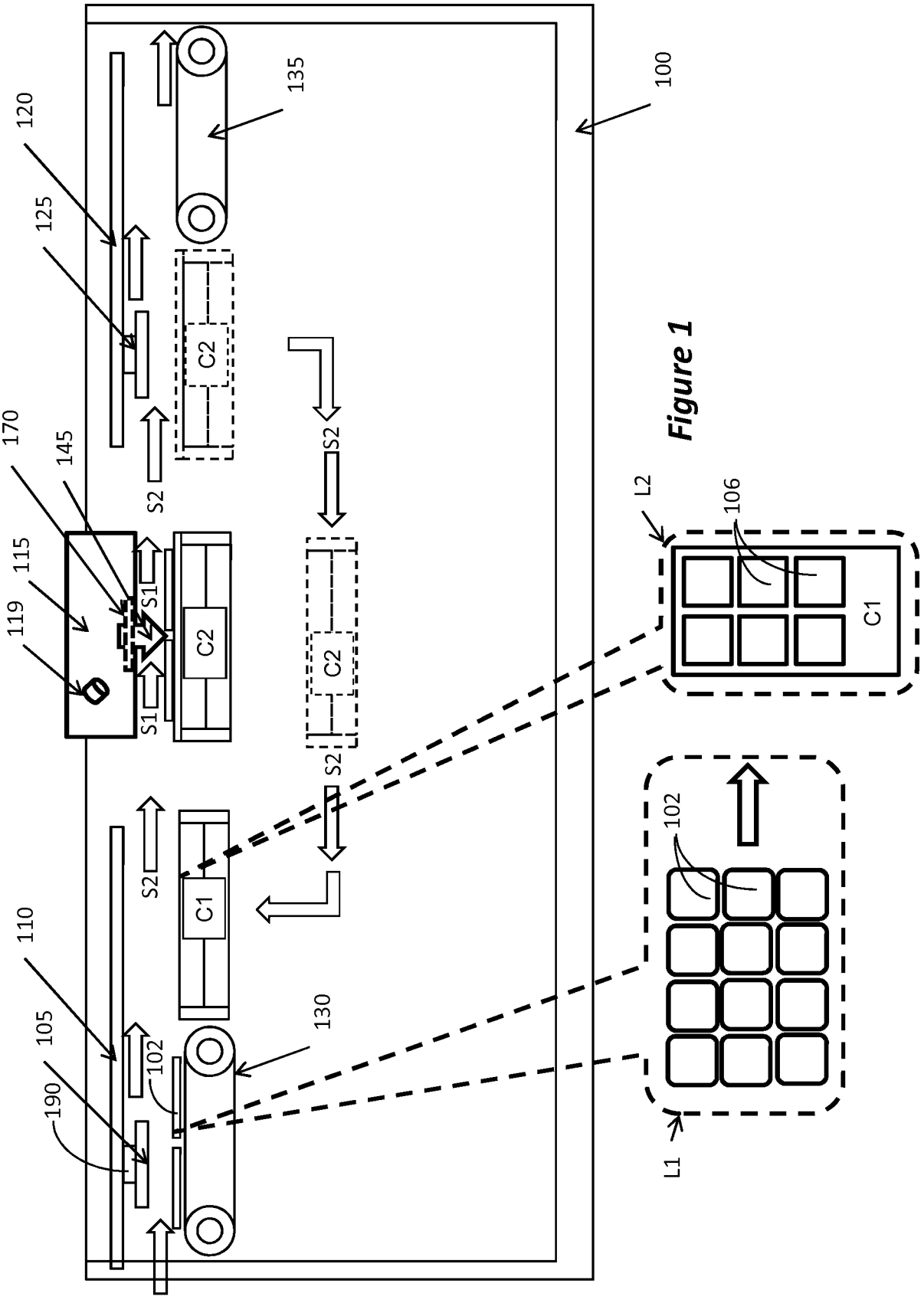

100
135
120
125
C2
170
145
S2
115
119
S1
C2
C2
S2
S2
C1
110
105
102
190
130
L2
106
C1
102
L1

Figure 1

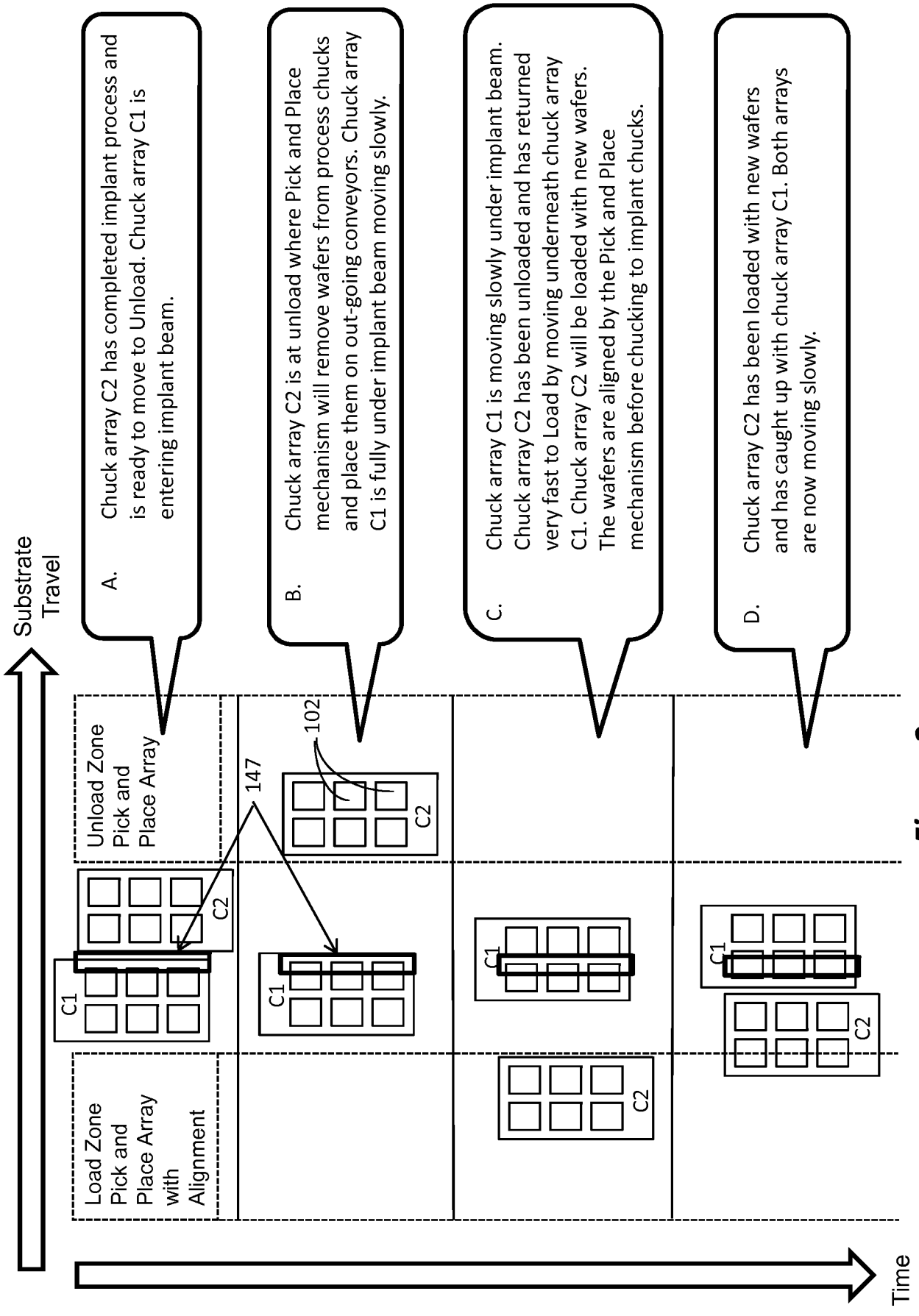

Substrate Travel
Time
Load Zone Pick and Place Array with Alignment
Unload Zone Pick and Place Array
C1
C2
147
102
A. Chuck array C2 has completed implant process and is ready to move to Unload. Chuck array C1 is entering implant beam.
B. Chuck array C2 is at unload where Pick and Place mechanism will remove wafers from process chucks and place them on out-going conveyors. Chuck array C1 is fully under implant beam moving slowly.
C. Chuck array C1 is moving slowly under implant beam. Chuck array C2 has been unloaded and has returned very fast to Load by moving underneath chuck array C1. Chuck array C2 will be loaded with new wafers. The wafers are aligned by the Pick and Place mechanism before chucking to implant chucks.
D. Chuck array C2 has been loaded with new wafers and has caught up with chuck array C1. Both arrays are now moving slowly.

