Fig.1

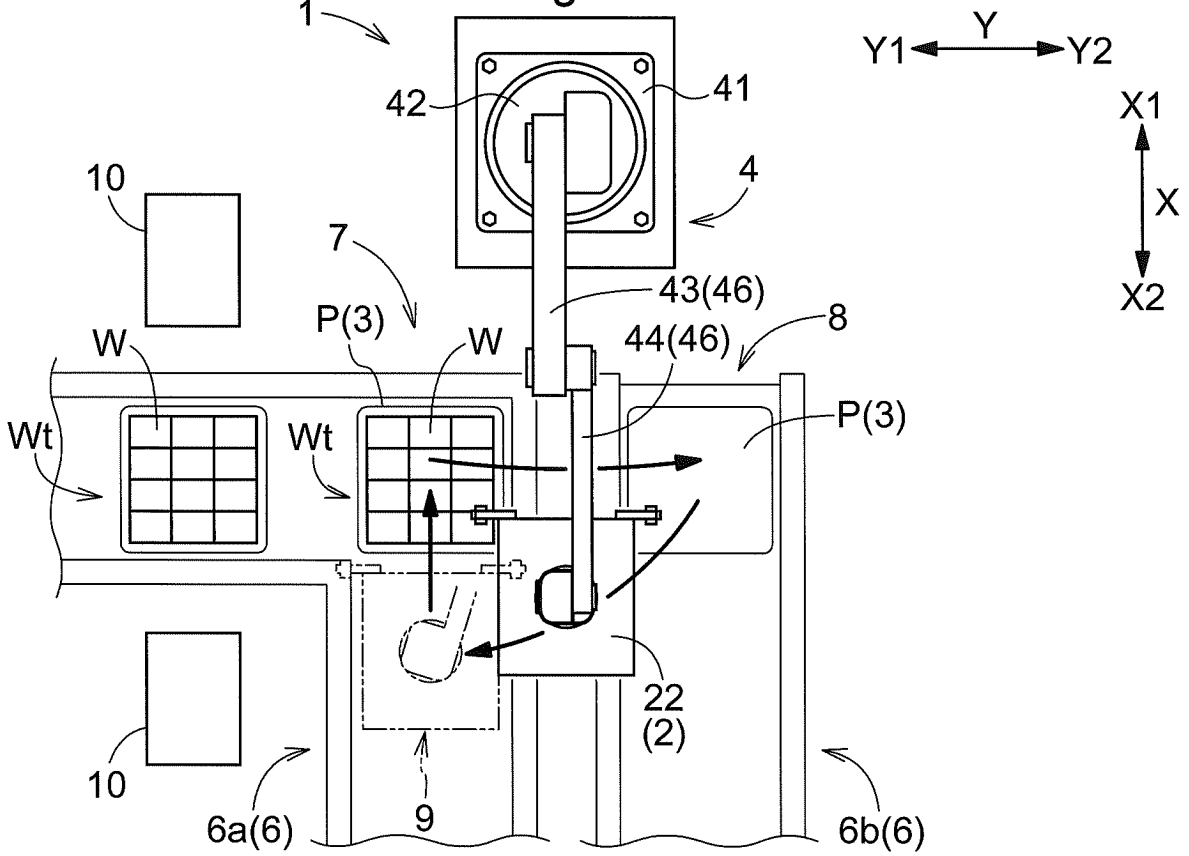

1
42
41
4
10
7
43(46)
P(3)
W
W
44(46)
8
Wt
Wt
P(3)
22
(2)
10
6a(6)
9
6b(6)
Y
Y1
Y2
X1
X
X2

