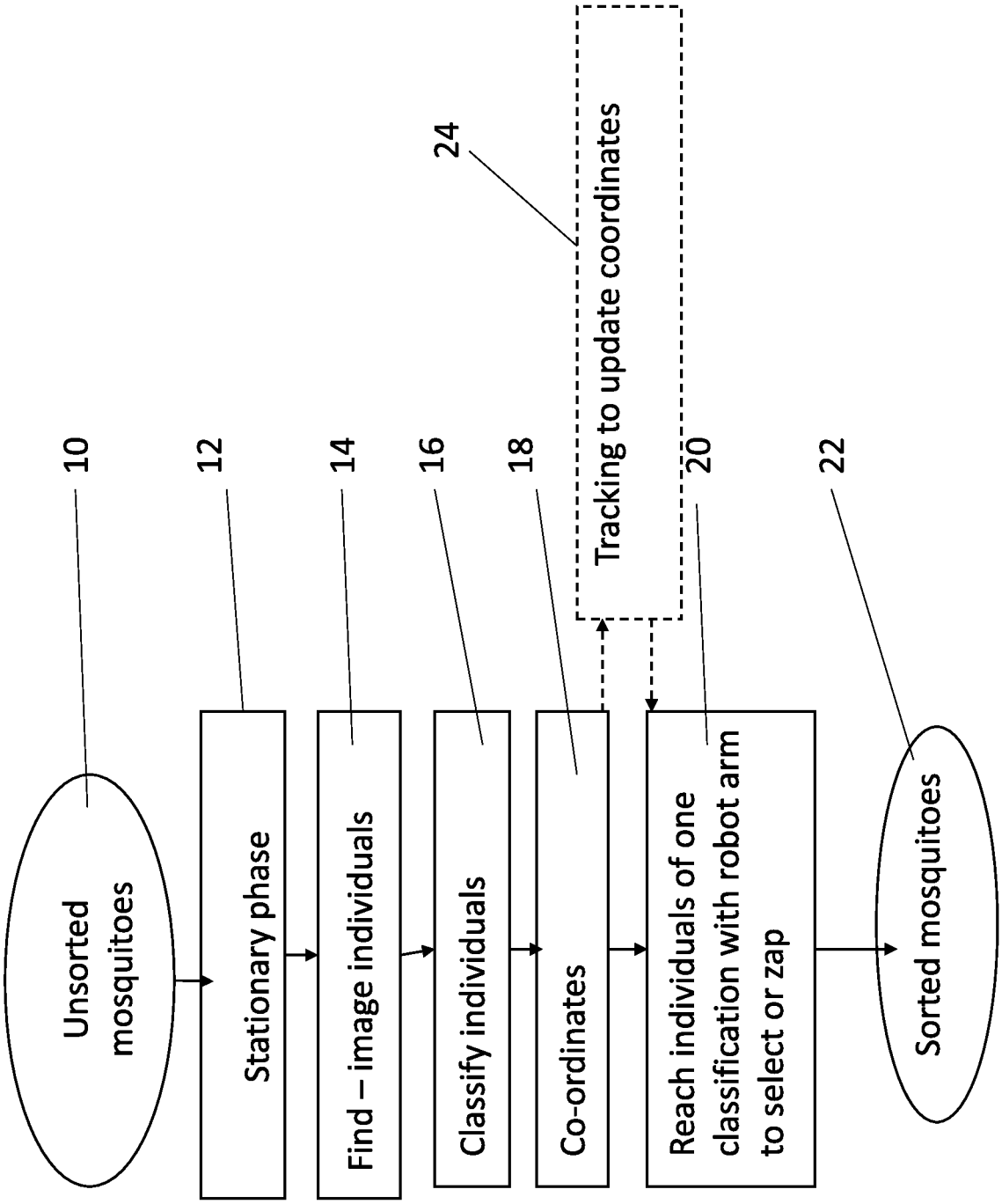

Unsorted mosquitoes
10
Stationary phase
12
Find – image individuals
14
Classify individuals
16
Co-ordinates
18
Reach individuals of one classification with robot arm to select or zap
20
Sorted mosquitoes
22
Tracking to update coordinates
24