Figure 2

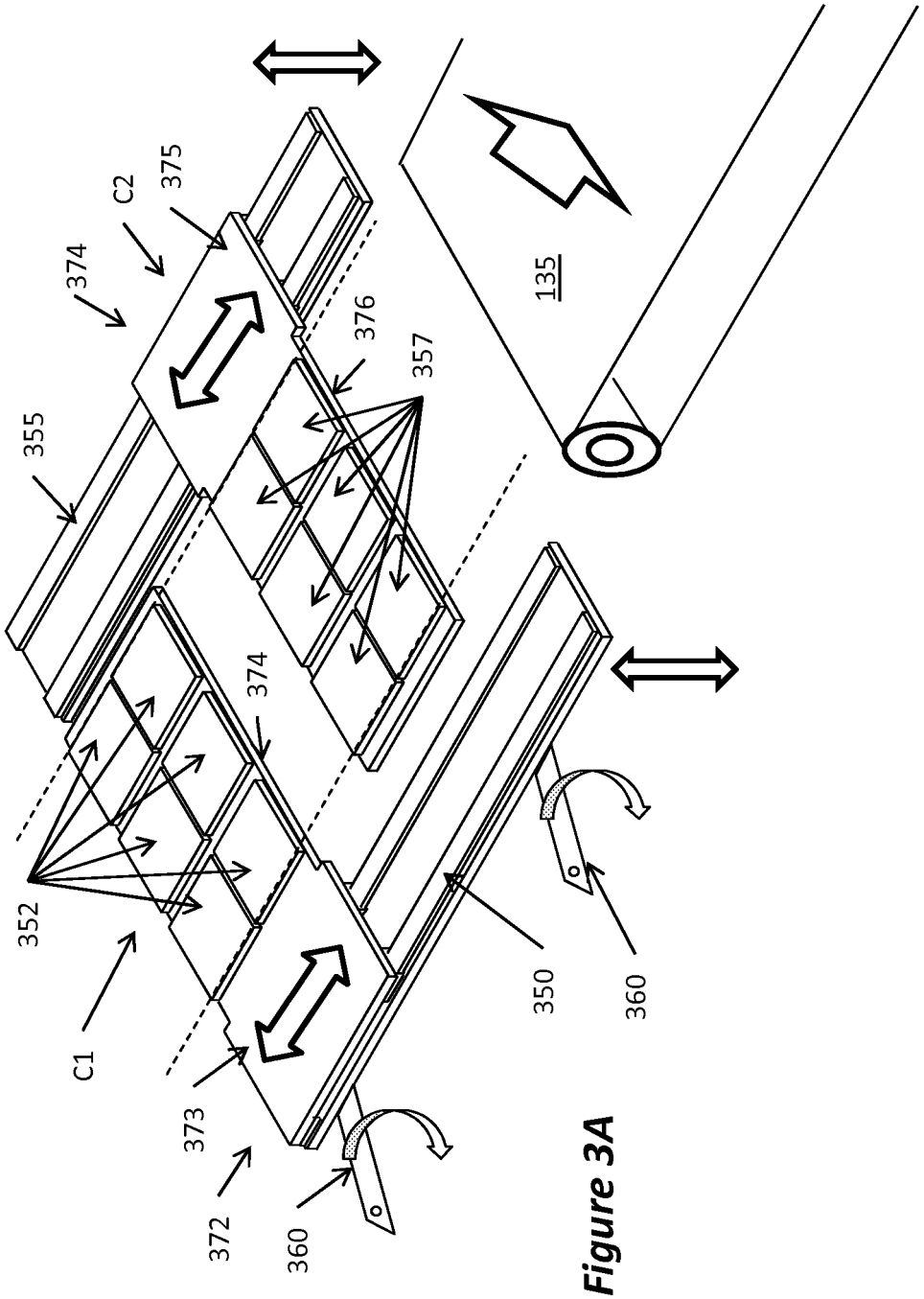


Figure 3A

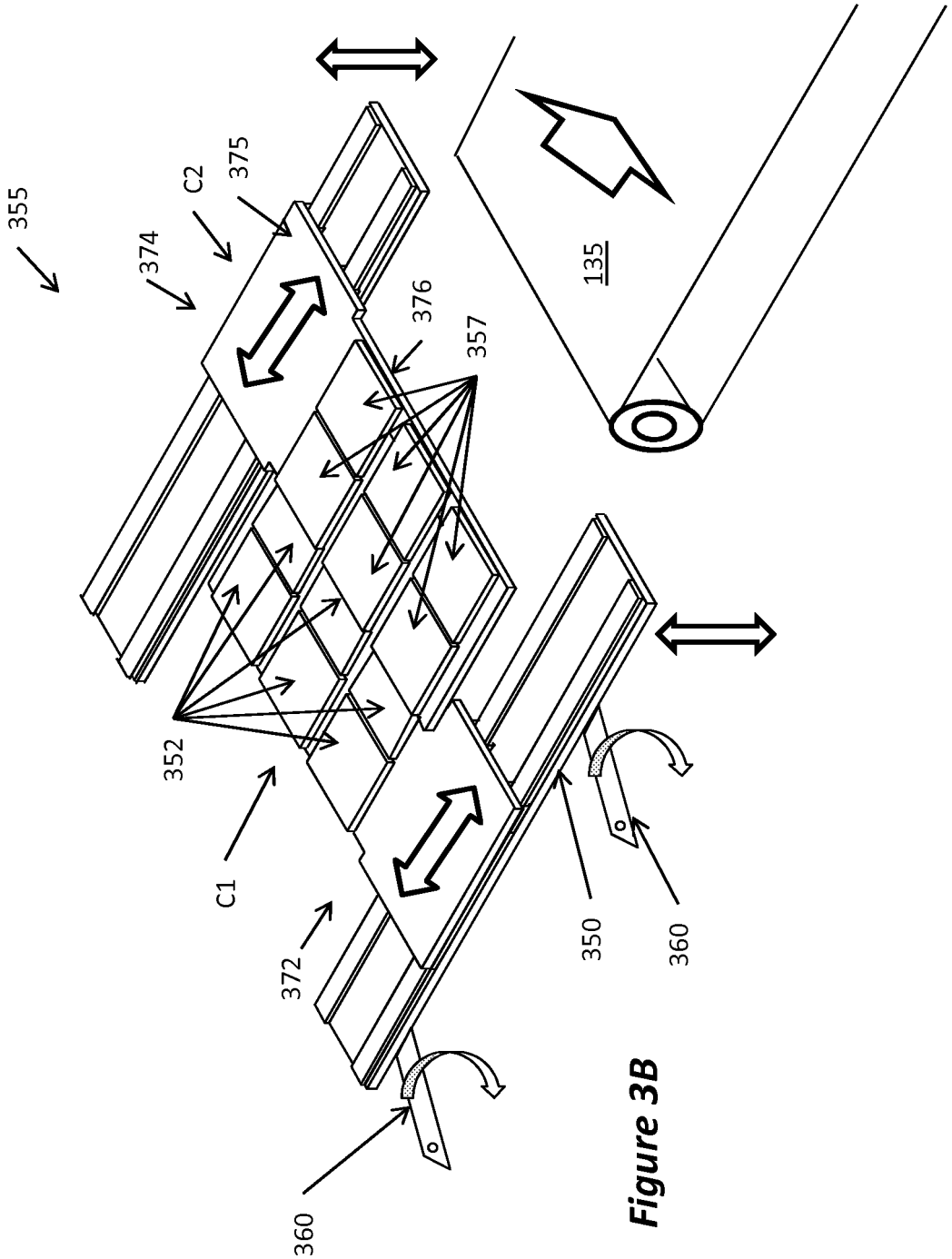