Fig.2

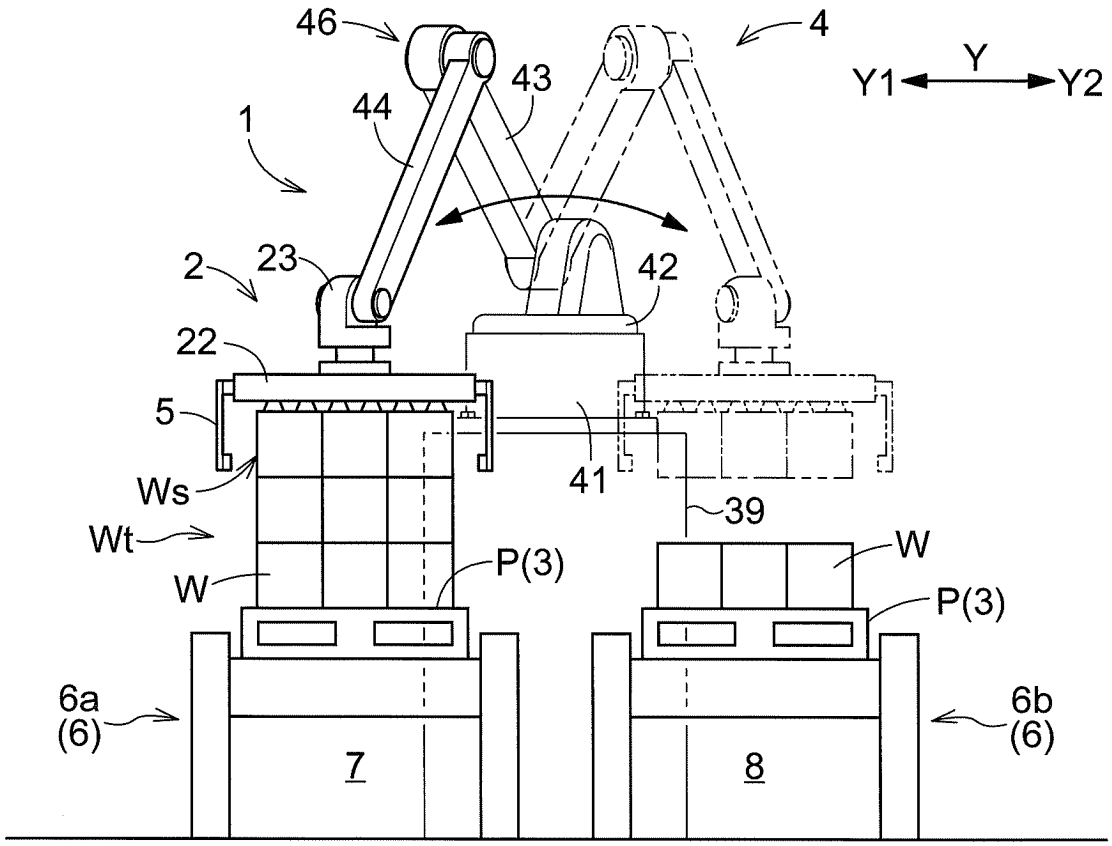

46
4
43
44
1
Y
Y1
Y2
2
23
42
22
5
41
39
Ws
Wt
W
P(3)
W
P(3)
6a
(6)
6b
(6)
7
8

Fig.3

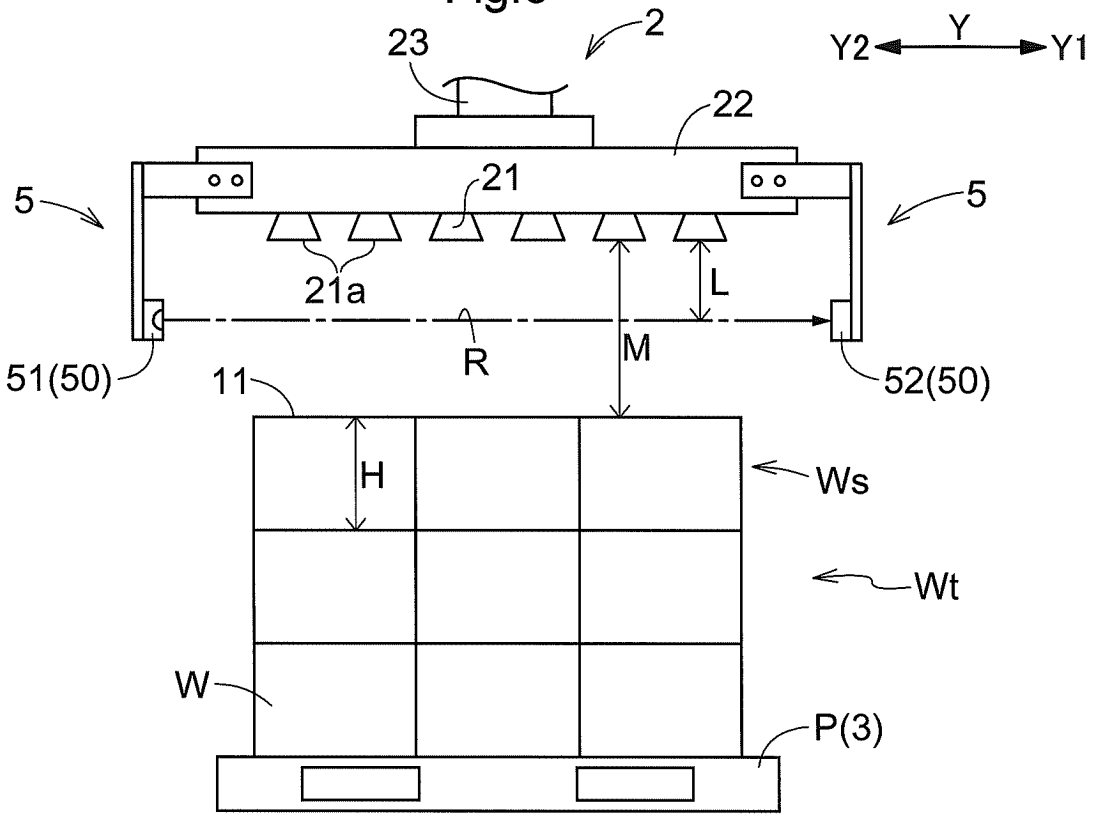

23
2
Y2
Y
Y1
22
21
5
5
21a
L
R
M
51(50)
52(50)
11
H
Ws
Wt
W
P(3)

Fig.4

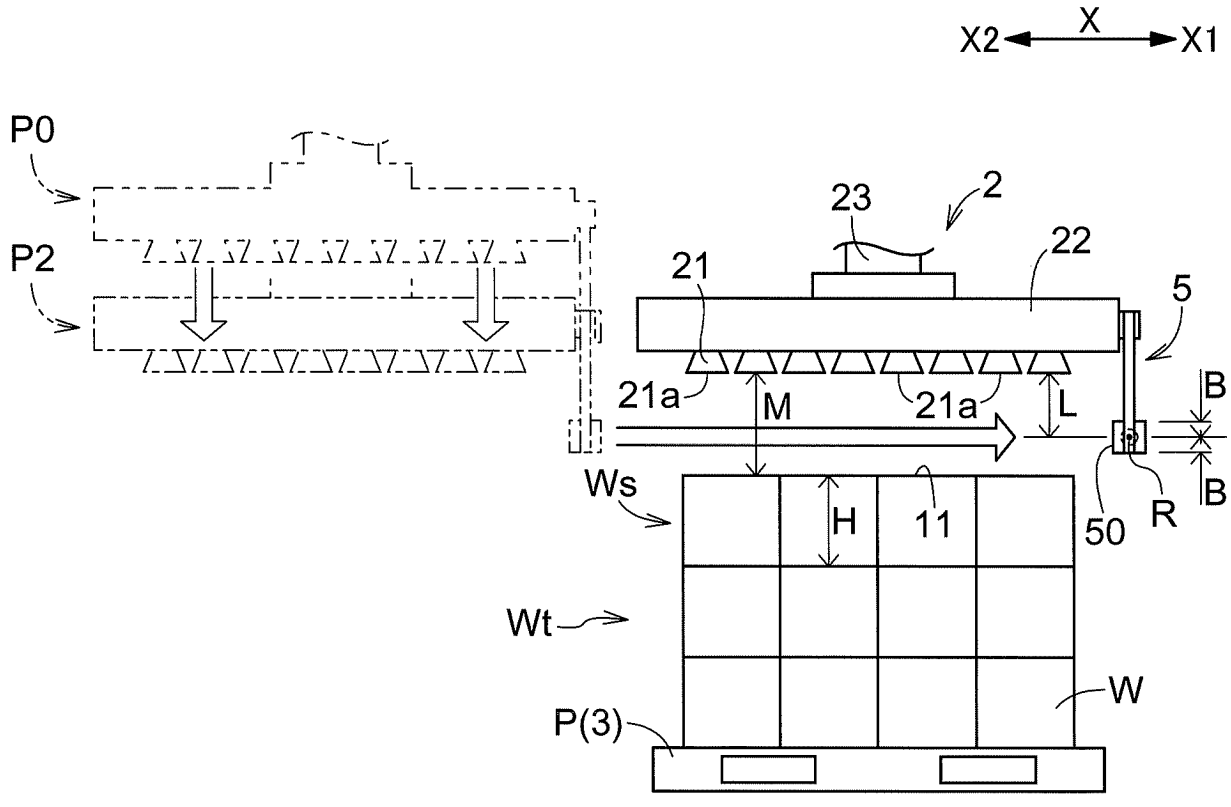

X2
X
X1
P0
P2
23
2
21
22
5
21a
M
21a
L
B
B
Ws
H
11
50
R
Wt
W
P(3)