Fig. 1

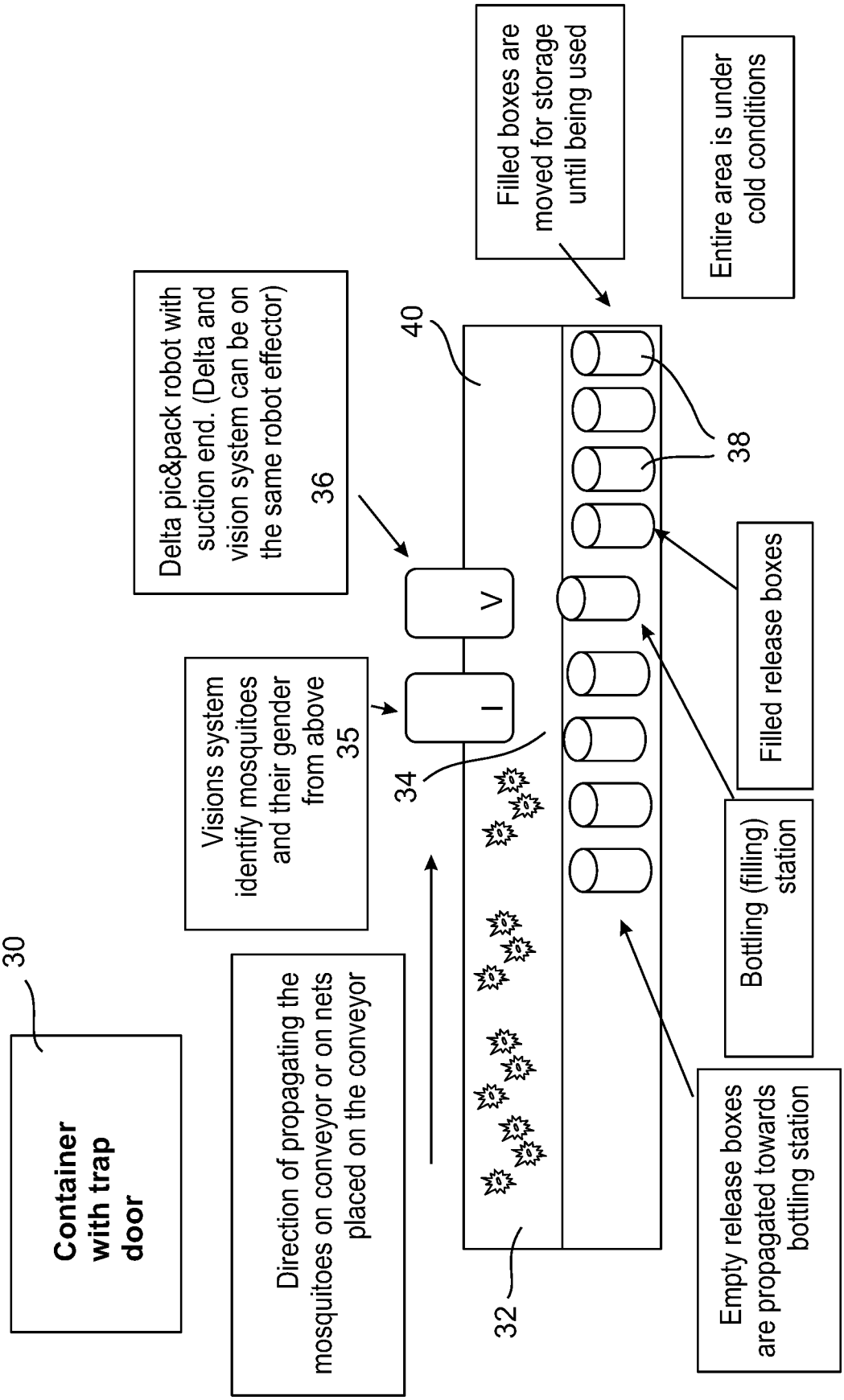

Container with trap door
30
Direction of propagating the mosquitoes on conveyor or on nets placed on the conveyor
Visions system identify mosquitoes and their gender from above
35
Delta pic&pack robot with suction end. (Delta and vision system can be on the same robot effector)
36
Filled boxes are moved for storage until being used
Entire area is under cold conditions
40
38
34
I
V
32
Filled release boxes
Bottling (filling) station
Empty release boxes are propagated towards bottling station