Figure 3B

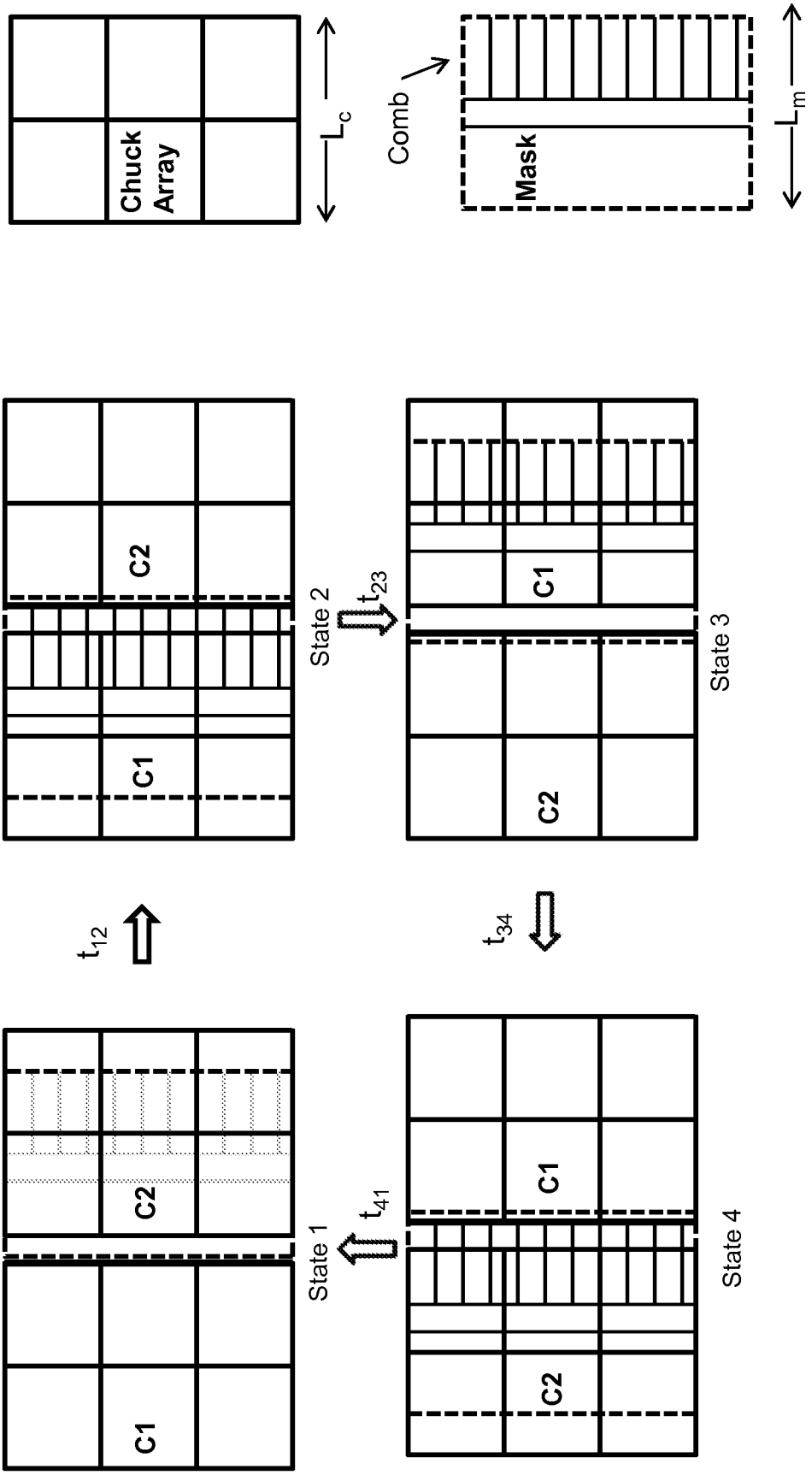

Chuck Array
L_c
Comb
Mask
L_m
C2
C1
State 2
t_{23}
C1
C2
State 3
t_{12}
t_{34}
C2
C1
State 1
t_{41}
C1
C2
State 4