Fig.5

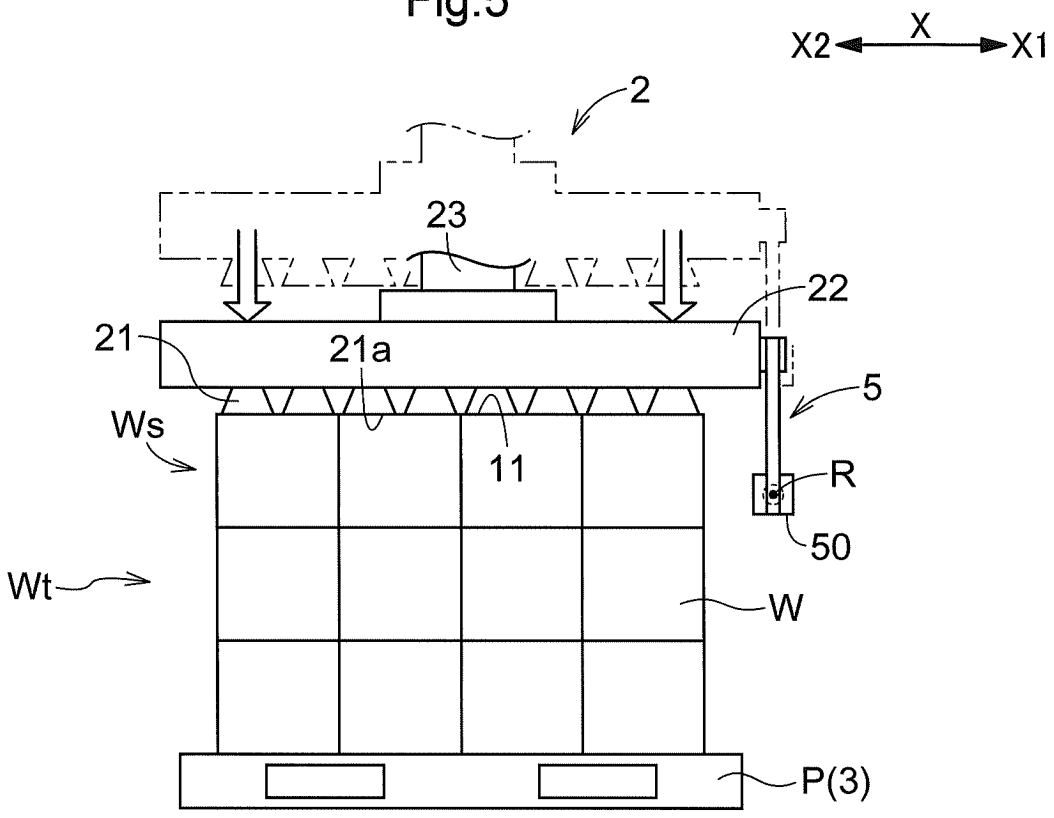

X
X2
X1
2
23
22
21
21a
5
Ws
11
R
50
Wt
W
P(3)

Fig.6

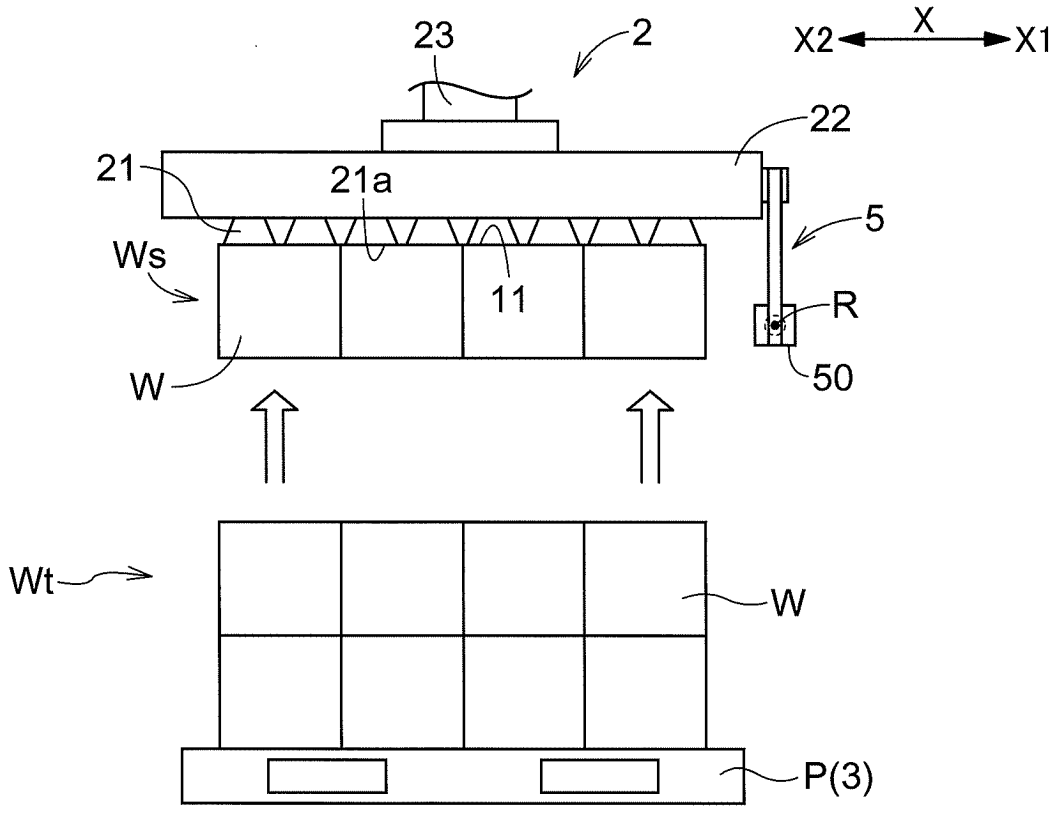

X
X2
X1
23
2
22
21
21a
5
Ws
11
R
50
W
Wt
W
P(3)