Fig. 2



Fig. 5

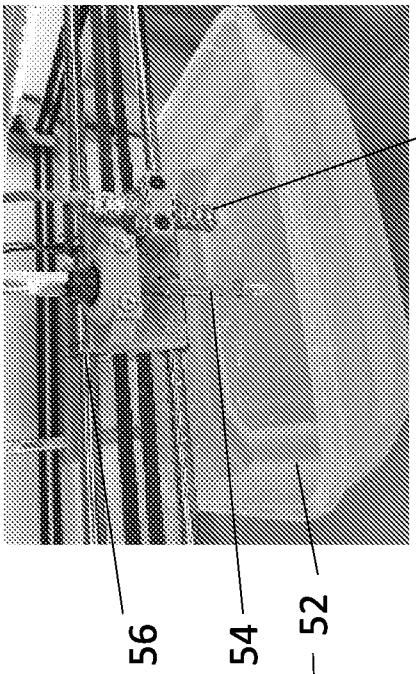


Fig. 4

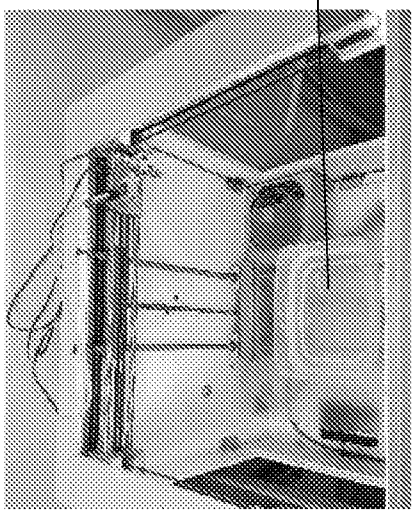


Fig. 3

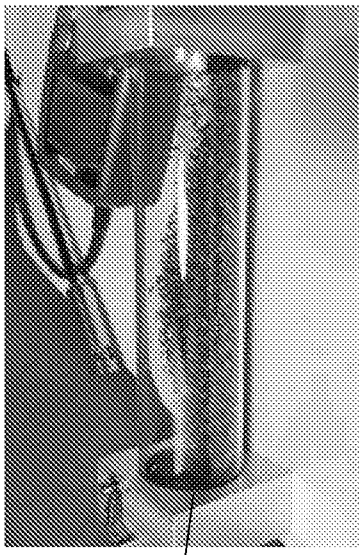


Fig. 7

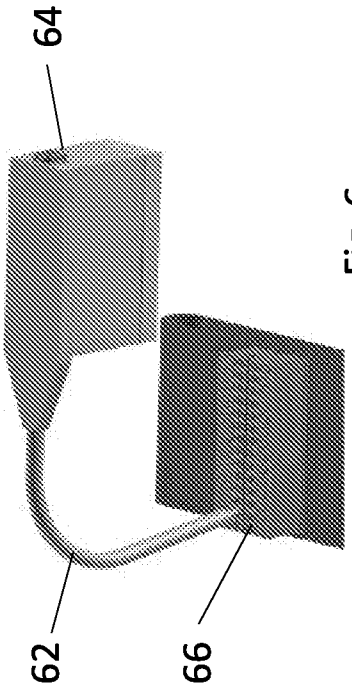


Fig. 6

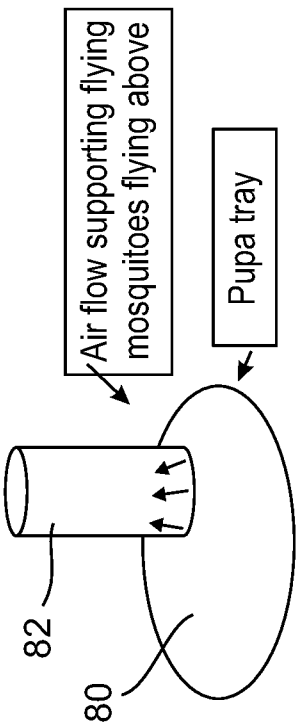

Air flow supporting flying mosquitoes flying above
Pupa tray
82
80

Fig. 8

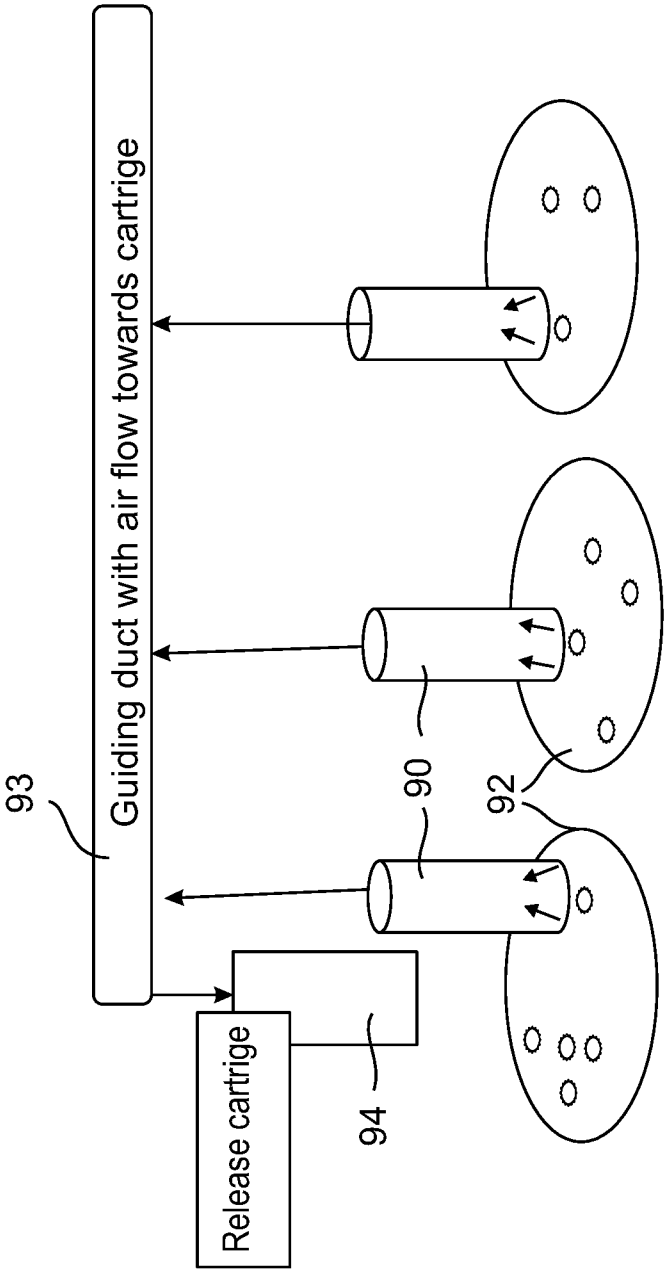

Guiding duct with air flow towards cartrige
93
90