Figure 4

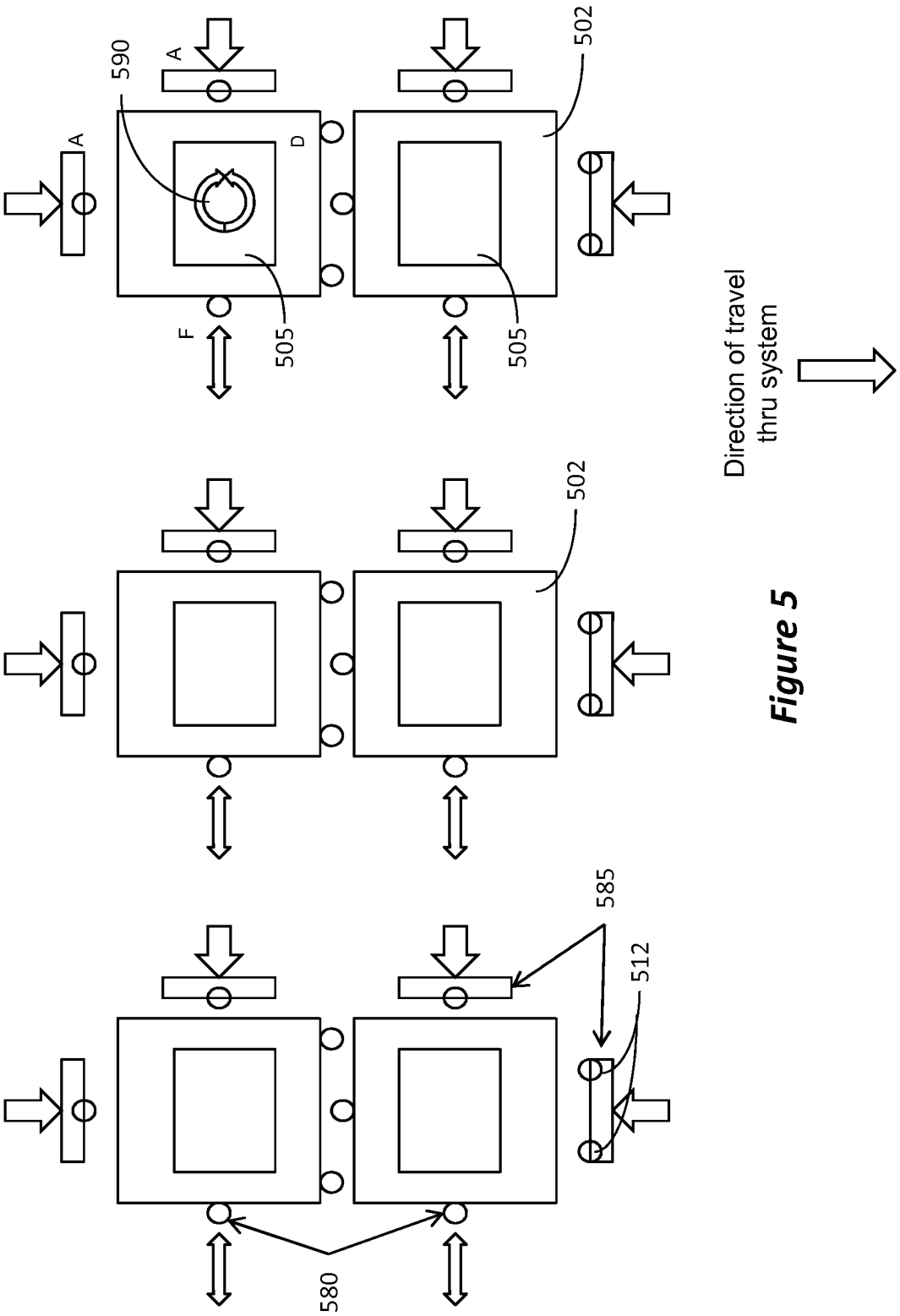

590
A
A
D
502
F
505
505
502
585
512
580
Direction of travel
thru system

Figure 5

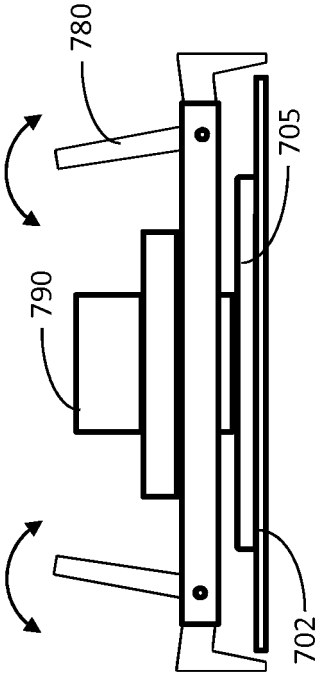