Fig.7

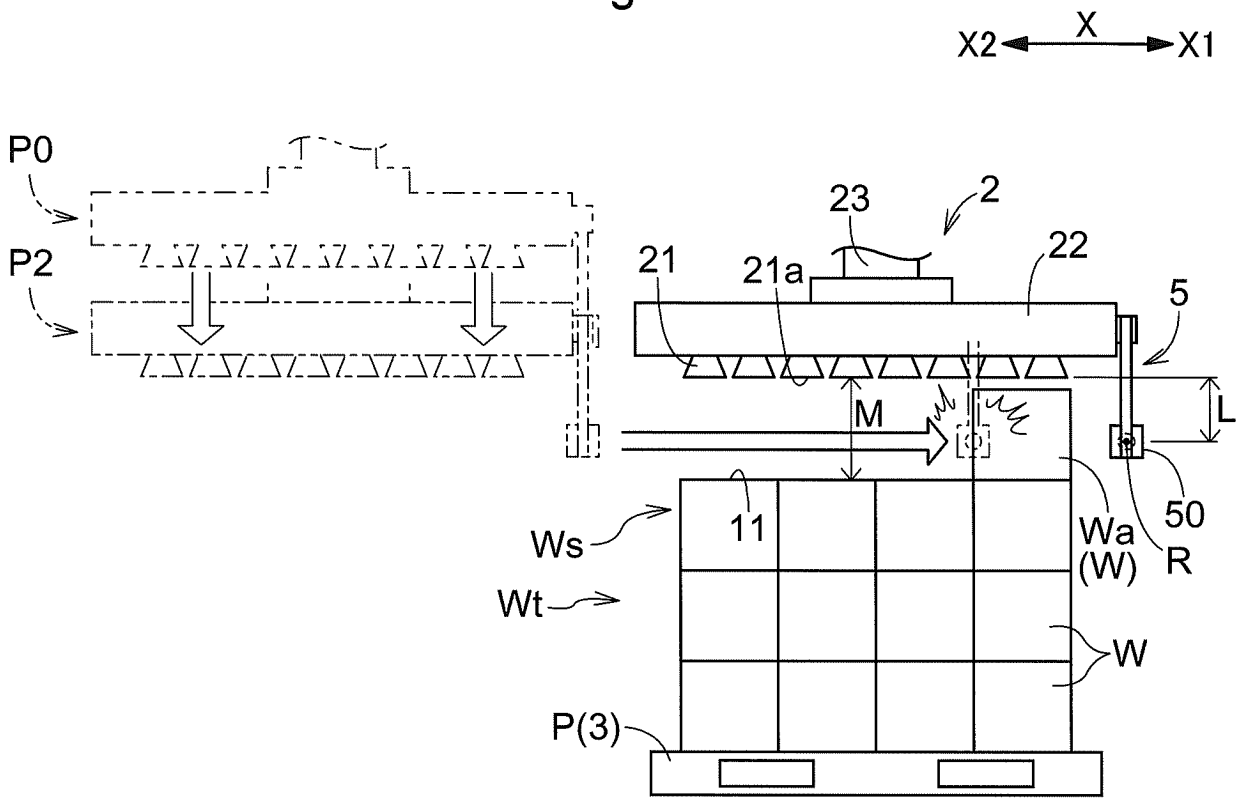

X
X2
X1
P0
P2
23
2
21
21a
22
5
M
L
11
Ws
Wt
Wa
(W)
50
R
W
P(3)

Fig.8

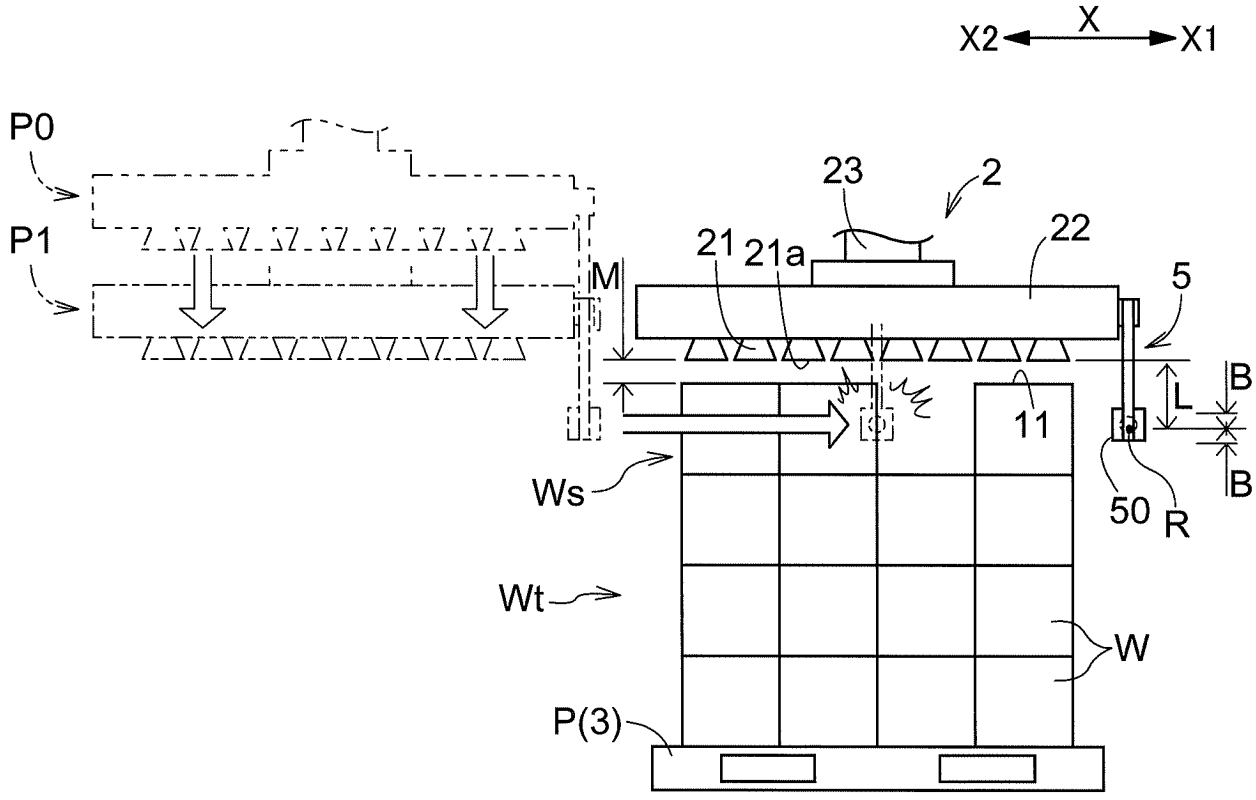

X
X2
X1
P0
P1
23
2
21
21a
22
5
M
L
B
B
11
Ws
Wt
50
R
W
P(3)