92
Release cartrige
94

Fig. 9



Fig. 10

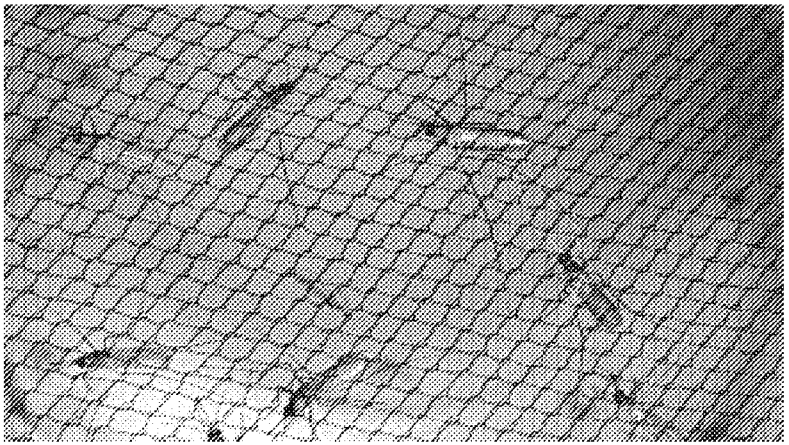


Fig. 11

Fig. 12

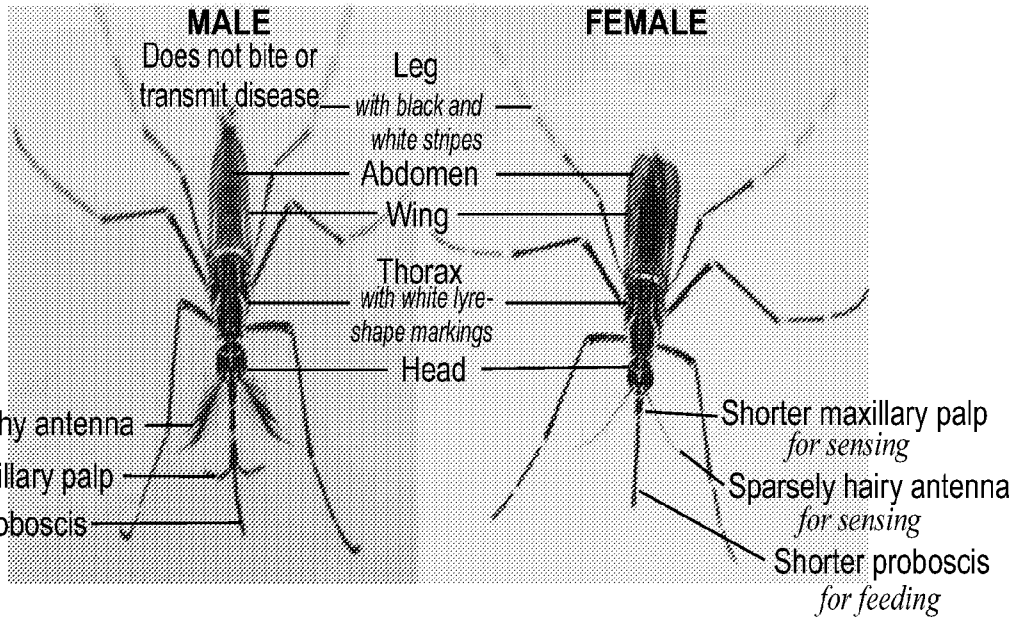




Fig. 13



Fig. 14

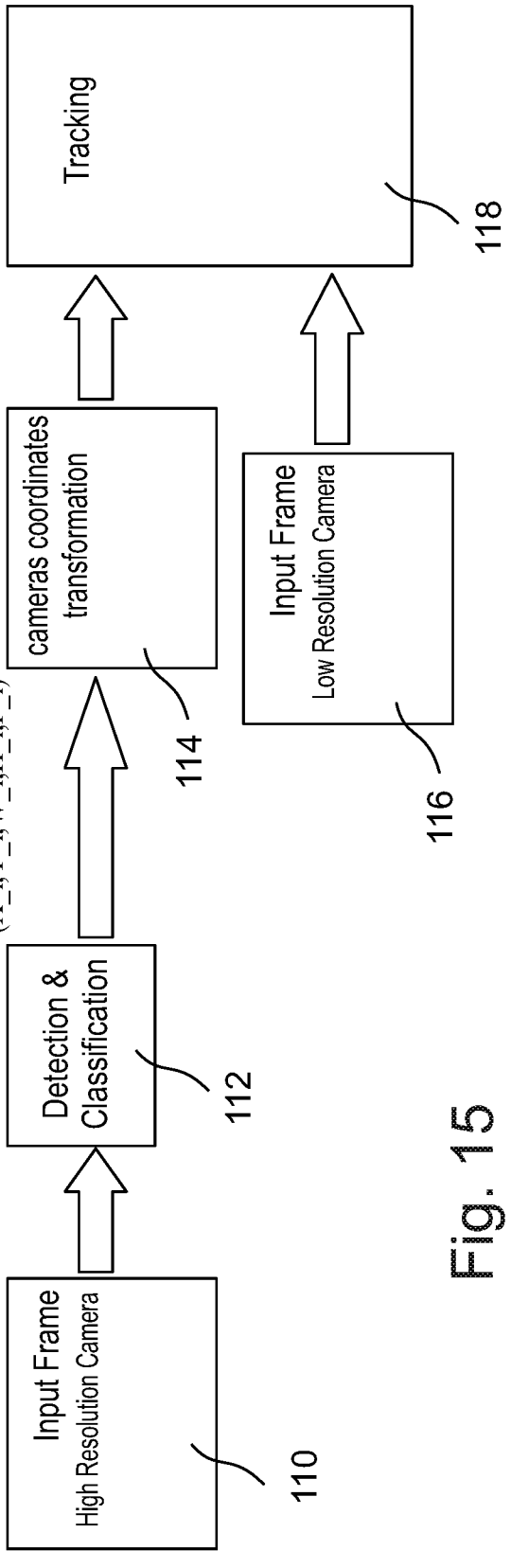


Fig. 15

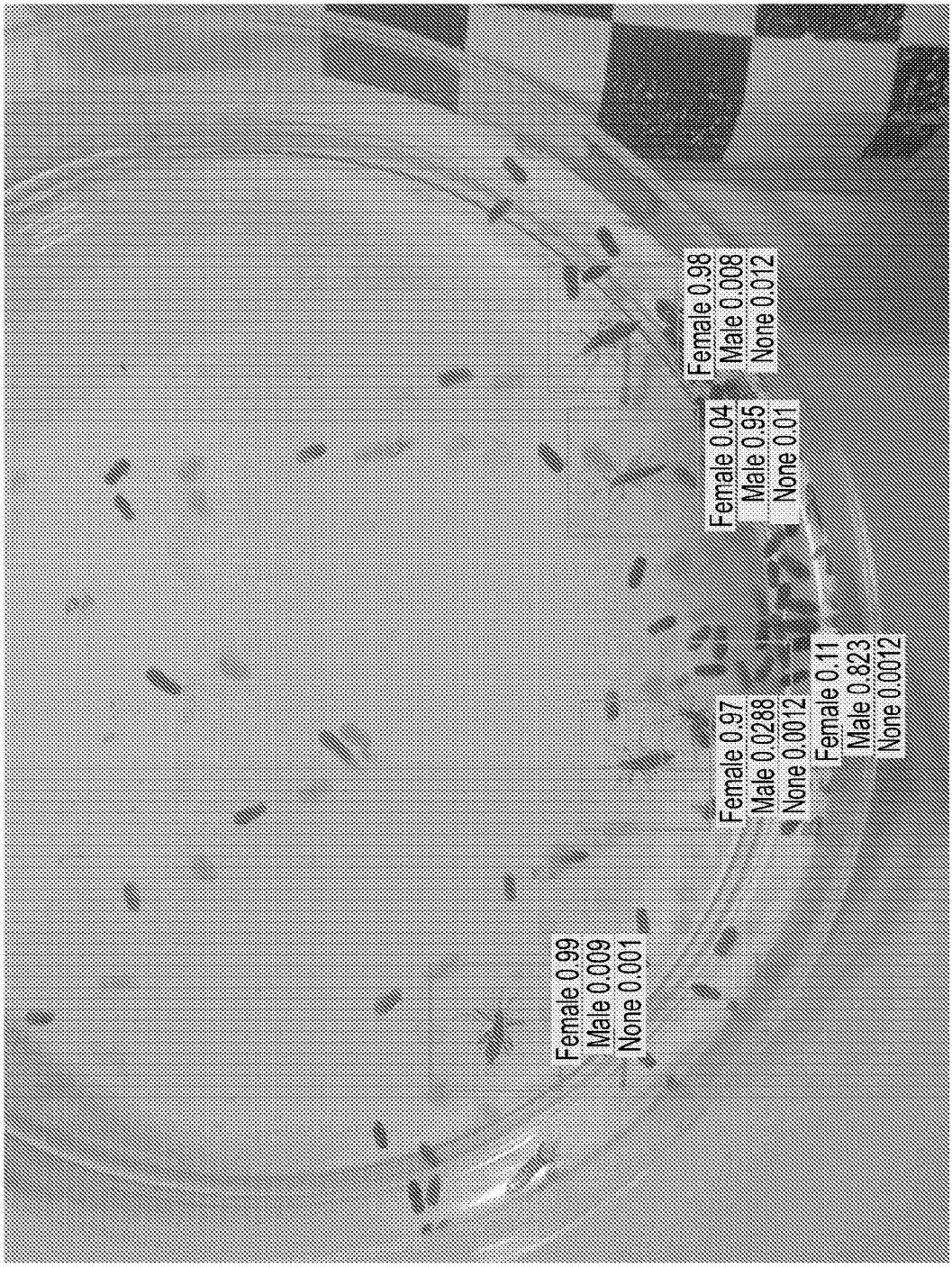

Female 0.99
Male 0.009
None 0.001
Female 0.97
Male 0.0288
None 0.0012
Female 0.11
Male 0.823
None 0.0012
Female 0.04
Male 0.95
None 0.01
Female 0.98
Male 0.008
None 0.012