Figure 7A

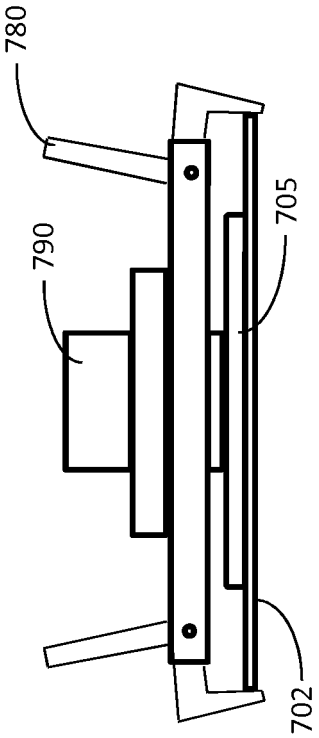


Figure 7B

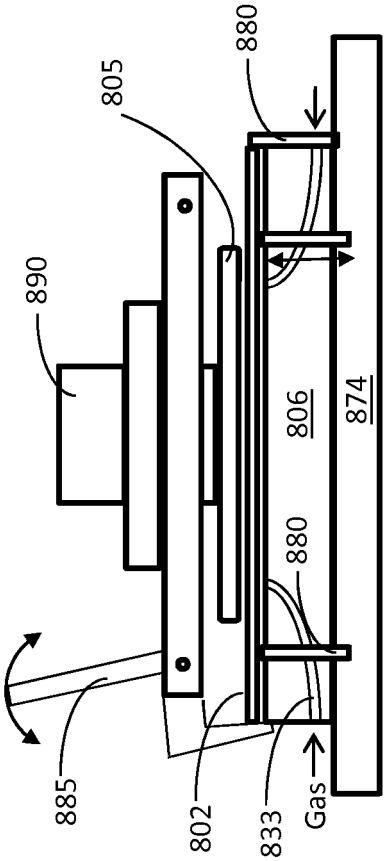


Figure 8B

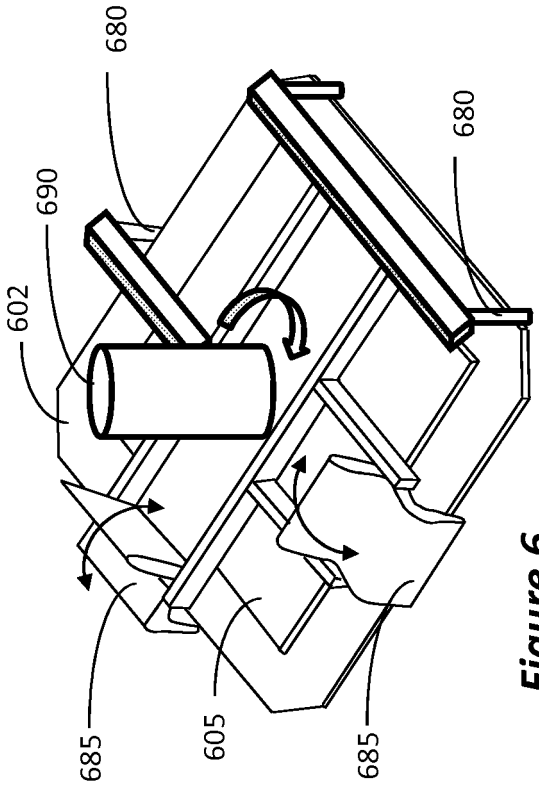