Fig.9

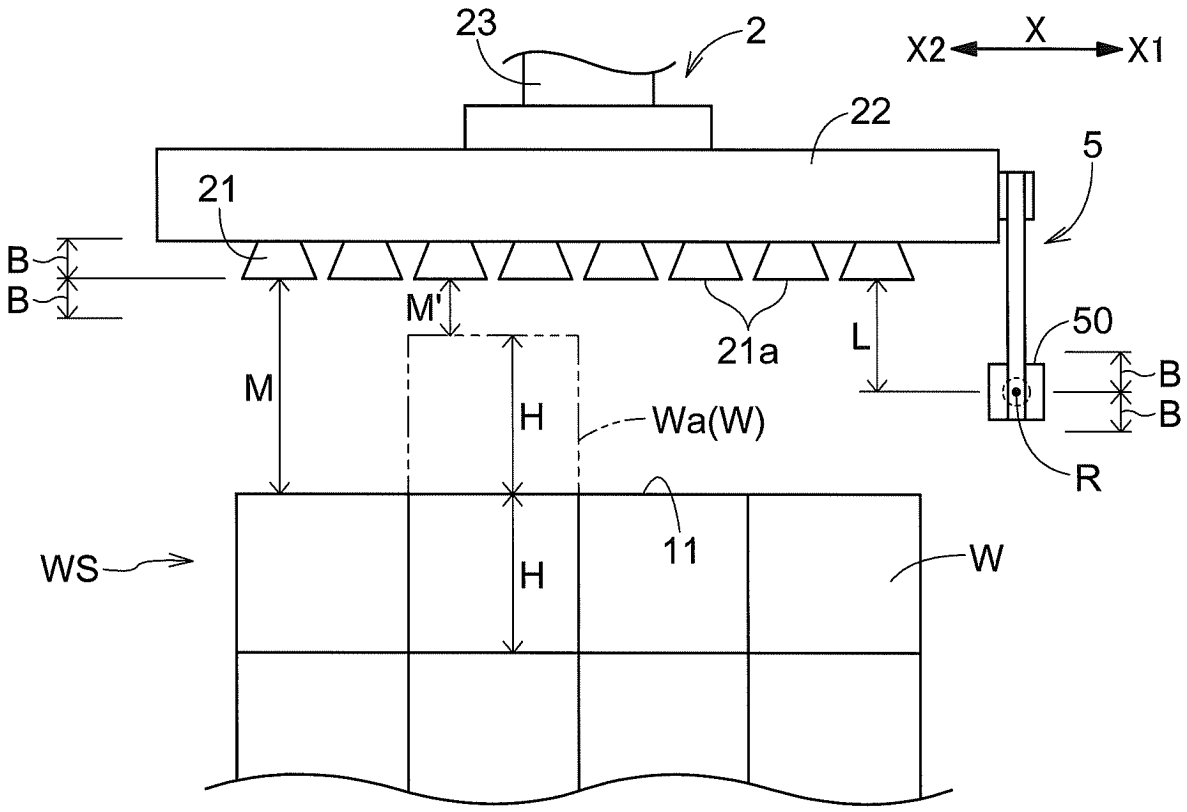

23
2
X2
X
X1
22
5
21
B
B
M'
21a
L
50
M
H
Wa(W)
B
B
R
11
WS
H
W

Fig.10

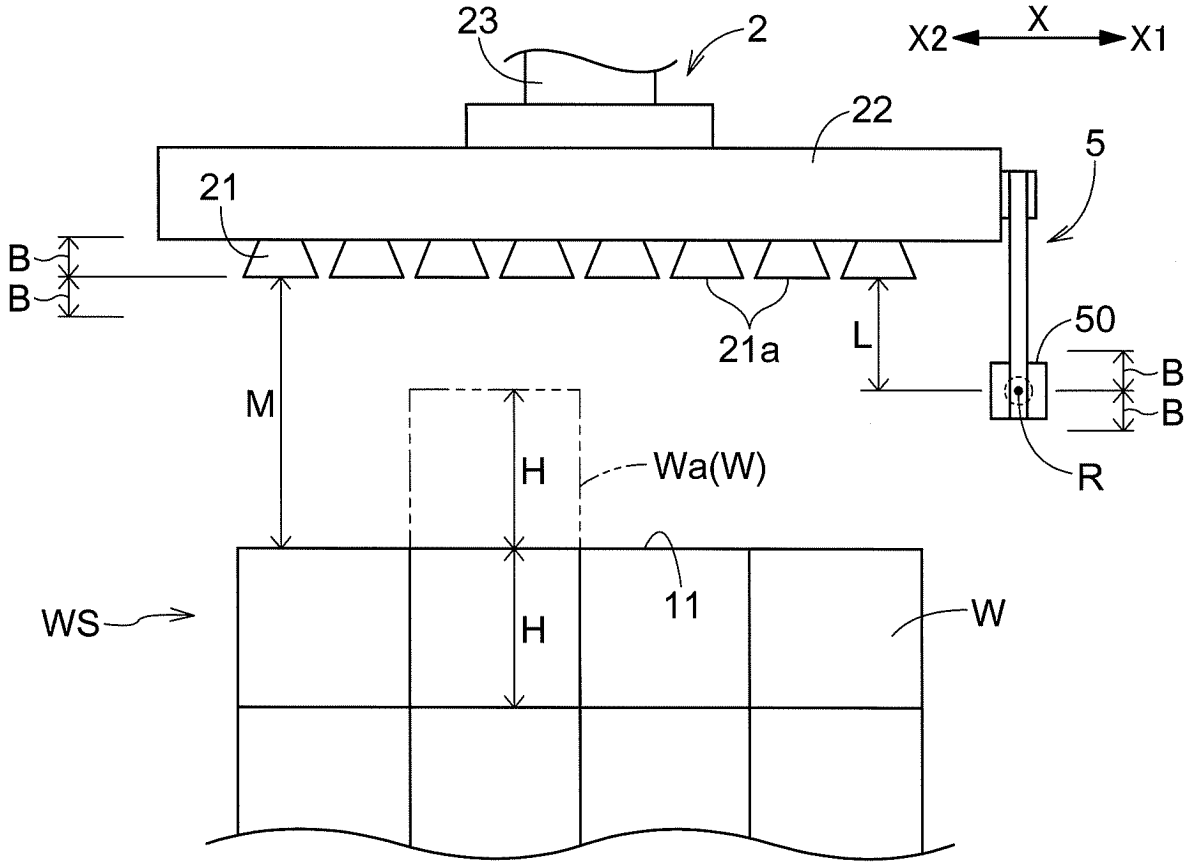

23
2
X2
X
X1
22
5
21
B
B
21a
L
50
M
H
Wa(W)
B
B
R
11
WS
H
W

Fig.11

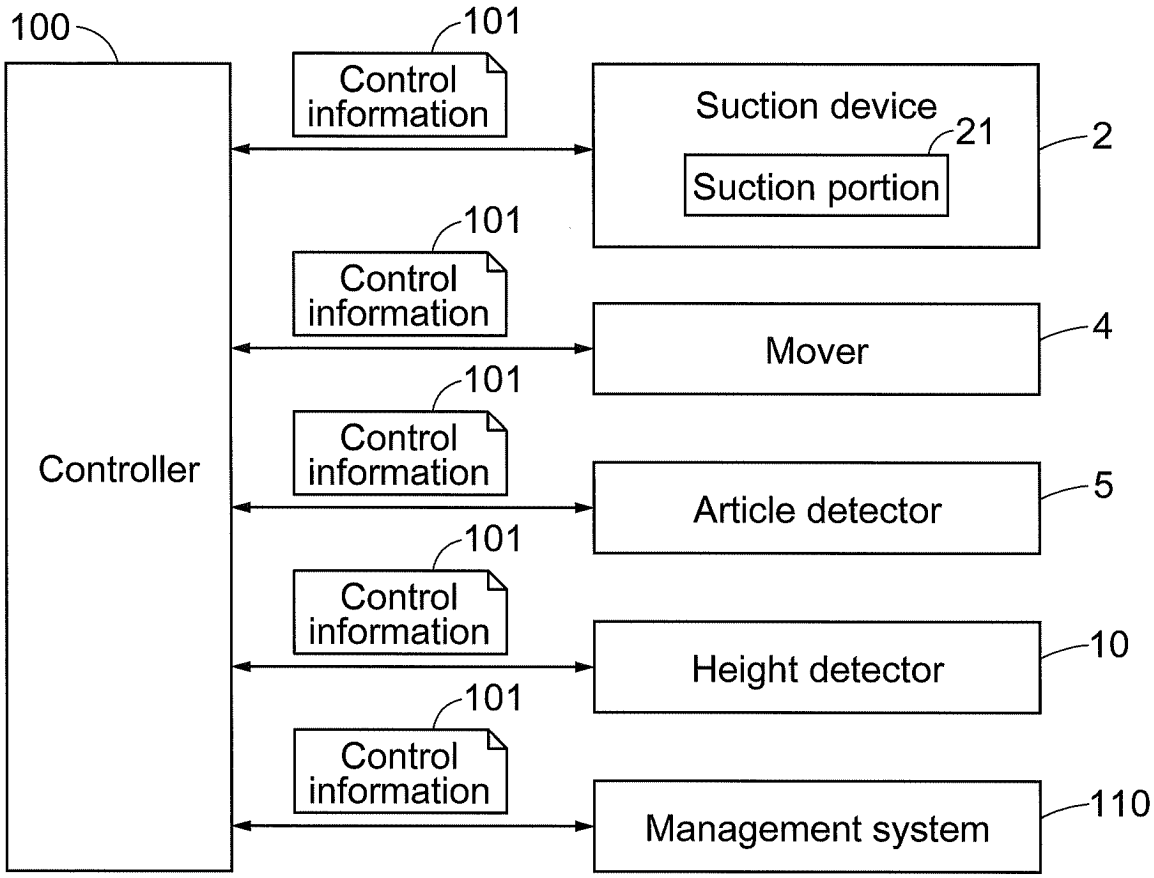

100
Controller
