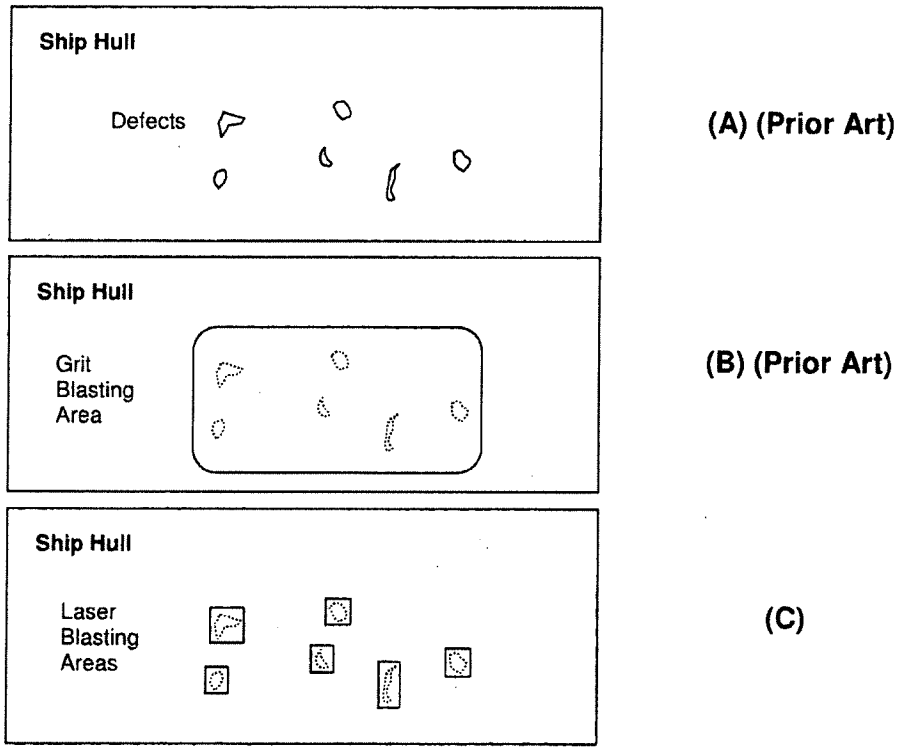


Figure 13

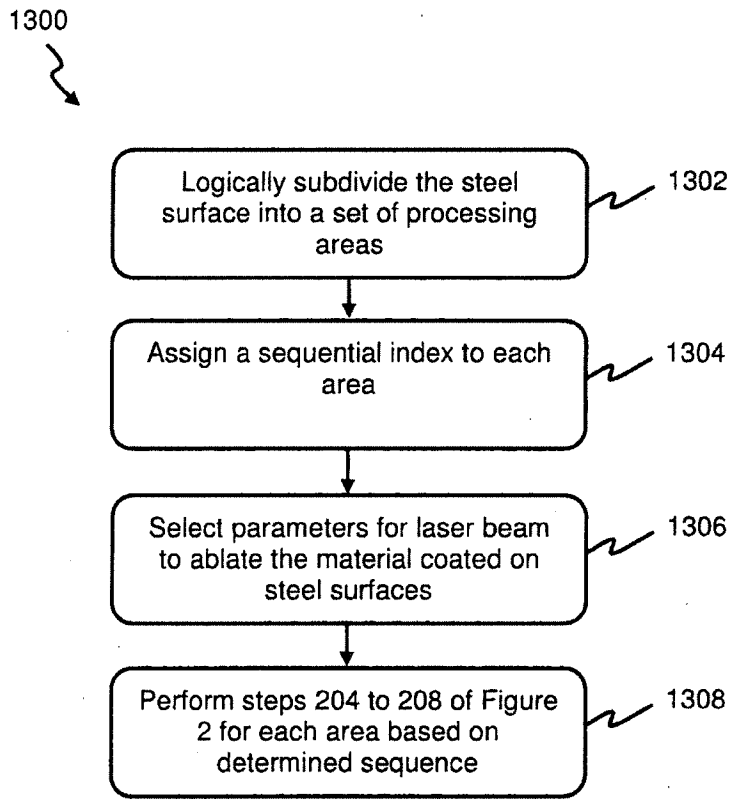

1300
Logically subdivide the steel surface into a set of processing areas
1302
Assign a sequential index to each area
1304
Select parameters for laser beam to ablate the material coated on steel surfaces
1306
Perform steps 204 to 208 of Figure 2 for each area based on determined sequence
1308