Fig. 16



Fig. 17



Fig. 18



Fig. 19

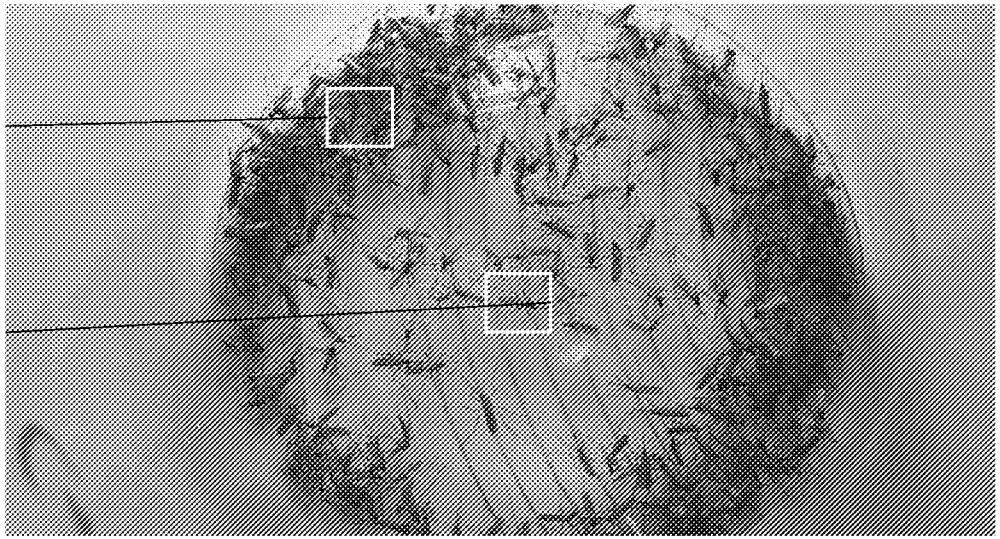


Fig. 20

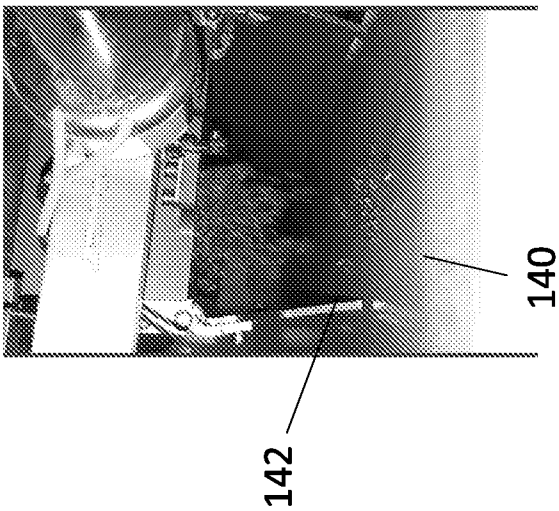


Fig. 23

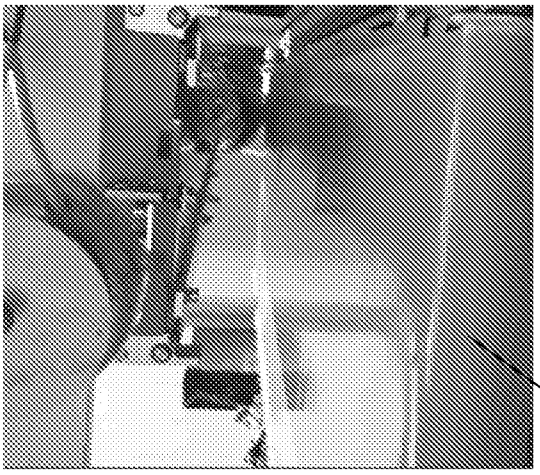


Fig. 22

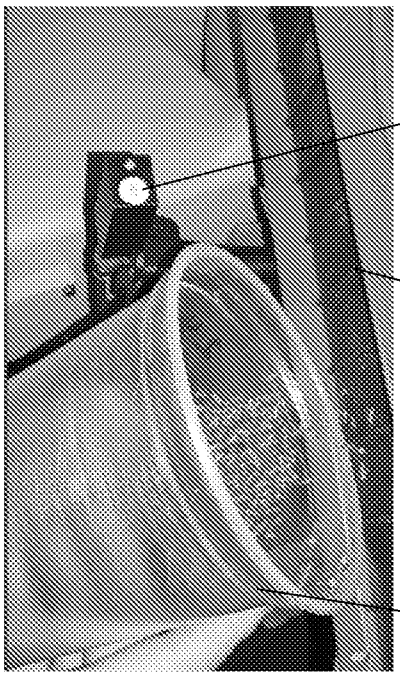
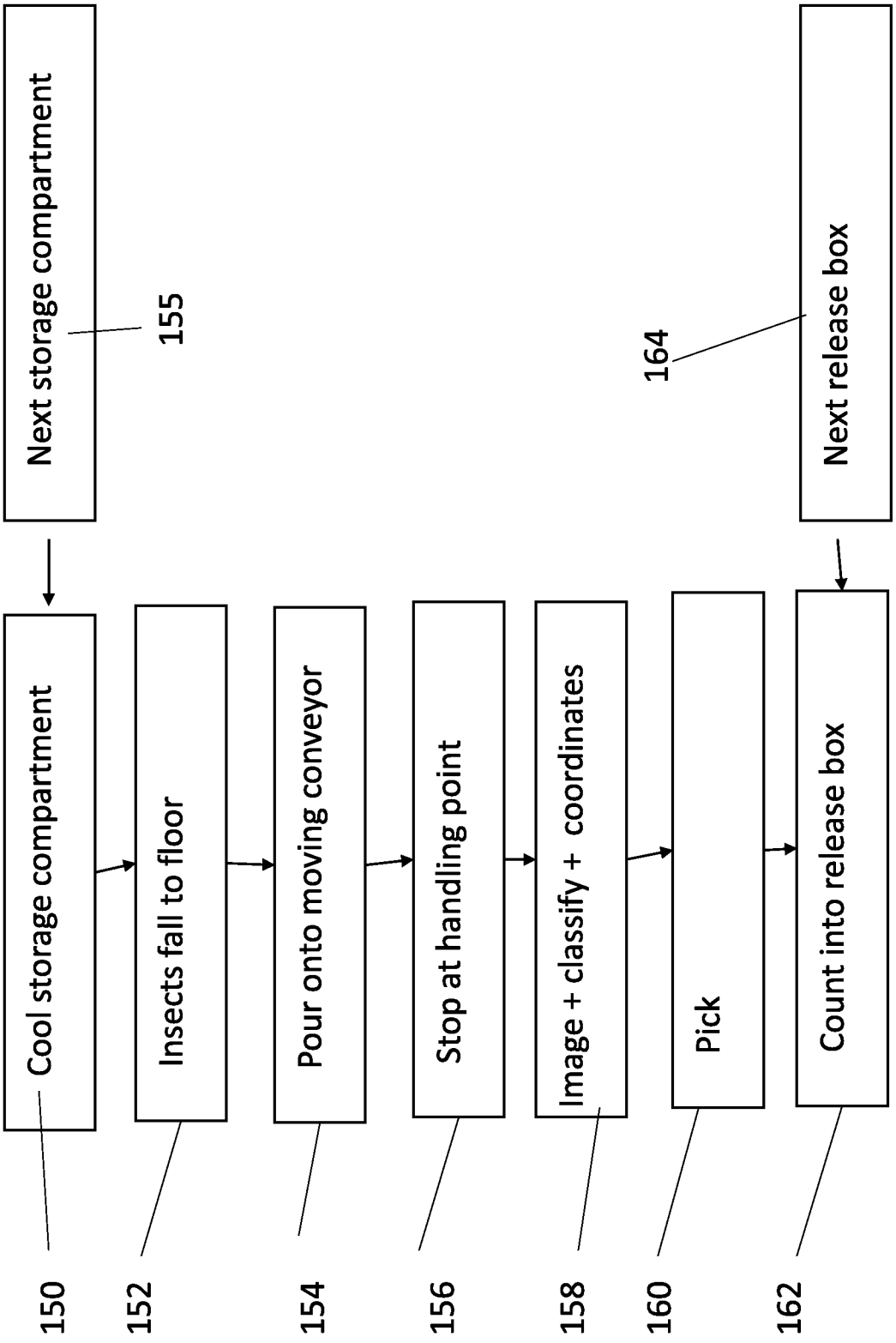
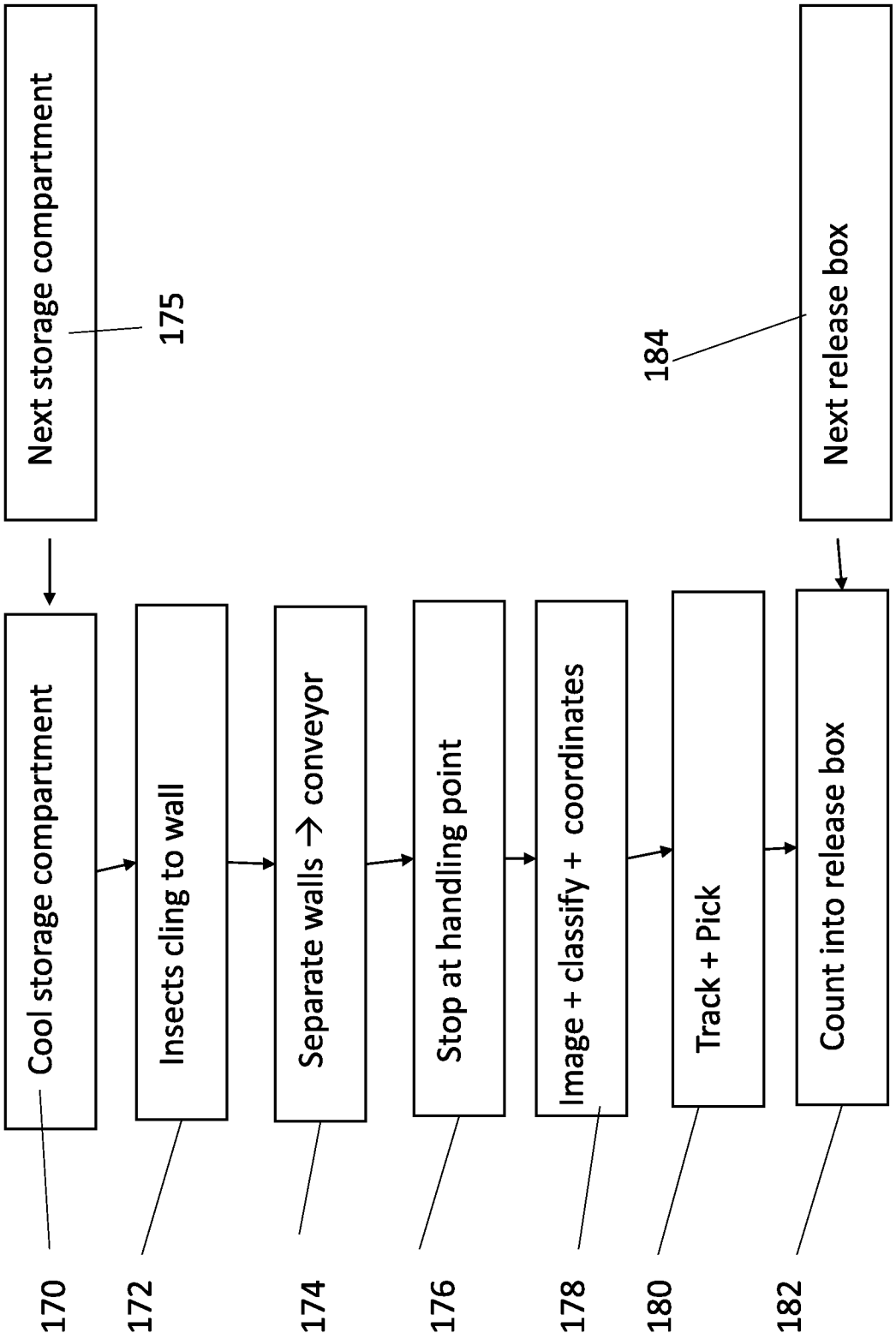


