Fig.1

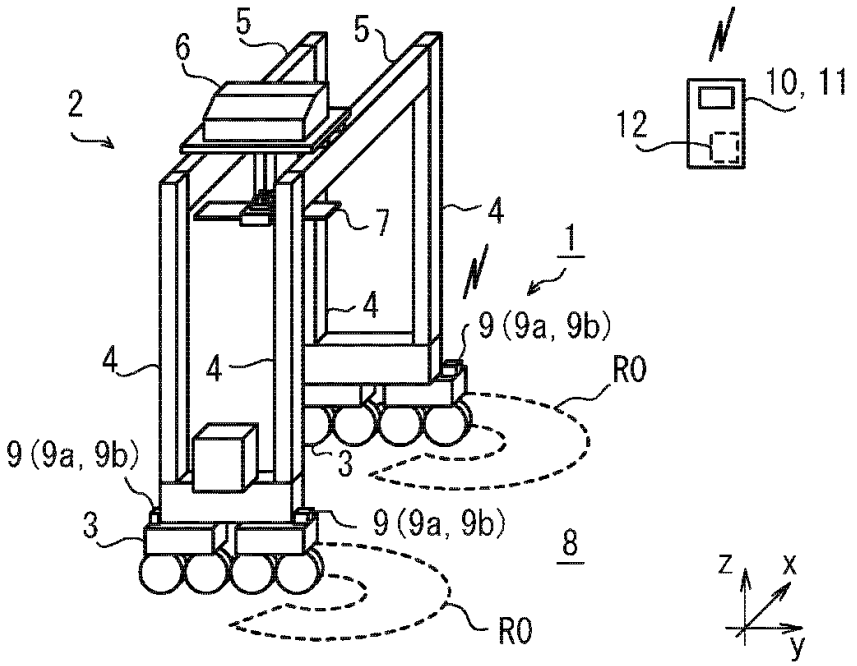

5
5
6
2
10, 11
12
7
4
1
4
9 (9a, 9b)
4
4
R0
9 (9a, 9b)
3
3
9 (9a, 9b)
8
R0
z
x
y

Fig.2

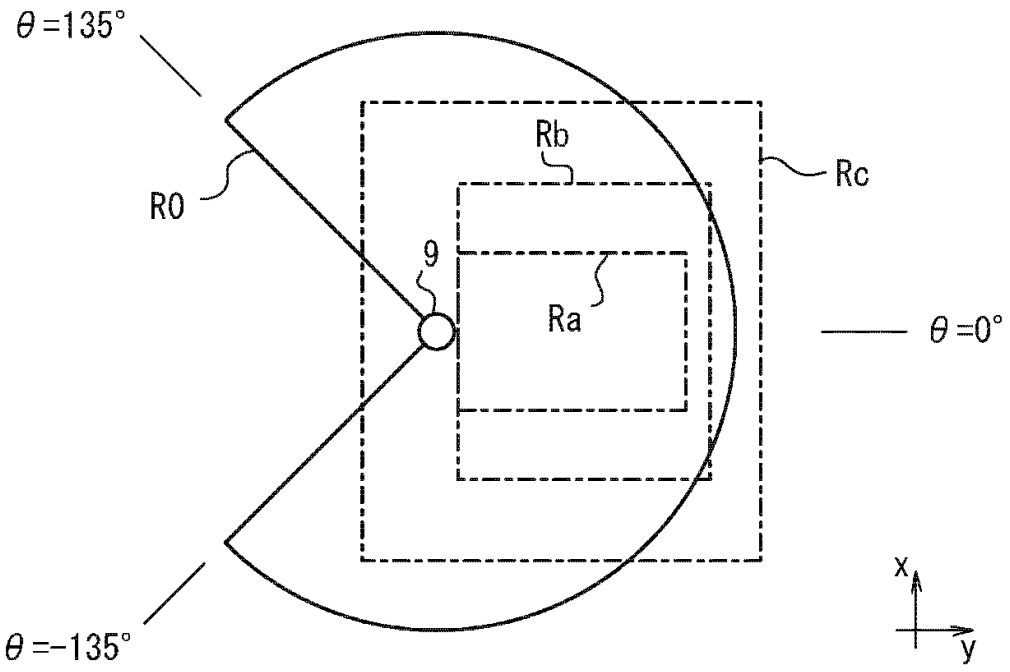

θ =135°
Rb
Rc
R0
9
Ra
θ =0°
θ =-135°
x
y

Fig.3

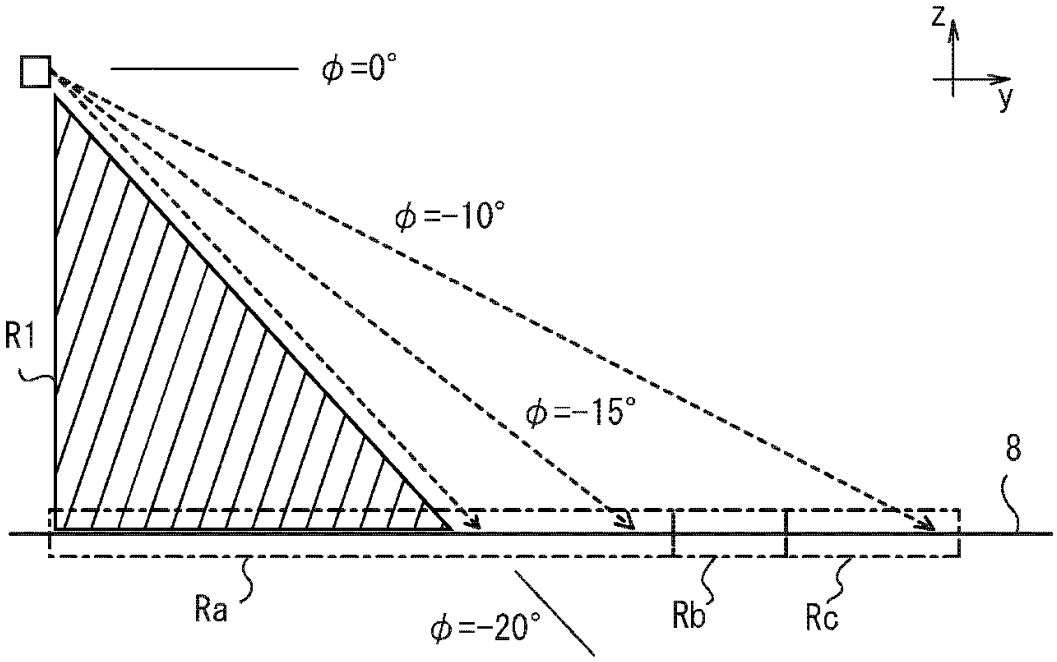


Fig.4

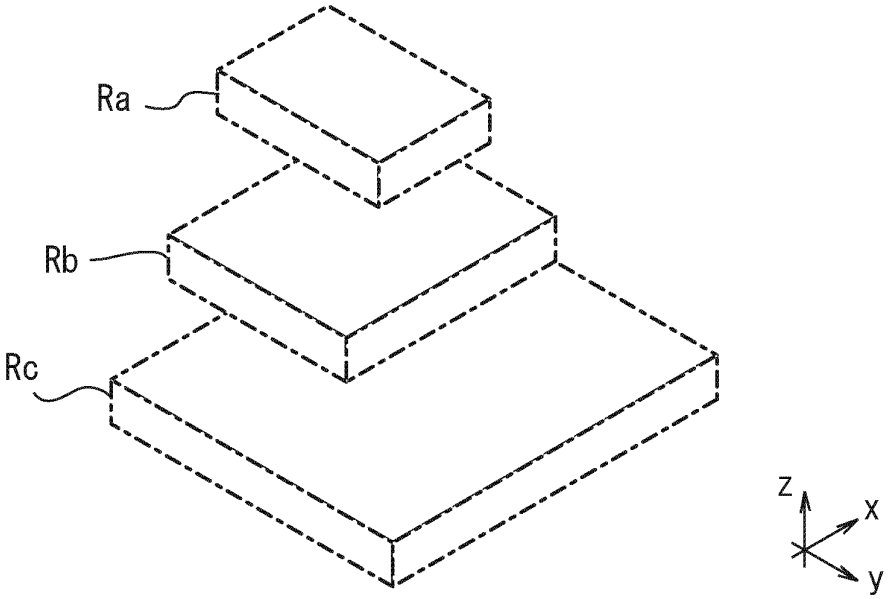


Fig.5

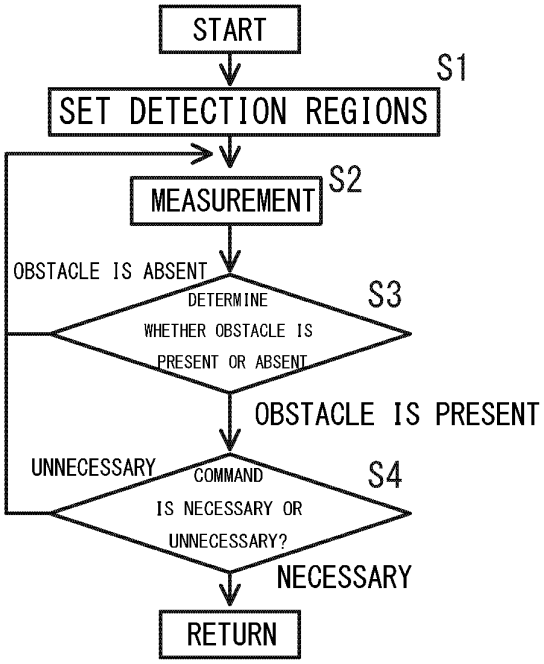


Fig.6

REFLECTION POINT Pmn	ANGLE ϕ IN UP-DOWN DIRECTION ϕ [deg]	ANGLE θ IN HORIZONTAL DIRECTIONS θ [deg]	DETECTION REGION Ra,Rb,Rc	ALLOWABLE TIME tn[10^{-8}sec]	MEASUREMENT TIME tmn[10^{-8}sec]	COMPARISON RESULT (OK, NOT OK)
