

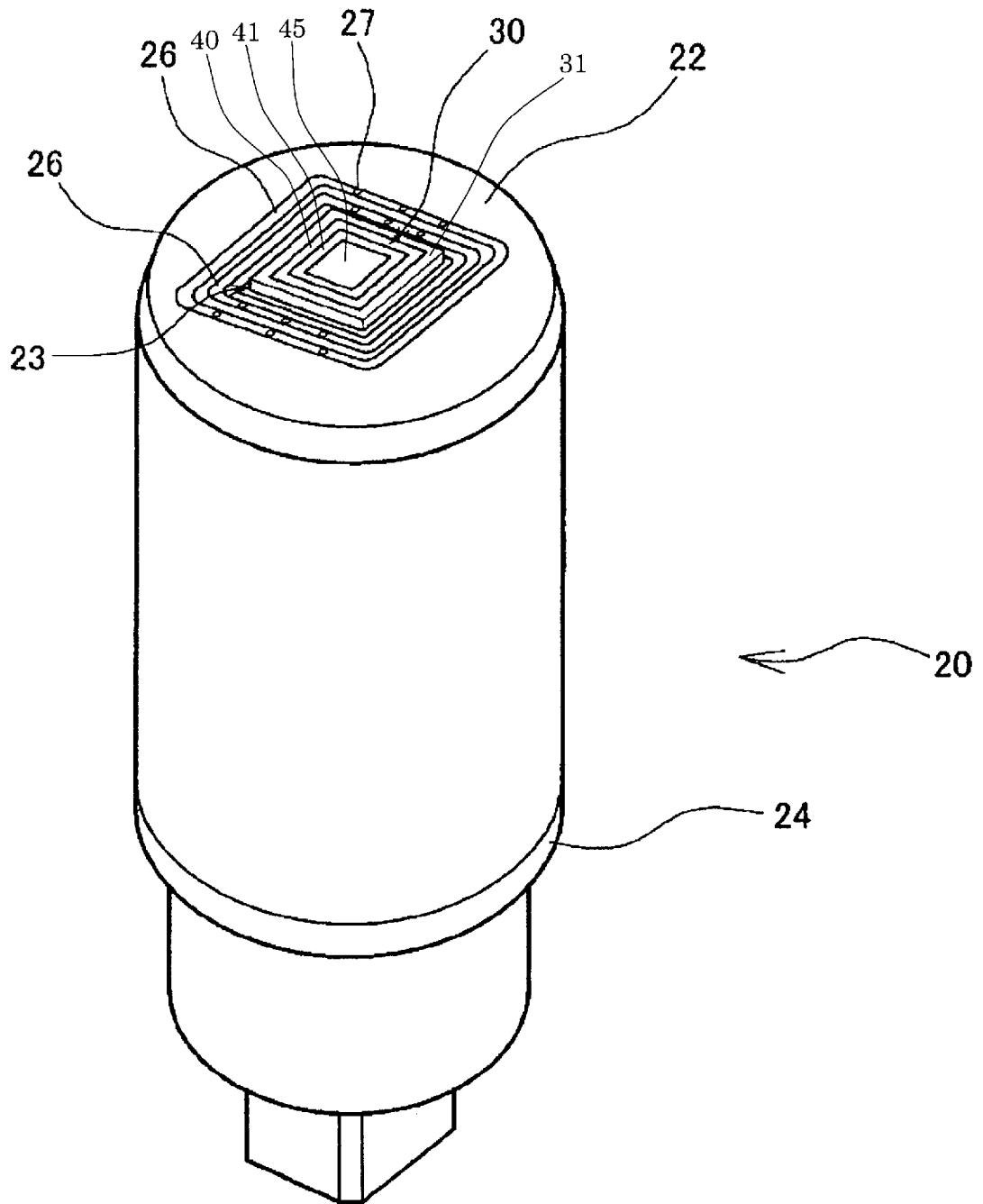


FIG. 2



FIG. 3

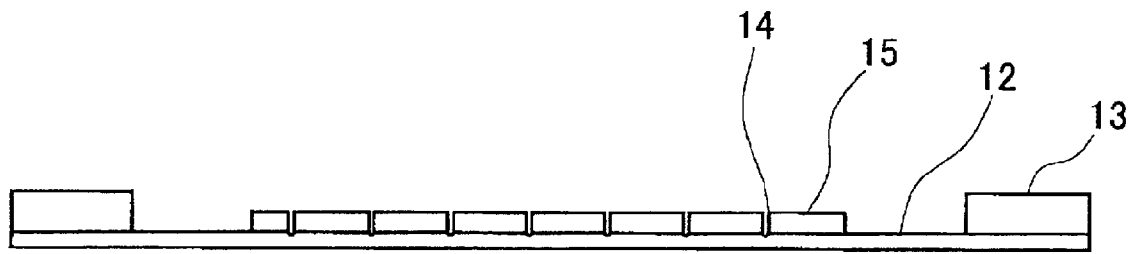


FIG. 4

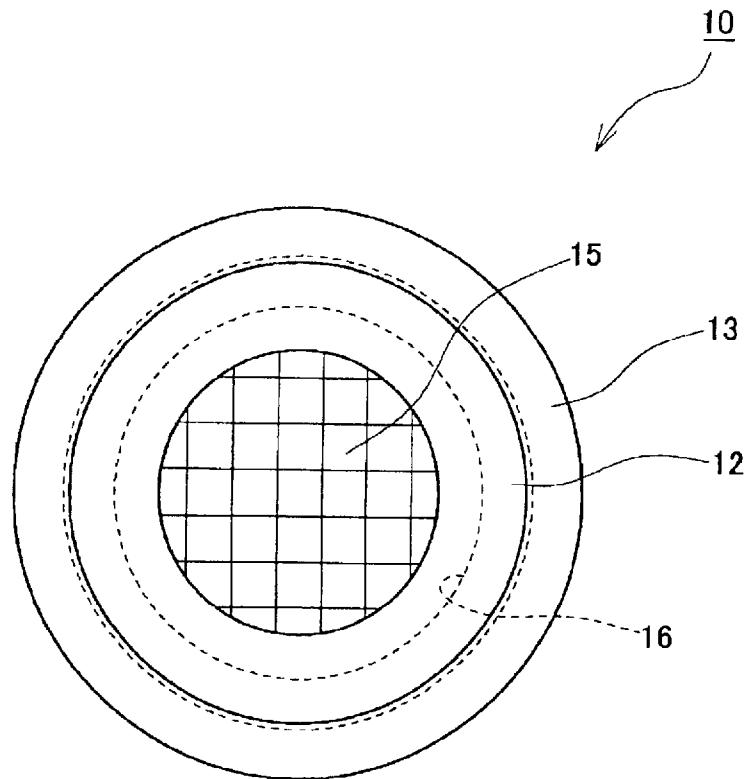


FIG. 5A

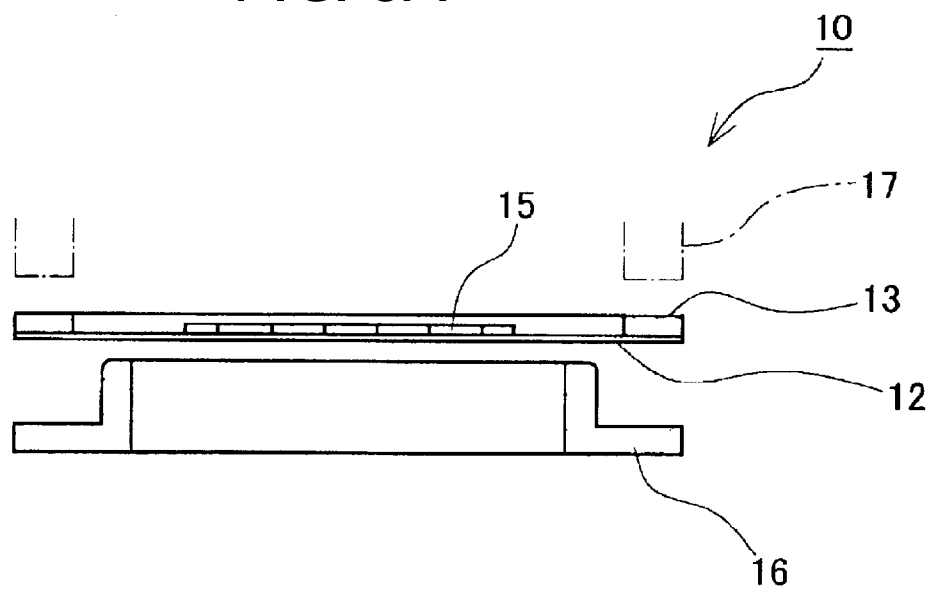


FIG. 5B

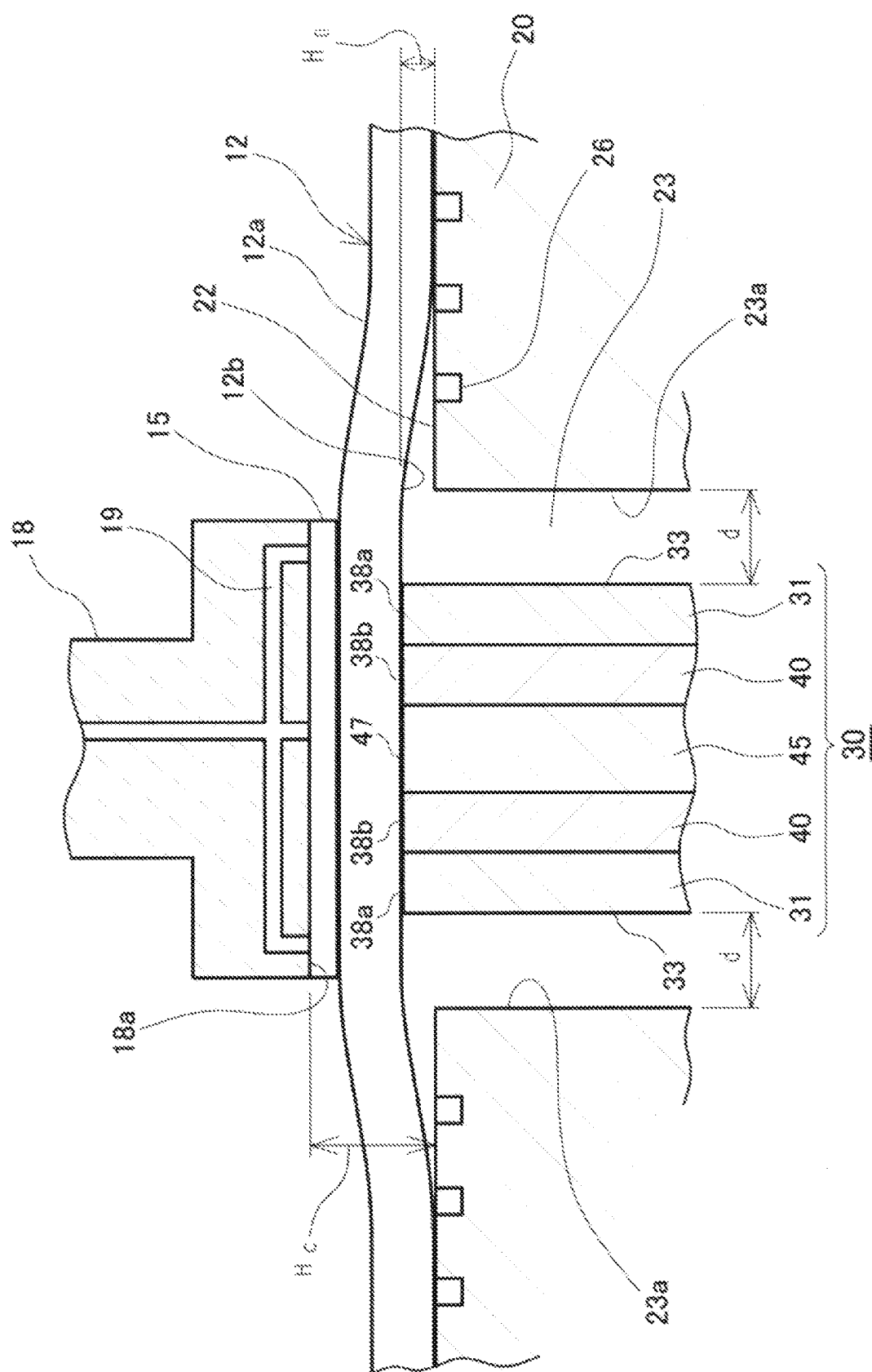