101
Control information
Suction device
21
Suction portion
2
Mover
4
Article detector
5
Height detector
10
Management system
110

Fig.12

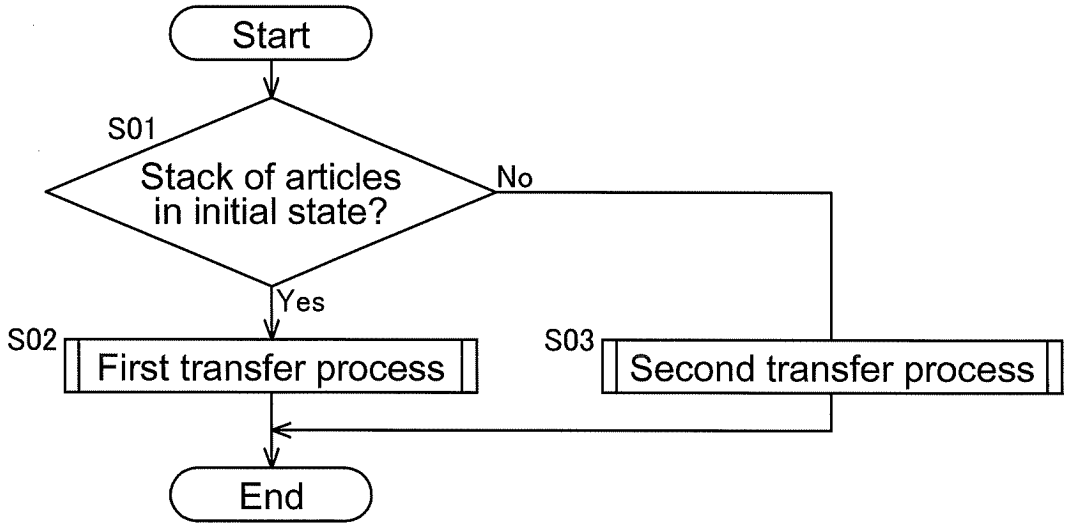

Start
S01
Stack of articles in initial state?
No
Yes
S02
First transfer process
S03
Second transfer process
End