P1-1	-10	-135	NONE	5.39～5.46	5.42	OK
P1-2	-10	-130	NONE	5.39～5.46	5.42	OK
⋮	⋮	⋮	⋮	⋮	⋮	⋮
P1-19	-10	-45	Rc	5.39～5.46	5.42	OK
⋮	⋮	⋮	⋮	⋮	⋮	⋮
P1-27	-10	-5	Rc	5.39～5.46	5.42	OK
P1-28	-10	0	Rc	5.39～5.46	5.42	OK
P1-29	-10	5	Rc	5.39～5.46	5.42	OK
⋮	⋮	⋮	⋮	⋮	⋮	⋮
P1-37	-10	45	Rc	5.39～5.46	5.42	OK
⋮	⋮	⋮	⋮	⋮	⋮	⋮
P1-54	-10	130	NONE	5.39～5.46	5.42	OK
P1-55	-10	135	NONE	5.39～5.46	5.42	OK

Fig.7

REFLECTION POINT Pmn	ANGLE ϕ IN UP-DOWN DIRECTION ϕ [deg]	ANGLE θ IN HORIZONTAL DIRECTIONS θ [deg]	DETECTION REGION Ra,Rb,Rc	ALLOWABLE TIME tn[10^{-8}sec]	MEASUREMENT TIME tmn[10^{-8}sec]	COMPARISON RESULT (OK, NOT OK)
P2-1	-15	-135	NONE	3.76～3.83	3.80	OK
P2-2	-15	-130	NONE	3.76～3.83	3.80	OK
⋮	⋮	⋮	⋮	⋮	⋮	⋮
P2-19	-15	-45	Rb	3.76～3.83	3.80	OK
⋮	⋮	⋮	⋮	⋮	⋮	⋮
P2-27	-15	-5	Ra	3.76～3.83	3.80	OK
P2-28	-15	0	Ra	3.76～3.83	3.80	OK
P2-29	-15	5	Ra	3.76～3.83	3.80	OK
⋮	⋮	⋮	⋮	⋮	⋮	⋮
P2-37	-15	45	Rb	3.76～3.83	3.80	OK
⋮	⋮	⋮	⋮	⋮	⋮	⋮
P2-54	-15	130	NONE	3.76～3.83	3.80	OK
P2-55	-15	135	NONE	3.76～3.83	3.80	OK