FIG. 6

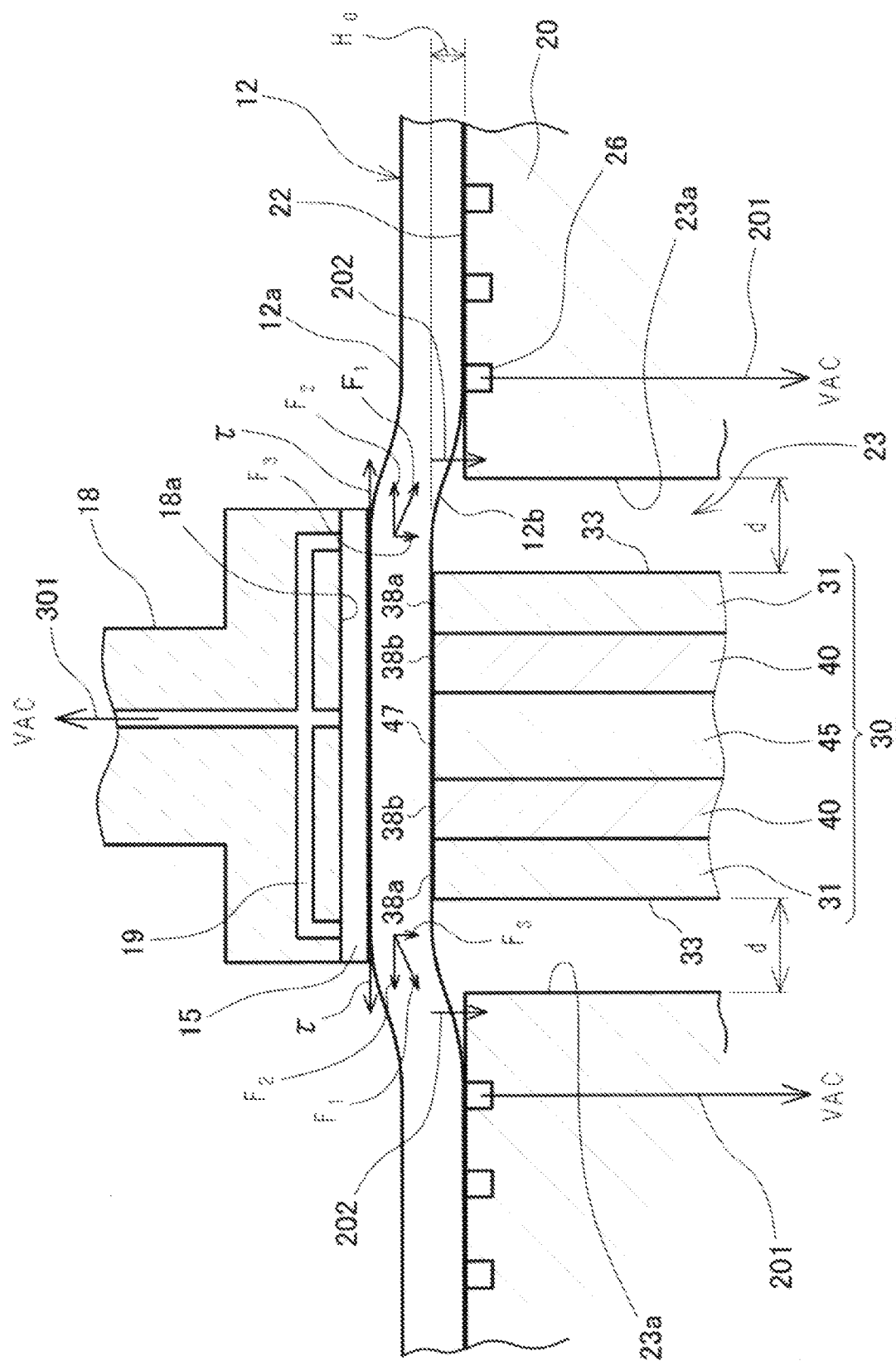


FIG. 7

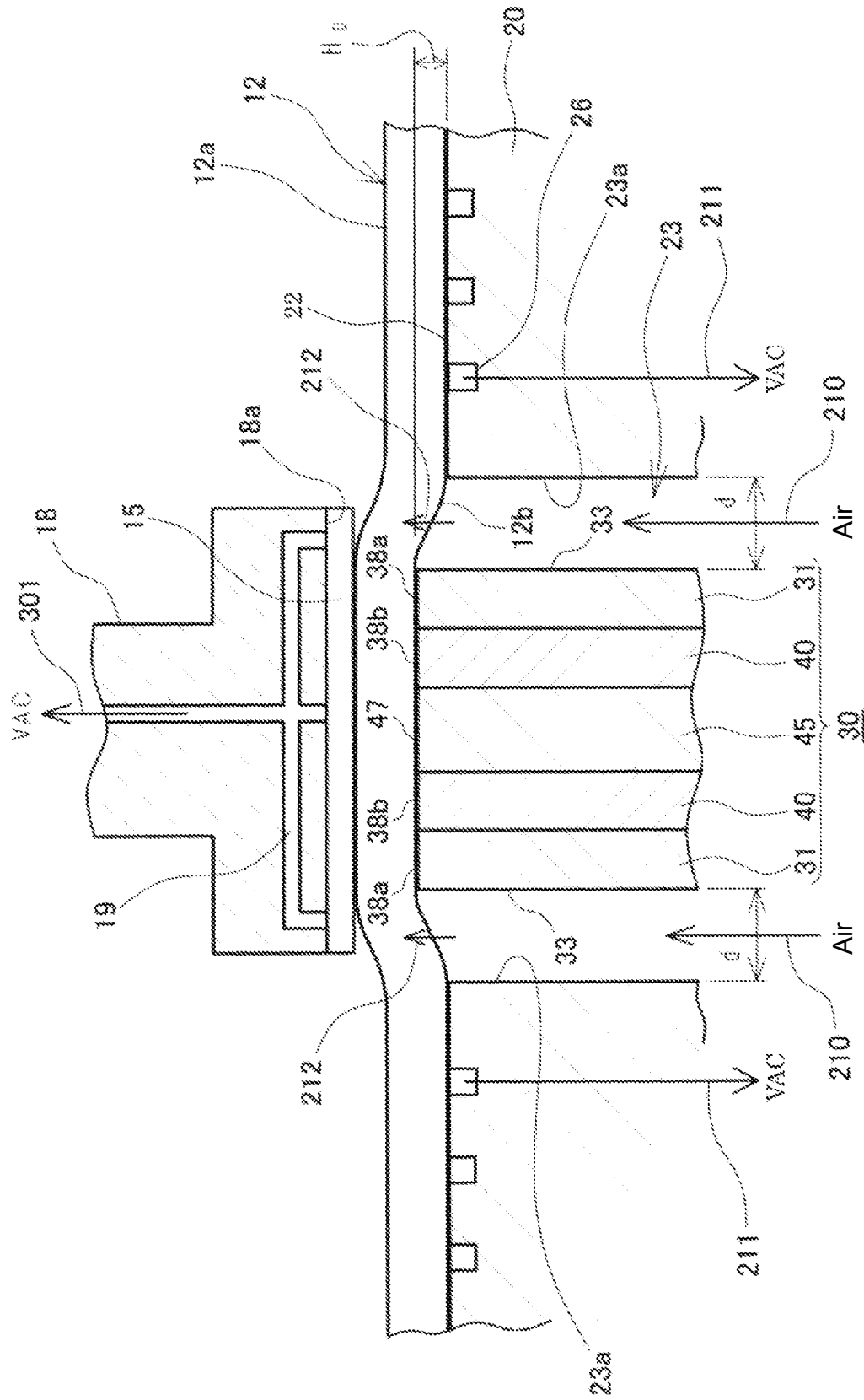


FIG. 10

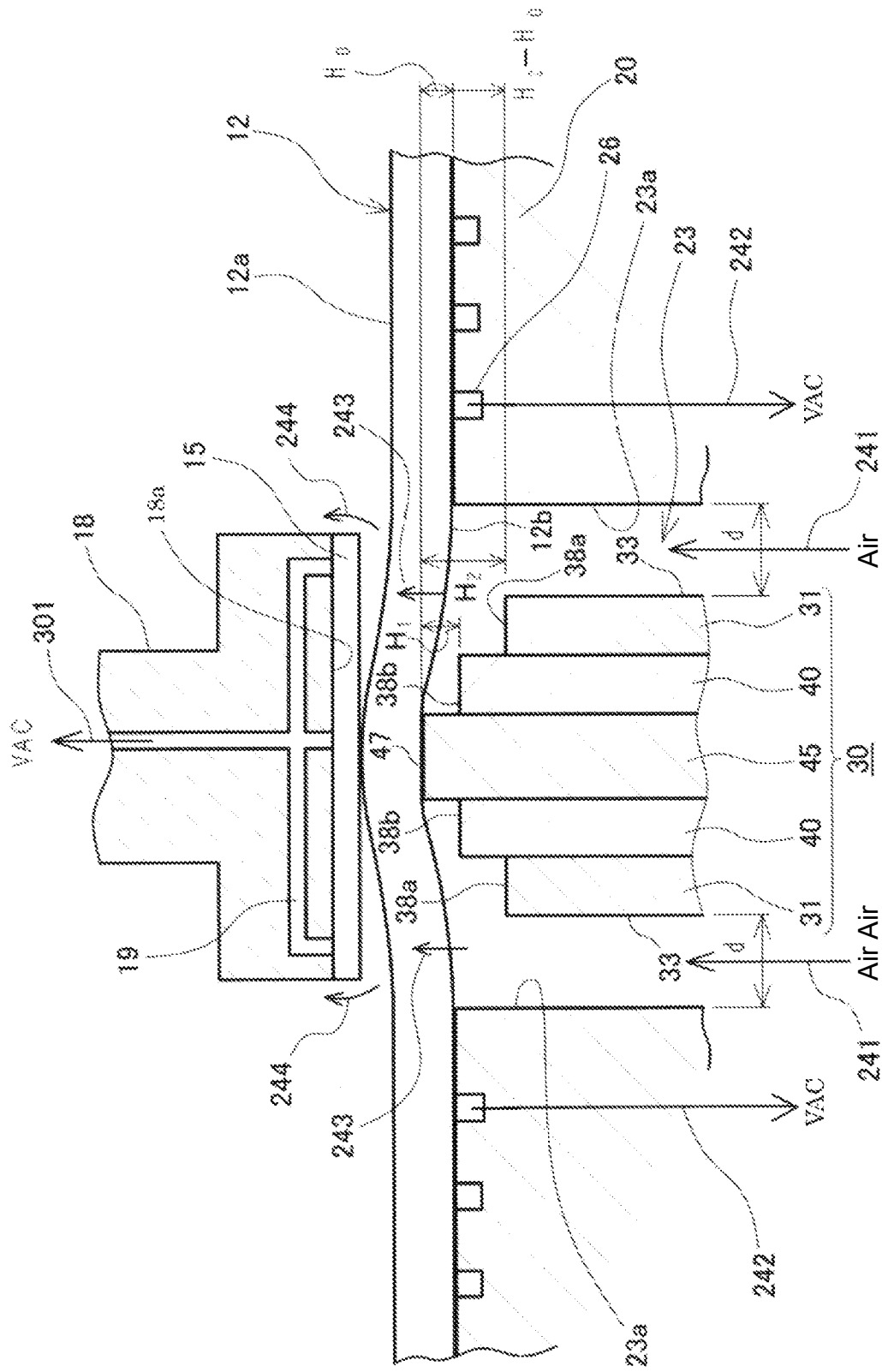


FIG. 16

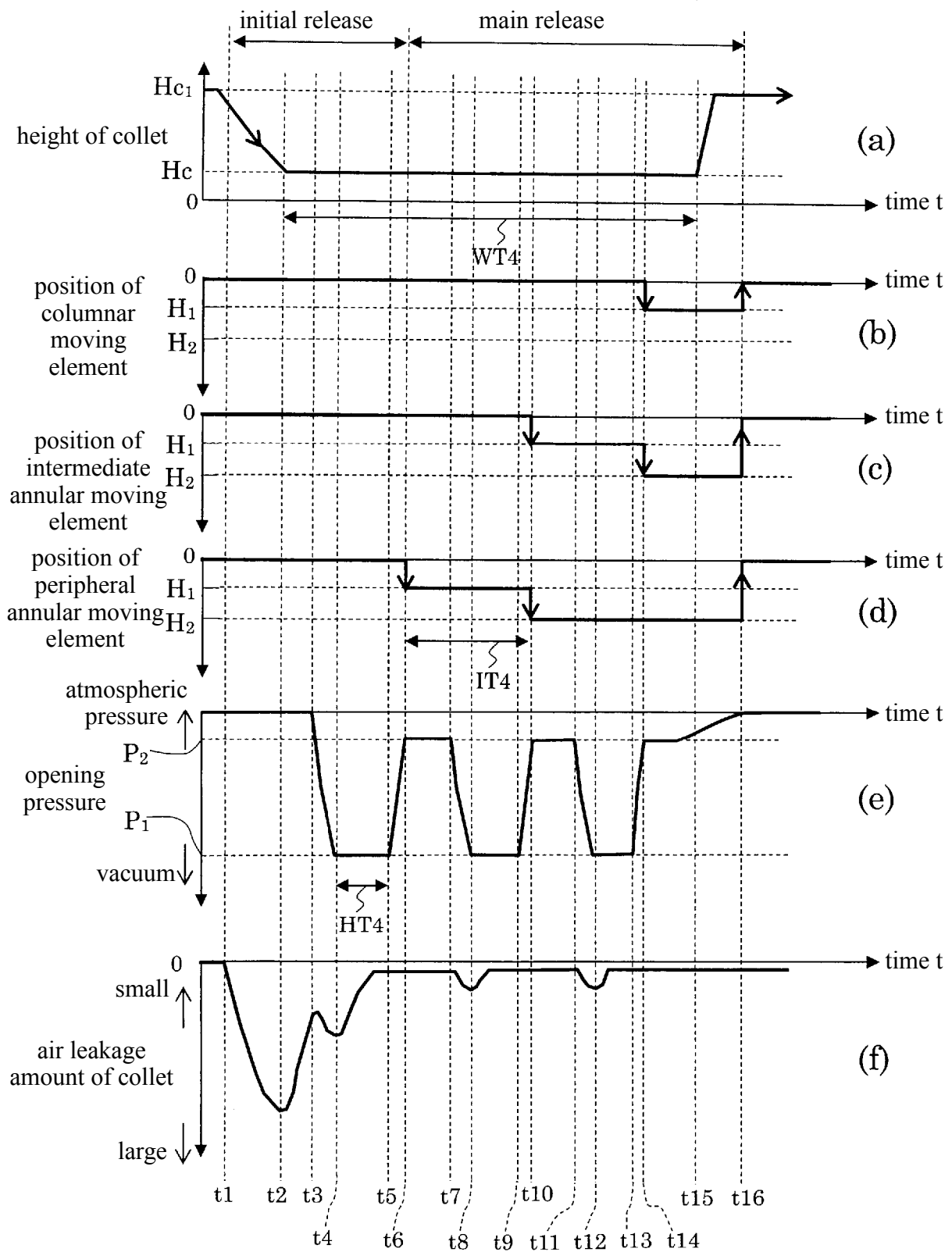


FIG. 18

159

release parameter	high speed ← level → low speed (stable)							
	1	2	3	4	5	6	7	8
number of switches of opening pressure during initial release (FSN)	1 (FSN1)	1	1	1 (FSN4)	2	3	3	4 (FSN8)
number of switches of opening pressure during main release (SSN)	1 (SSN1)	1	2	2 (SSN4)	2	3	4	4 (SSN8)
holding time of first pressure (HT)	100 (HT1)	130	130	130 (HT4)	140	140	150	150 (HT8)
number of moving elements descended simultaneously (DN)	3 (DN1)	2	2	0 (DN4)	0	0	0	0 (DN8)
descending time interval between moving elements (IT)	0 (IT1)	100	210	240 (IT4)	300	350	350	450 (IT8)
collet waiting time (WT)	460 (WT1)	540	660	710 (WT4)	990	1140	1290	1590 (WT8)
pickup time (PT)	570 (PT1)	650	770	820 (PT4)	1100	1250	1400	1700 (PT8)