Fig.13

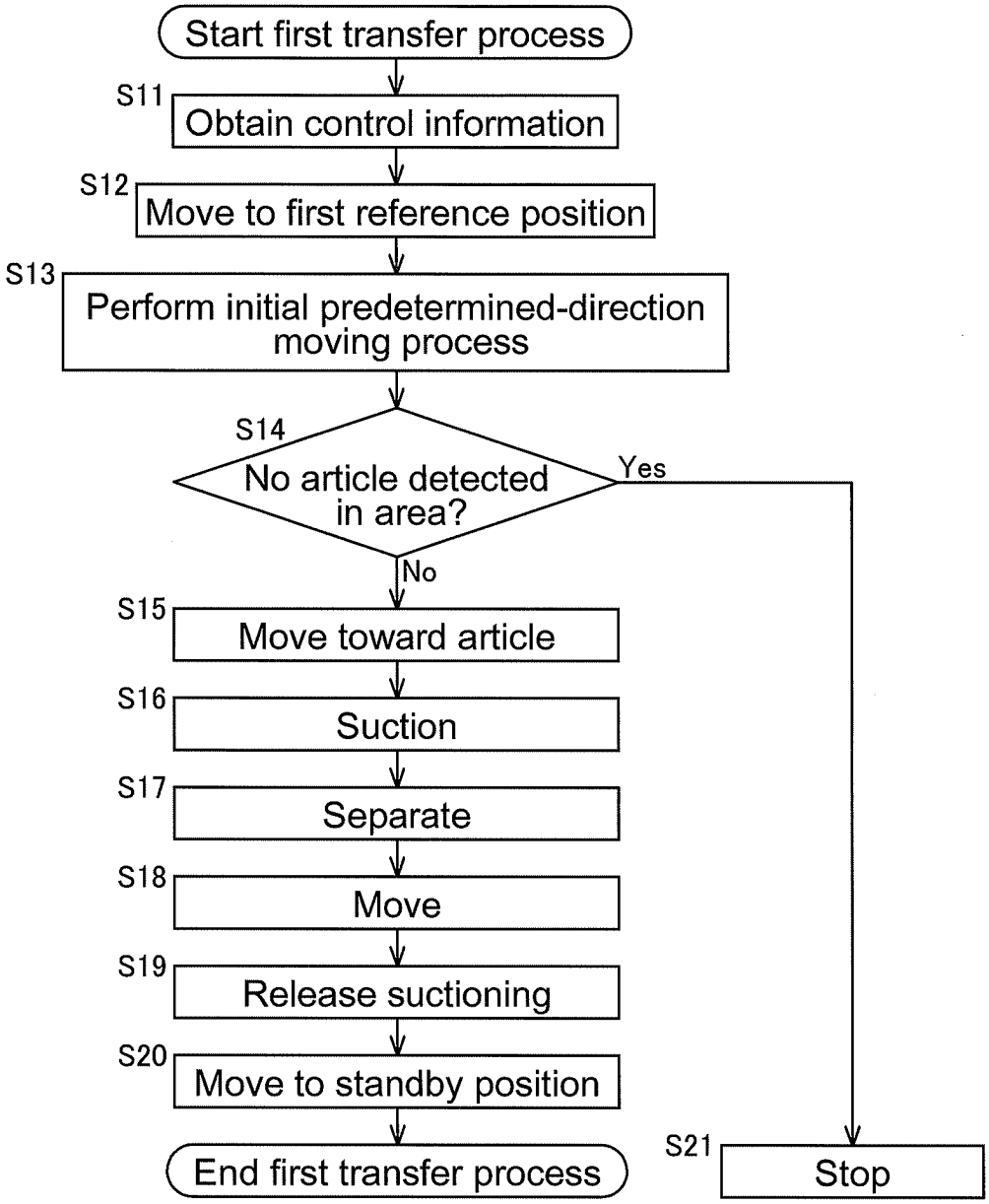

Start first transfer process
S11
Obtain control information
S12
Move to first reference position
S13
Perform initial predetermined-direction moving process
S14
No article detected in area?
Yes
No
S15
Move toward article
S16
Suction
S17
Separate
S18
Move
S19
Release suctioning
S20
Move to standby position
End first transfer process
S21
Stop