Figure 14

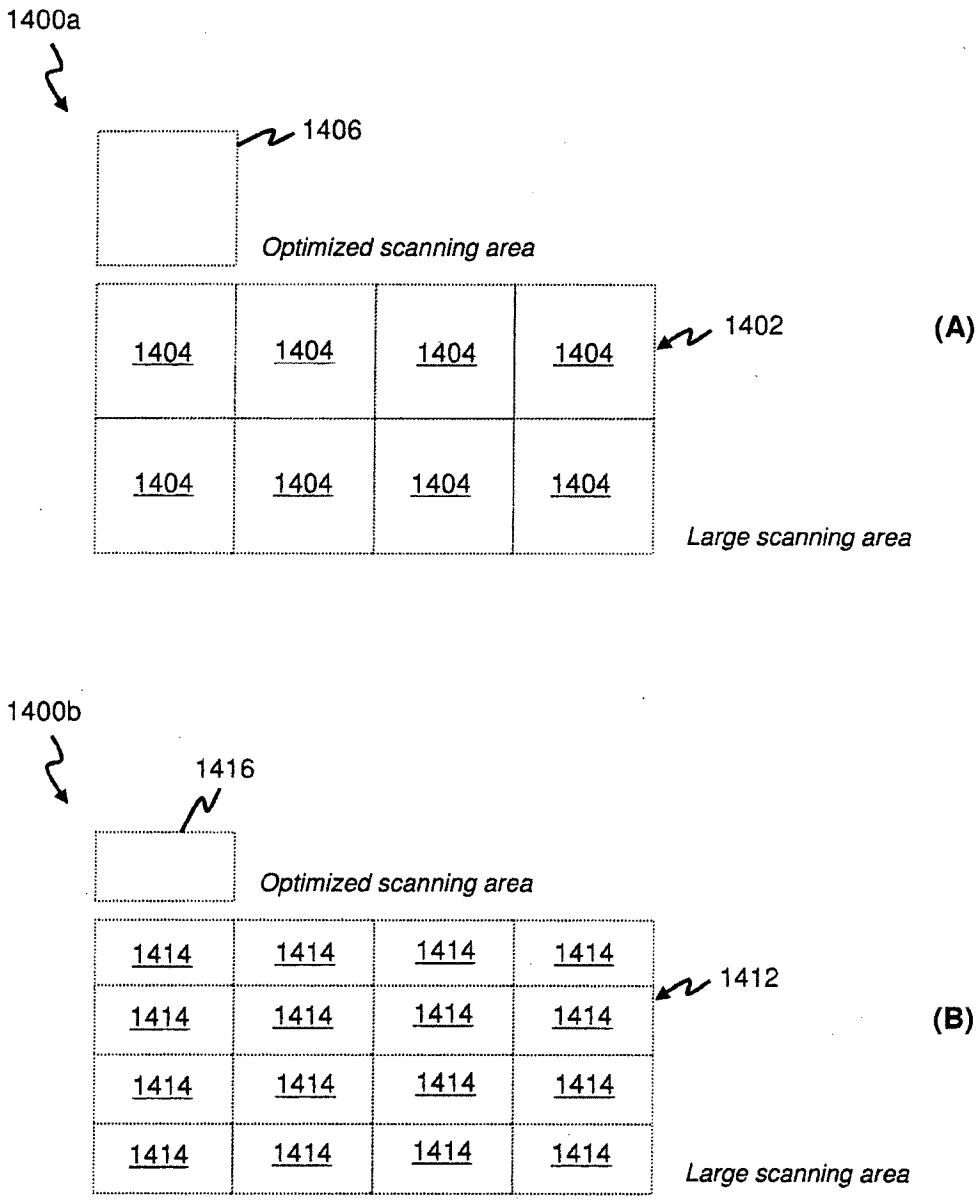

1400a
1406
Optimized scanning area
1404
1404
1404
1404
1404
1404
1404
1404
1402
(A)
Large scanning area
1400b
1416
Optimized scanning area
1414
1414
1414
1414
1414
1414
1414
1414
1414
1414
1414
1414
1414
1414
1414
1414
1412
(B)
Large scanning area

Figure 15

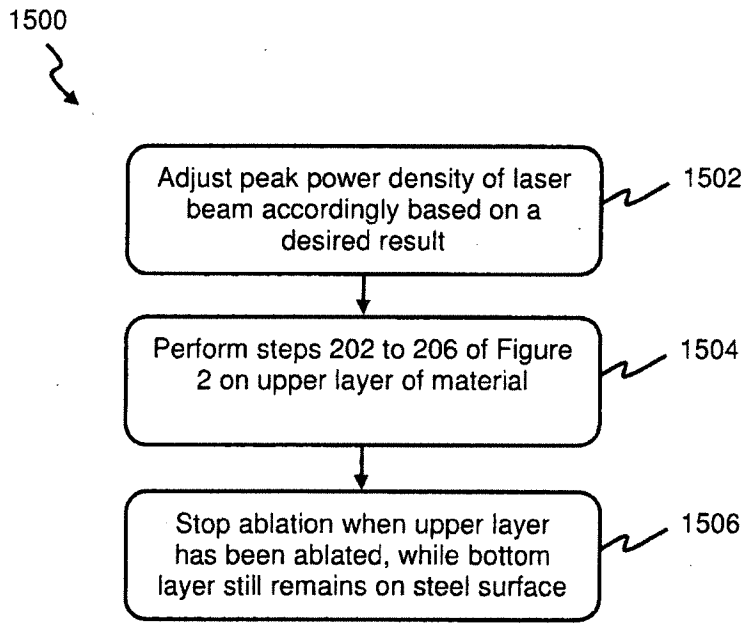

1500