FIG. 19

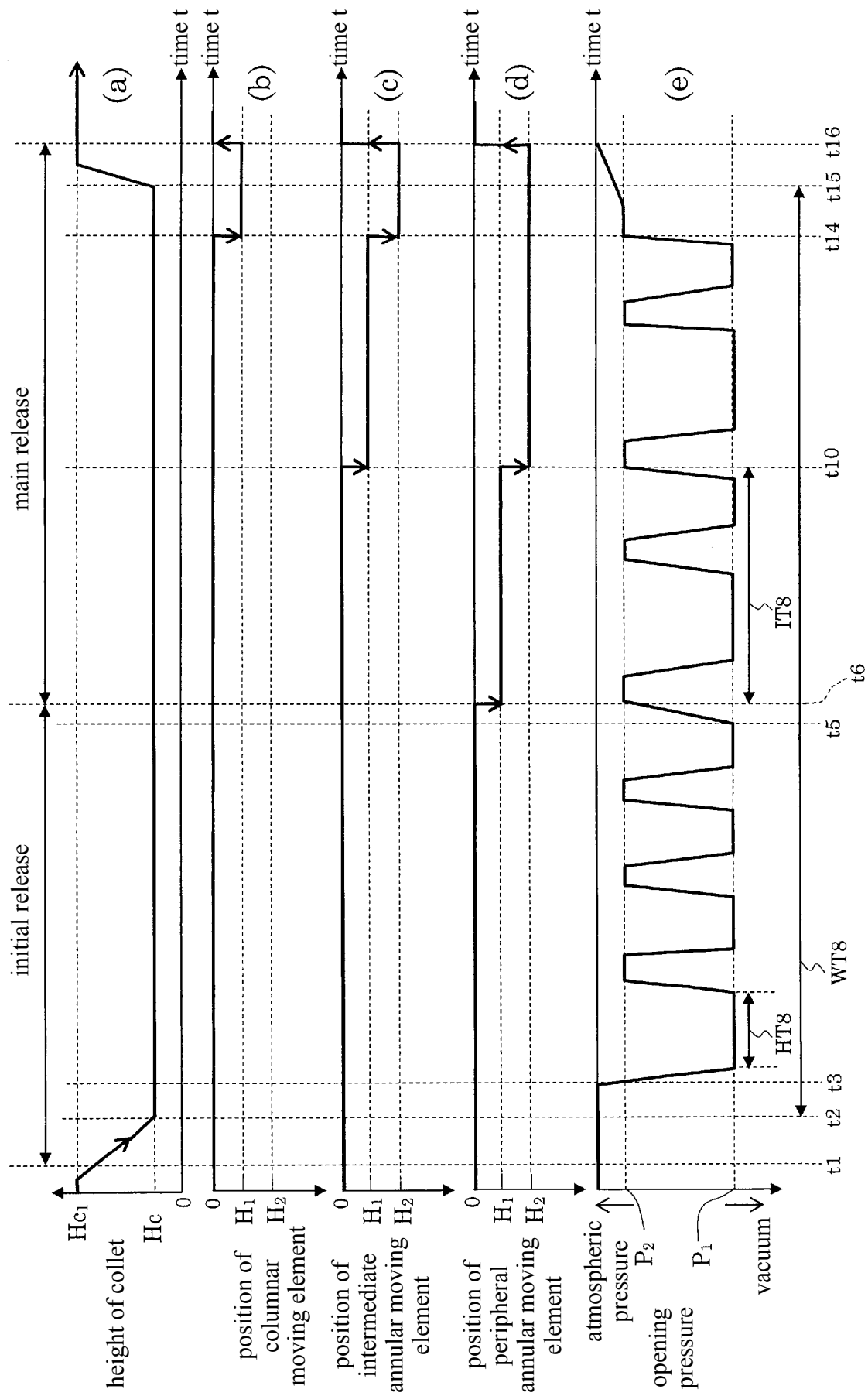


FIG. 20

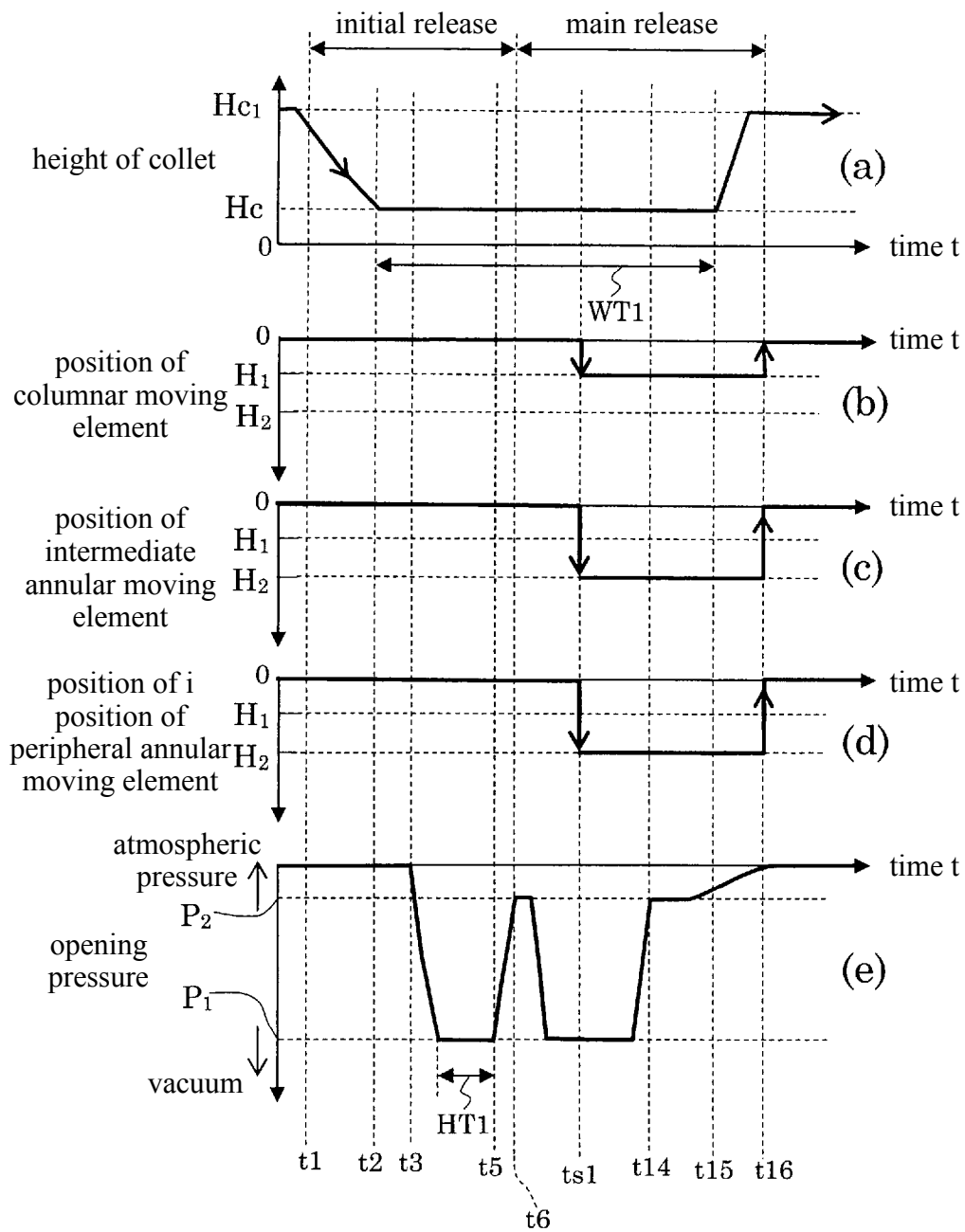


FIG. 21

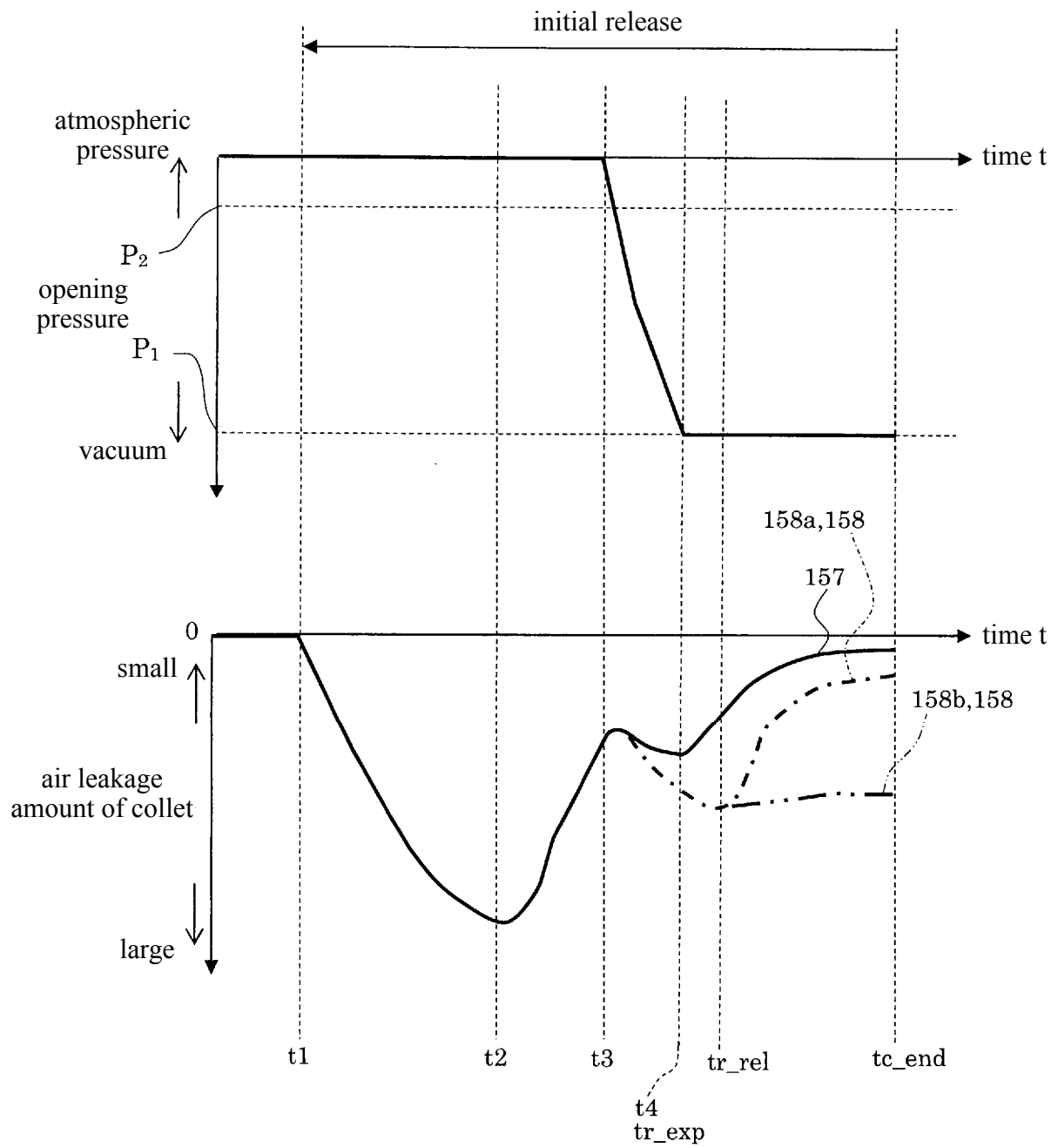


FIG. 22