Fig. 21


Next storage compartment
155
Cool storage compartment
Insects fall to floor
Pour onto moving conveyor
Stop at handling point
Image + classify + coordinates
Pick
Count into release box
164
Next release box
150
152
154
156
158
160
162

Fig, 24


Next storage compartment
175
Cool storage compartment
Insects cling to wall
Separate walls → conveyor
Stop at handling point
Image + classify + coordinates
Track + Pick
Count into release box
184
Next release box
170
172
174
176
178
180
182

Fig, 25

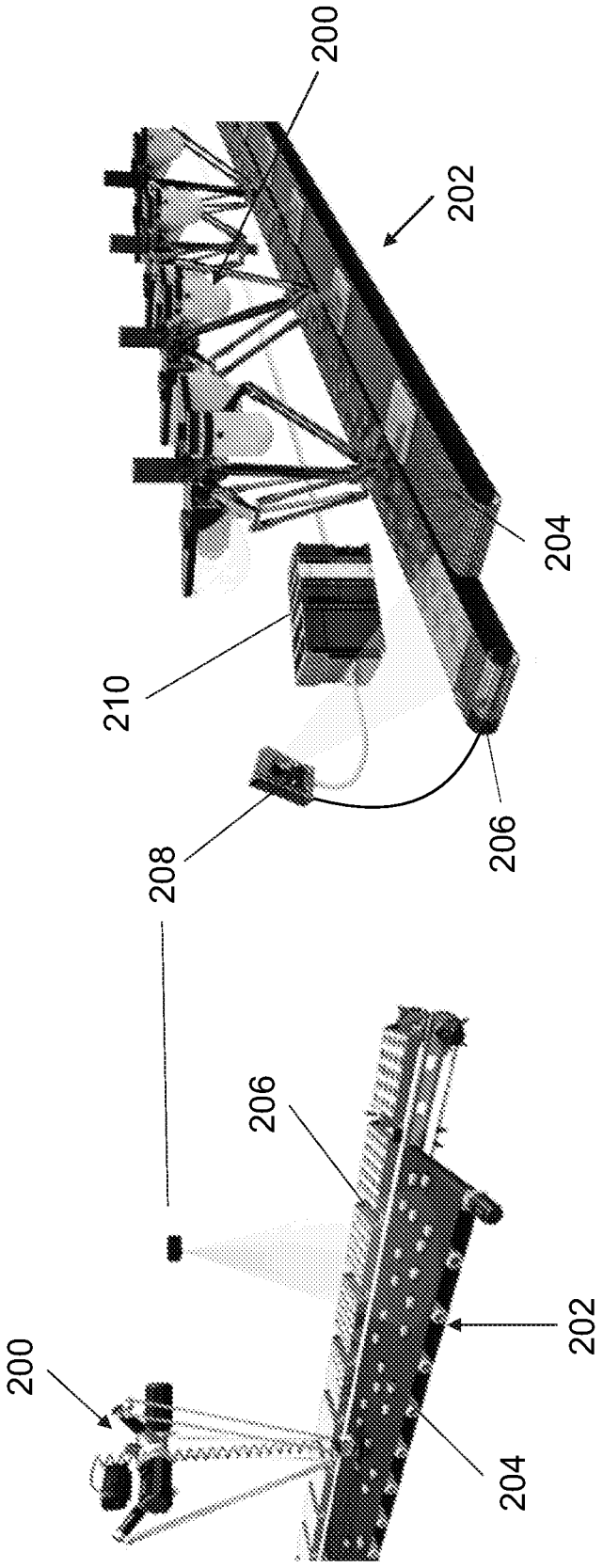


Fig. 27

Fig. 26

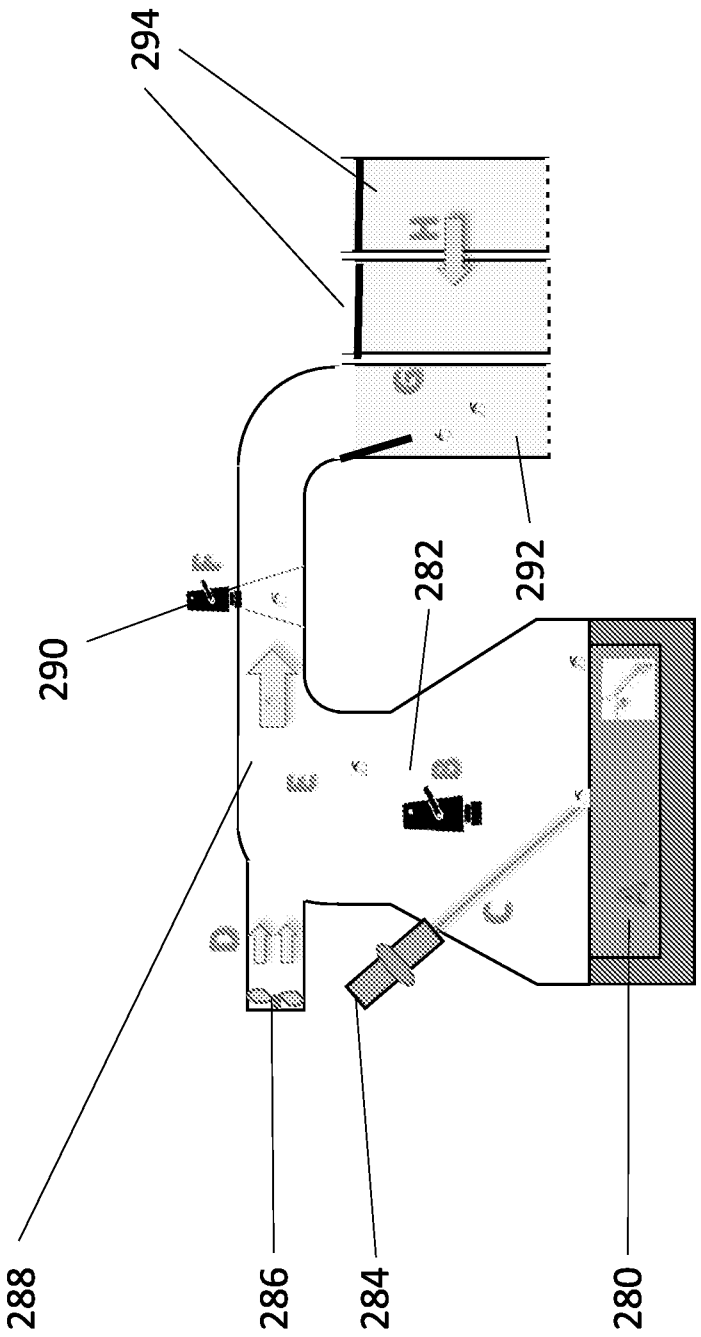