Fig.14

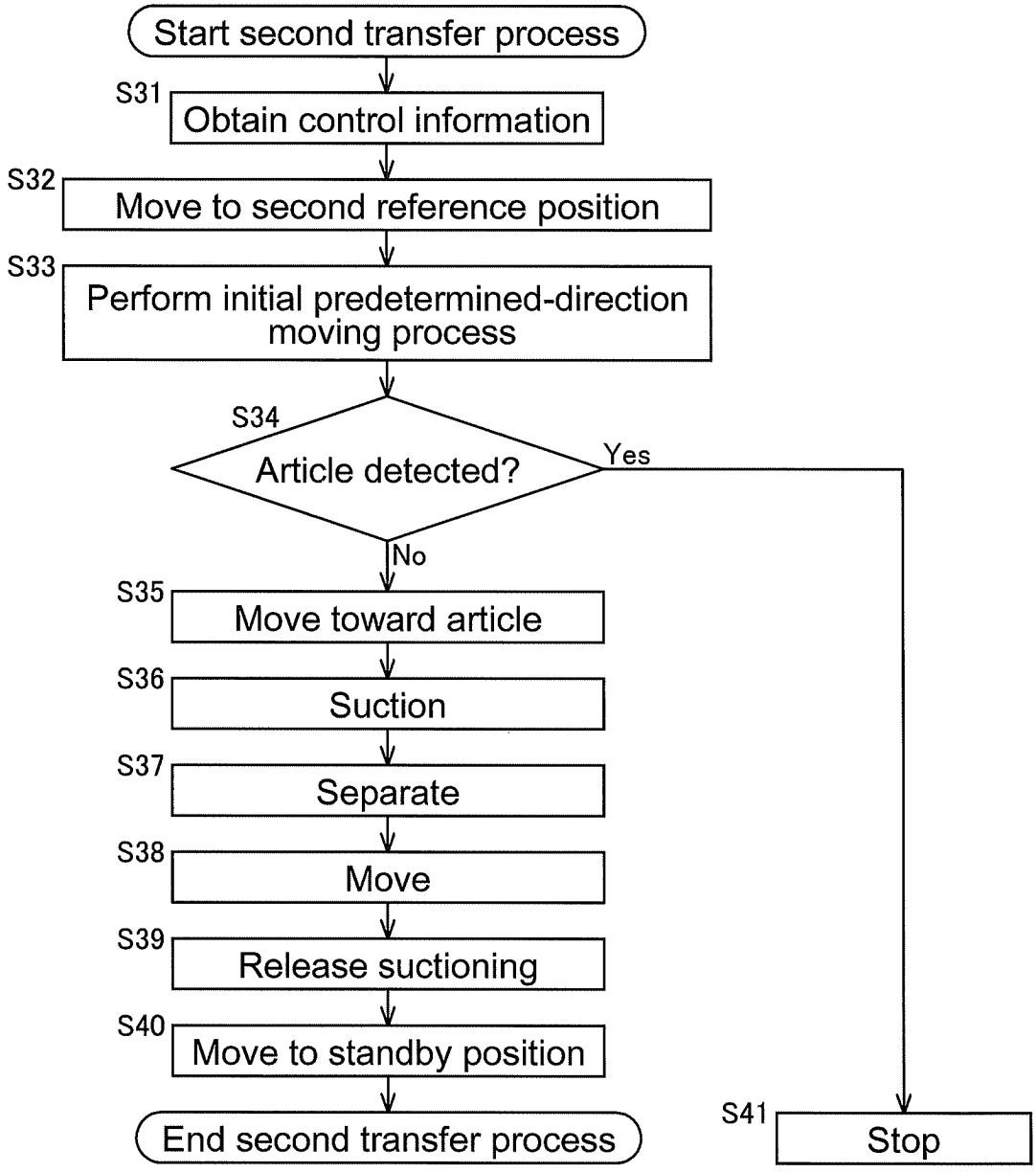
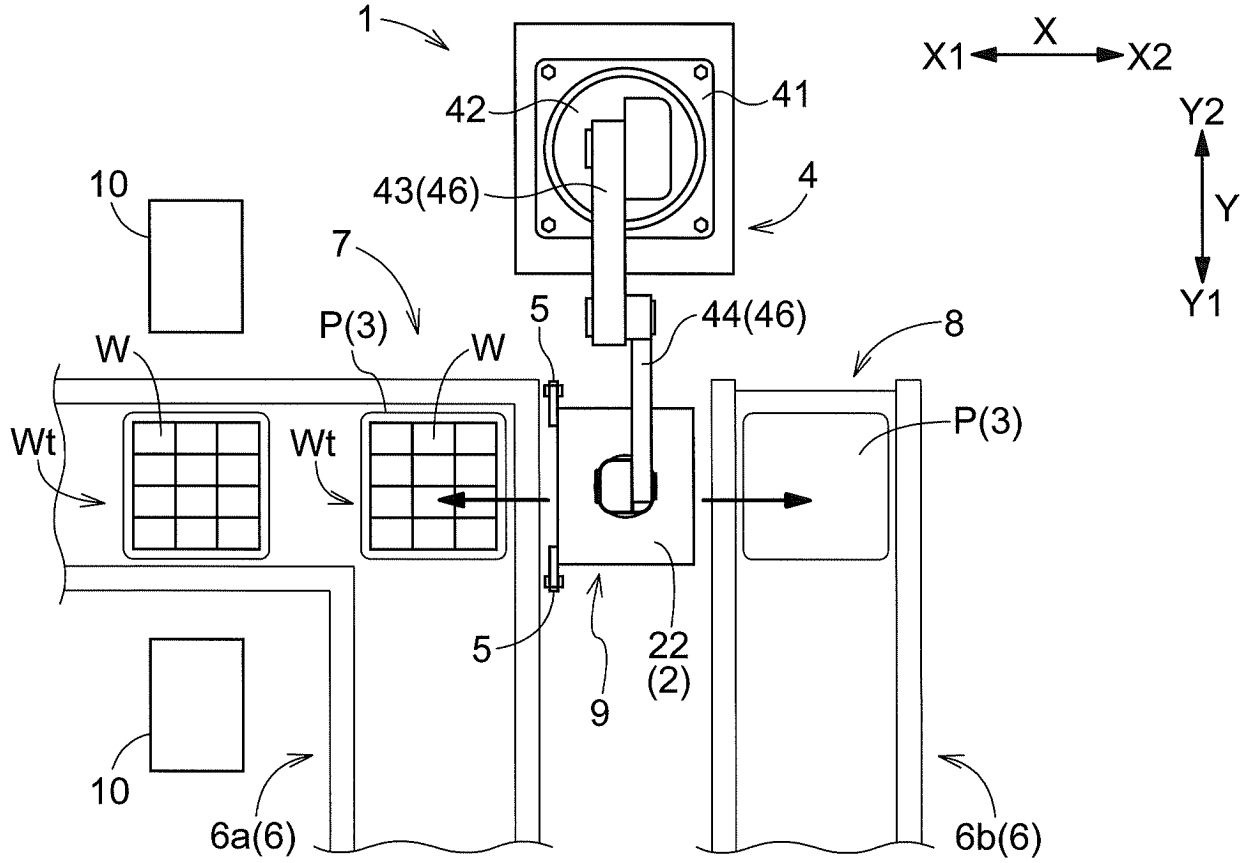

Start second transfer process
S31
Obtain control information
S32
Move to second reference position
S33
Perform initial predetermined-direction moving process
S34
Article detected?
Yes
No
S35
Move toward article
S36
Suction
S37
Separate
S38
Move
S39
Release suctioning
S40
Move to standby position
End second transfer process
S41
Stop

Fig.15


1
X
X1
X2
Y2
Y
Y1
42
41
43(46)
4
10
7
P(3)
5
44(46)
8
W
W
Wt
Wt
P(3)
5
22
(2)
9
10
6a(6)
6b(6)