Fig.8

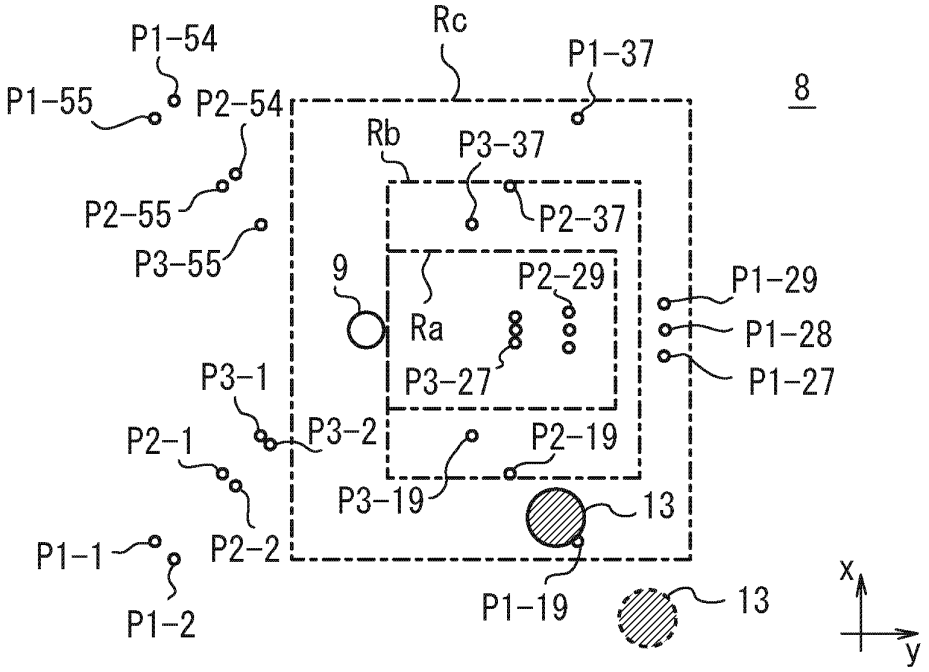


Fig.9

SITUATION	Ra	Rb	Rc	COMMAND
Q3	—	—	—	—
Q2	—	—	OBSTACLE IS PRESENT	—
Q1	—	OBSTACLE IS PRESENT	OBSTACLE IS PRESENT	—
Q4	OBSTACLE IS PRESENT	OBSTACLE IS PRESENT	OBSTACLE IS PRESENT	EMERGENCY STOP
Q5	—	—	—	EMERGENCY STOP