Fig. 28

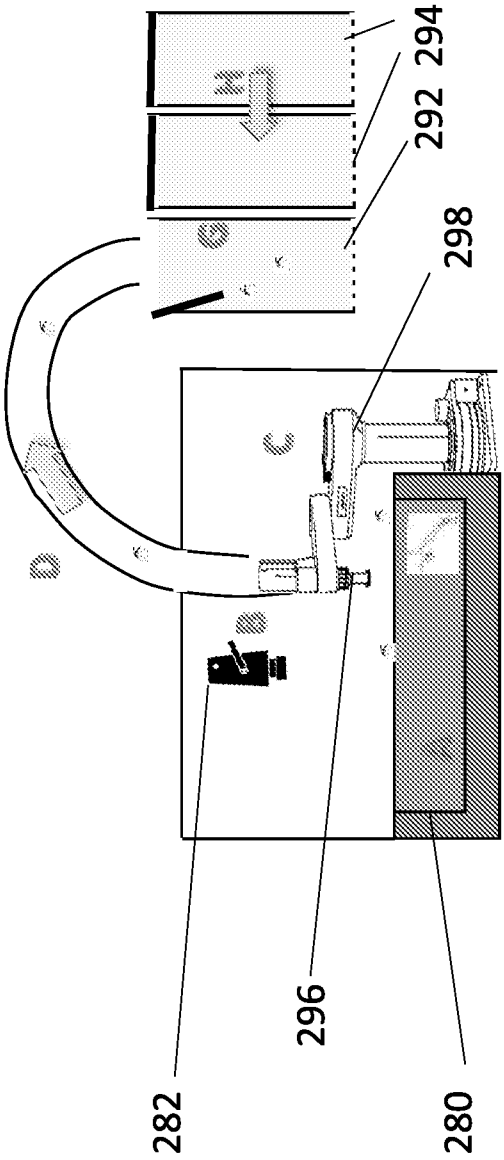


Fig. 29

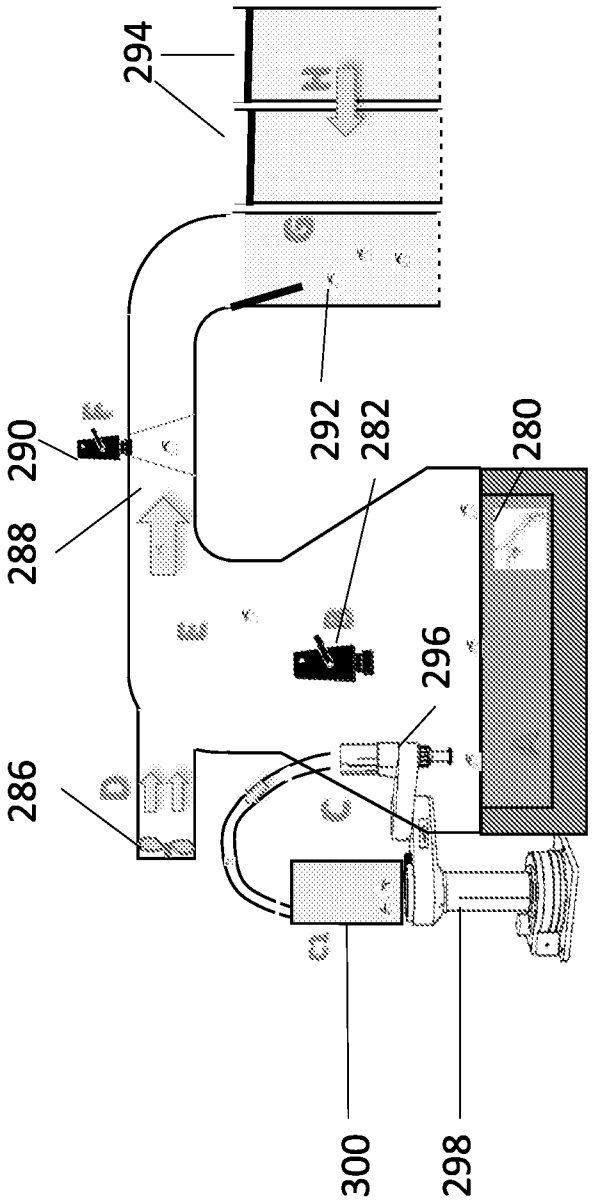


Fig. 30

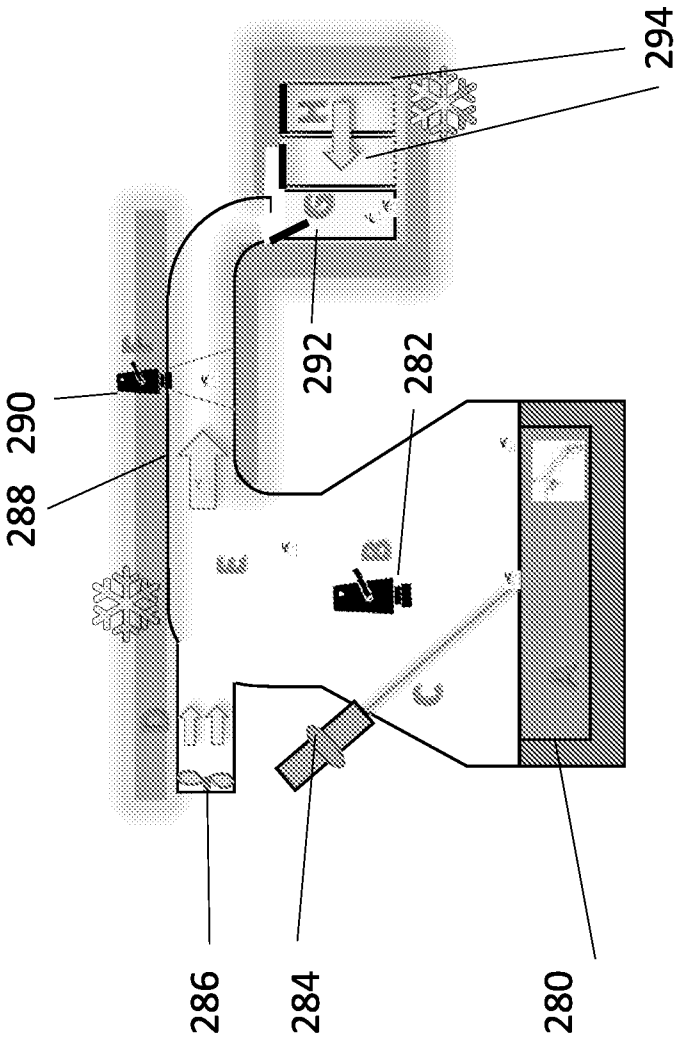


Fig. 31

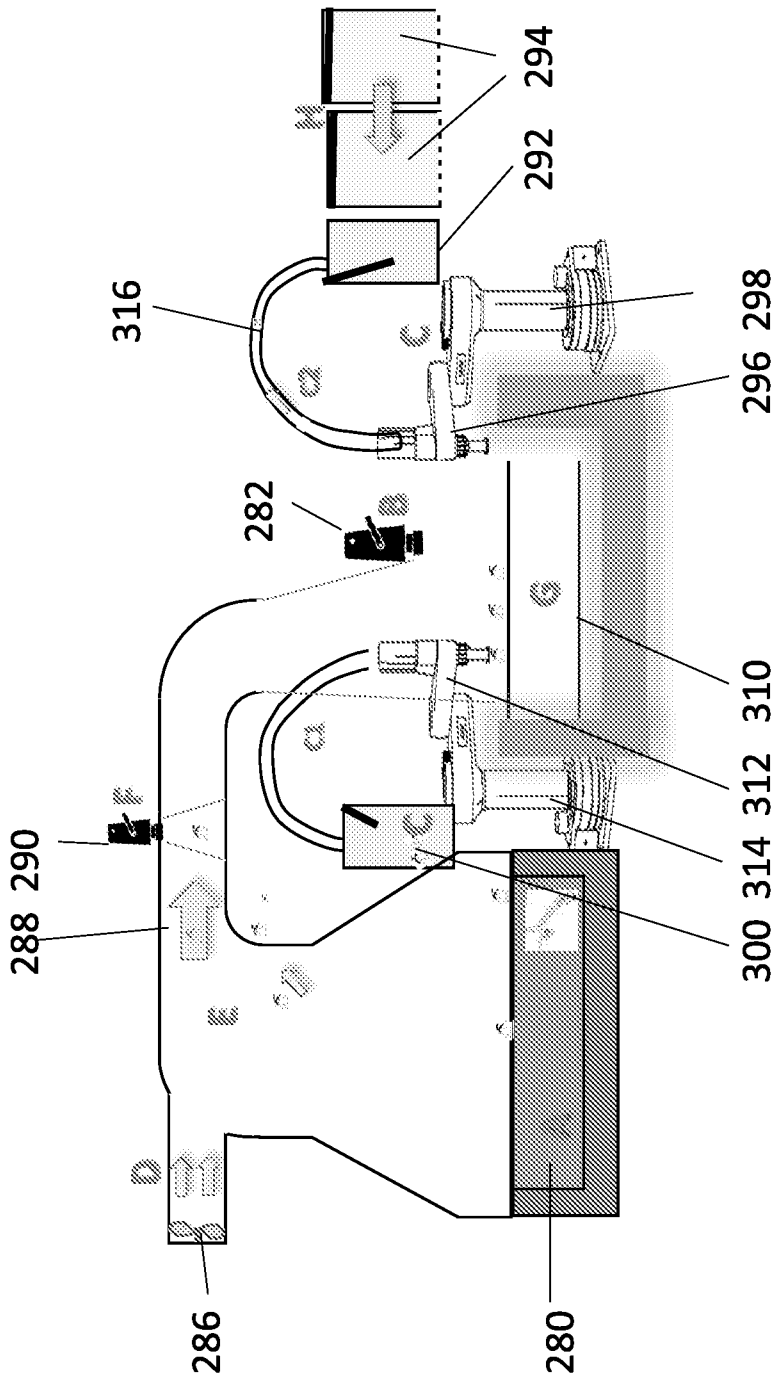
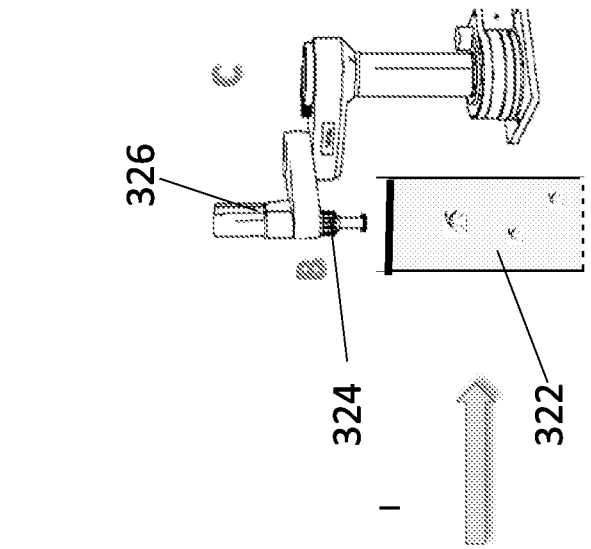


Fig. 32



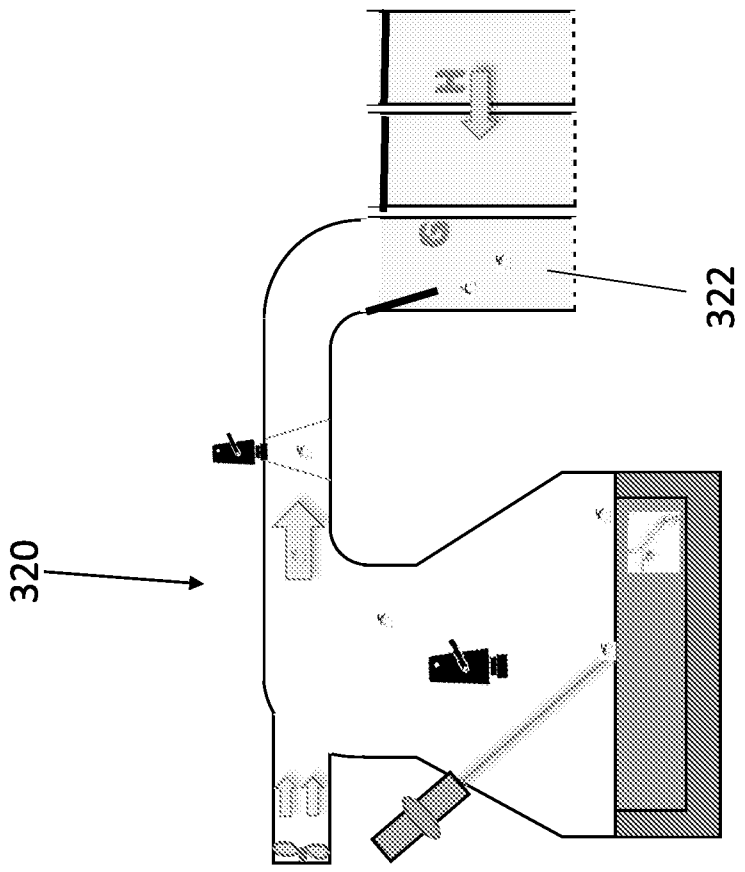


Fig. 33