Adjust peak power density of laser beam accordingly based on a desired result
1502
Perform steps 202 to 206 of Figure 2 on upper layer of material
1504
Stop ablation when upper layer has been ablated, while bottom layer still remains on steel surface
1506

Figure 16

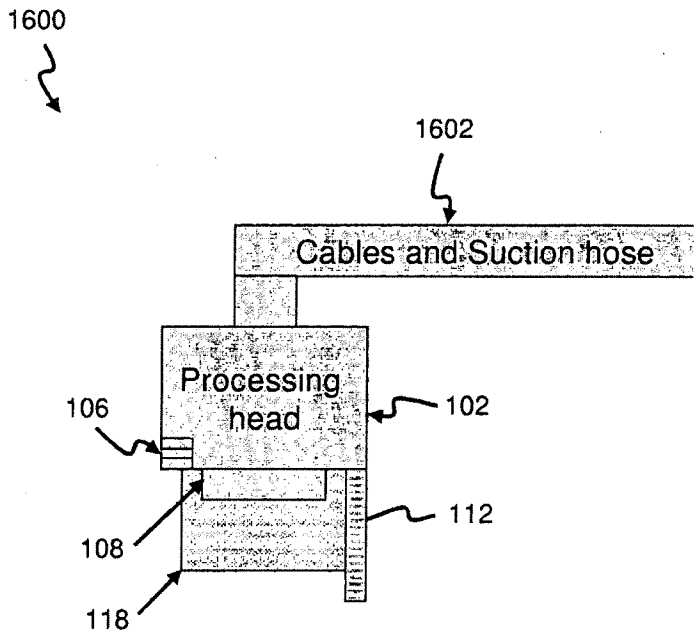

1600
1602
Cables and Suction hose
Processing head
102
106
112
108
118

Figure 17