Fig.10

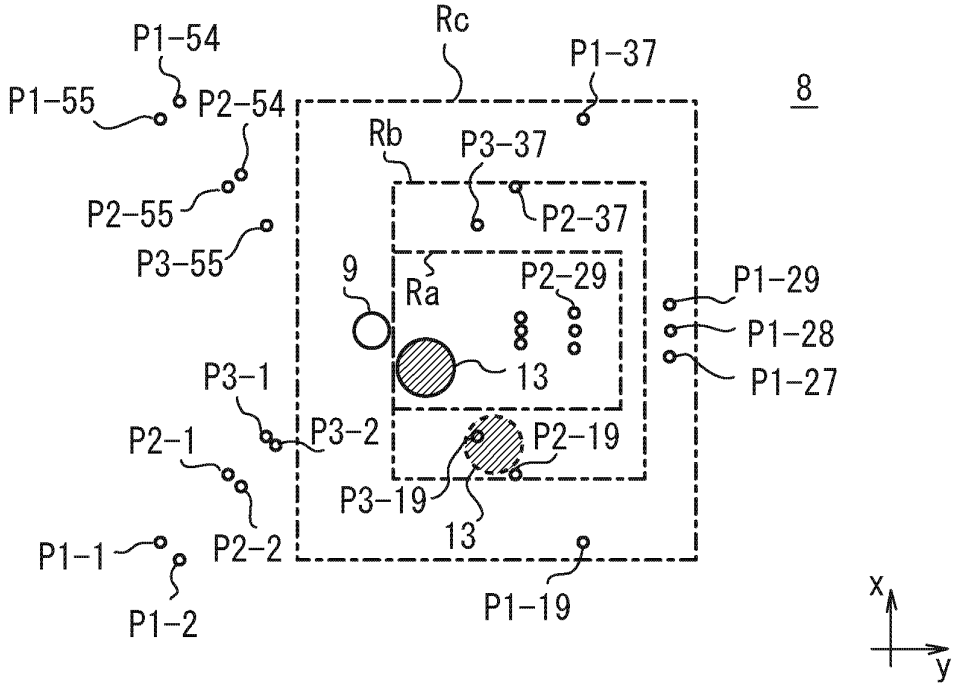


Fig.11

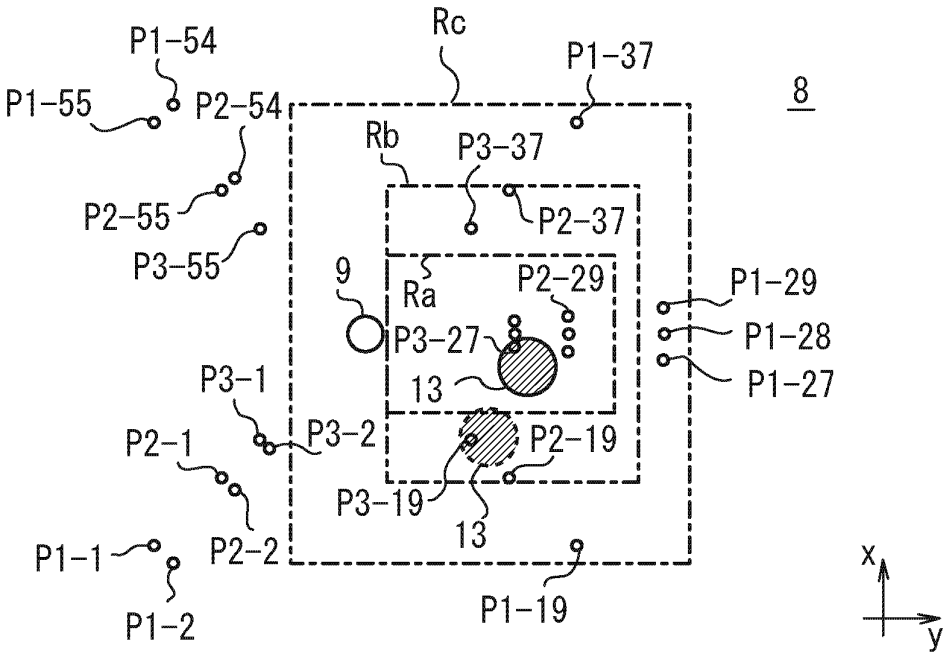

P1-54
Rc
P1-37
8
P1-55
P2-54
Rb
P3-37
P2-55
P2-37
P3-55
9
Ra
P2-29
P1-29
P3-27
P1-28
P3-1
13
P1-27
P2-1
P3-2
P2-19
P3-19
13
P1-1
P2-2
P1-19
P1-2
x
y