Figure 6

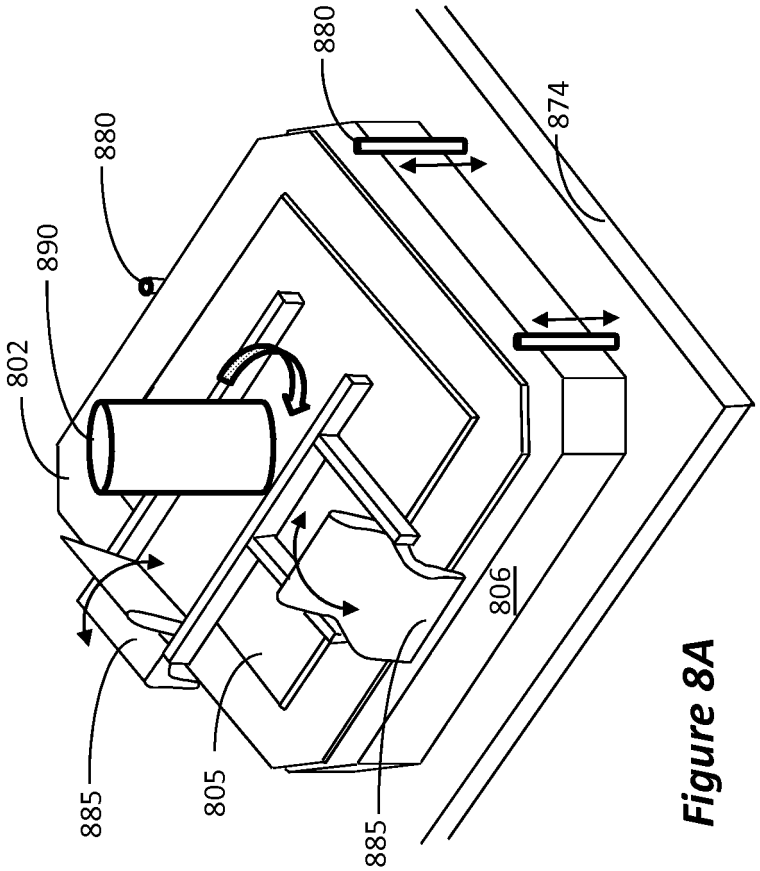


Figure 8A

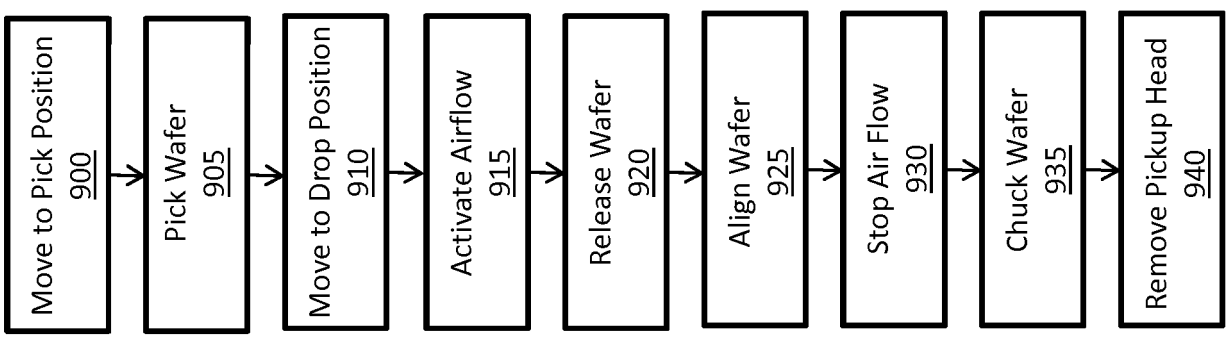


Figure 9

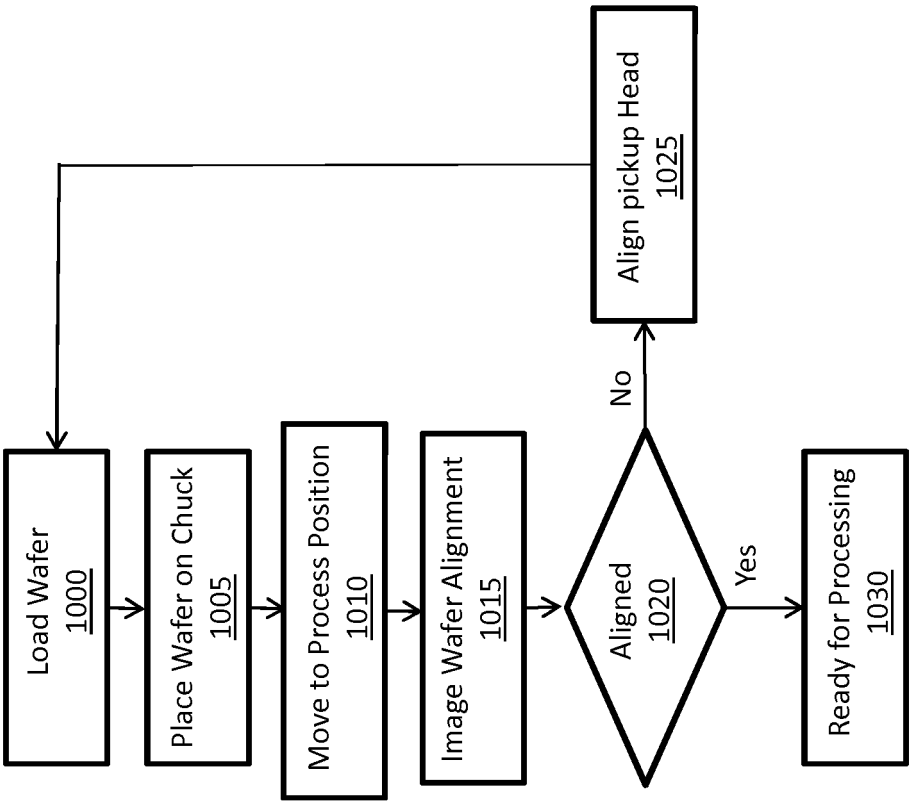


Figure 10