Fig.12

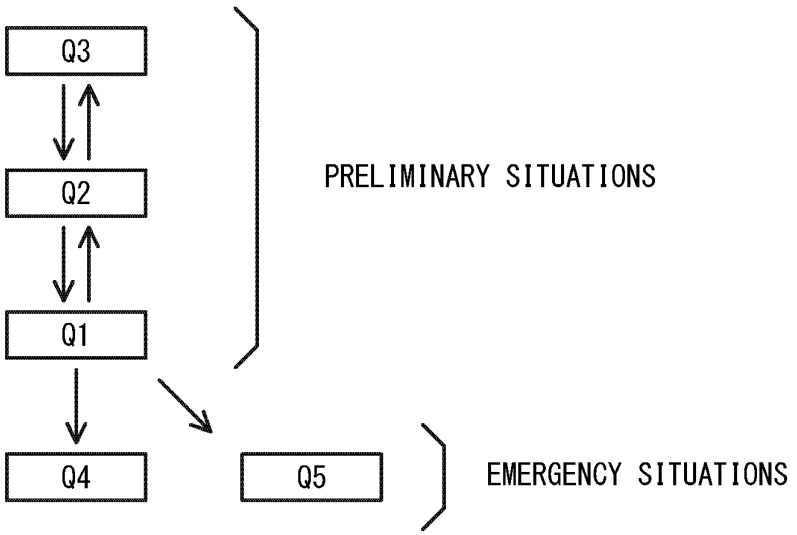

Q3
Q2
Q1
PRELIMINARY SITUATIONS
Q4
Q5
EMERGENCY SITUATIONS

Fig.13

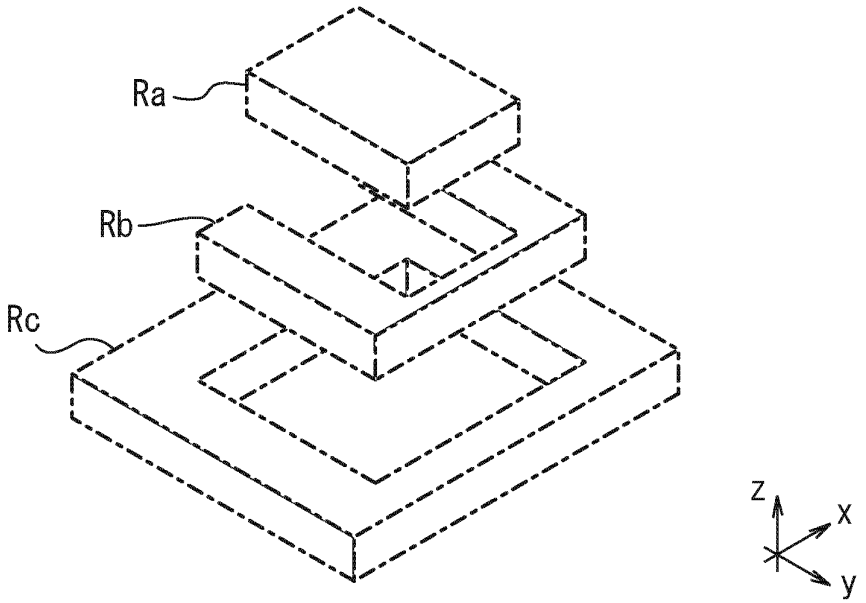
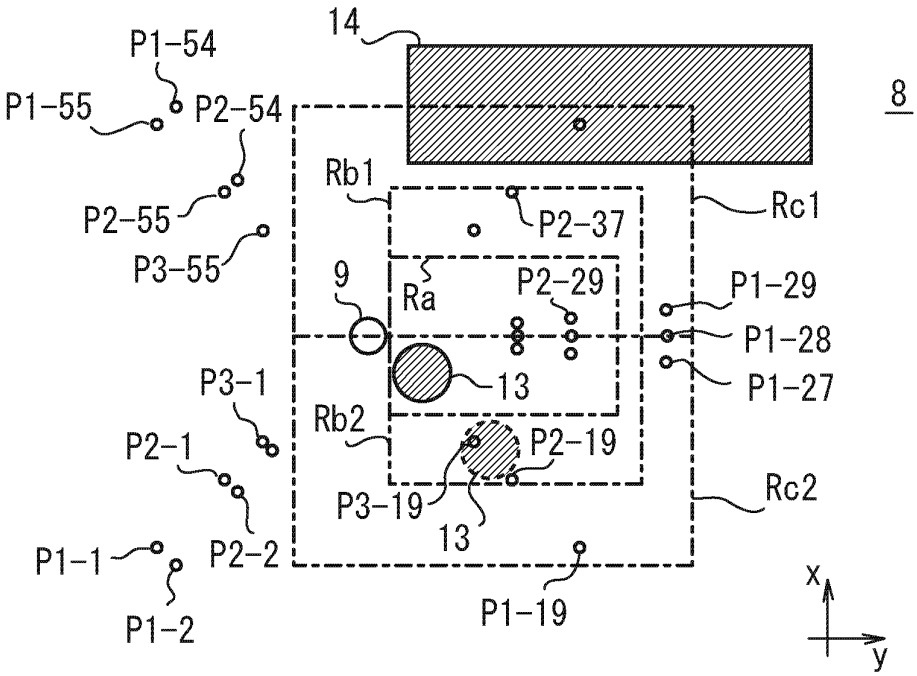


Fig.14

SITUATION	Ra	Rb	Rc	COMMAND
Q3'	—	—	—	—
Q2'	—	—	OBSTACLE IS PRESENT	—
Q1'	—	OBSTACLE IS PRESENT	—	—
Q4'	OBSTACLE IS PRESENT	—	—	EMERGENCY STOP
Q5'	—	—	—	EMERGENCY STOP

Fig.15


14
P1-54
P1-55
P2-54
8
Rb1
P2-37
Rc1
P2-55
P3-55
9
Ra
P2-29
P1-29
P1-28
P1-27
13
P3-1
Rb2
P2-19
P2-1
P3-19
13
Rc2
P1-1
P2-2
P1-19
P1-2
x
y