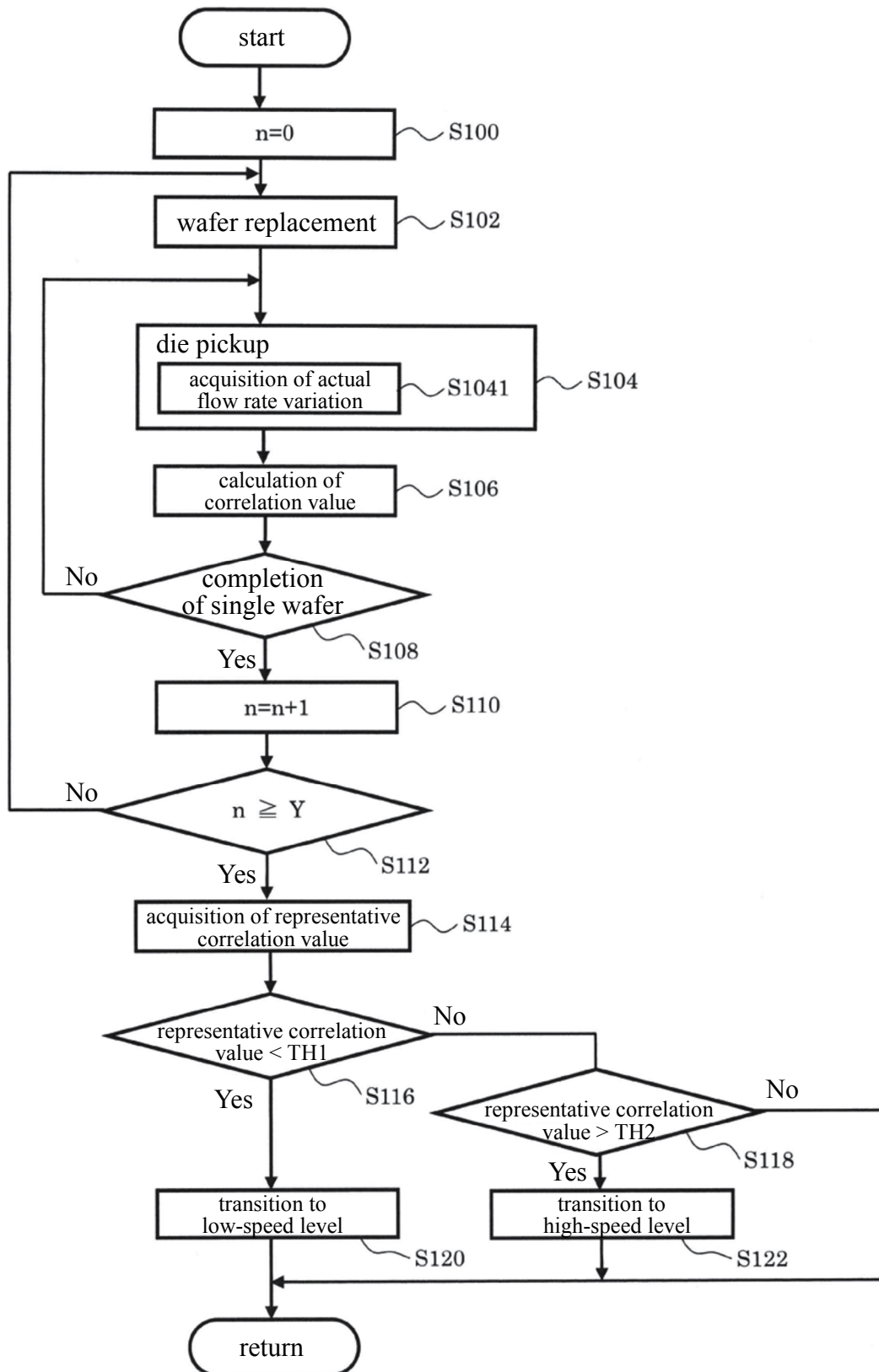


FIG. 23

160

threshold value	high speed ← level → low speed (stable)							
	1	2	3	4	5	6	7	8
threshold value TH1 to low-speed level	0.96	0.91	0.86	0.81	0.76	0.71	0.66	
threshold value TH2 to high-speed level		0.95	0.90	0.85	0.80	0.75	0.70	0.65

FIG. 24

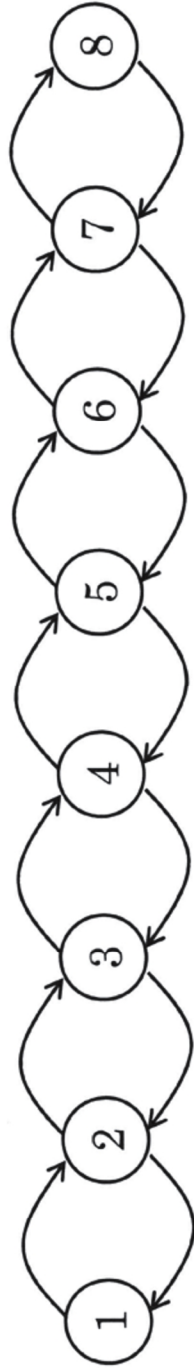


FIG. 25

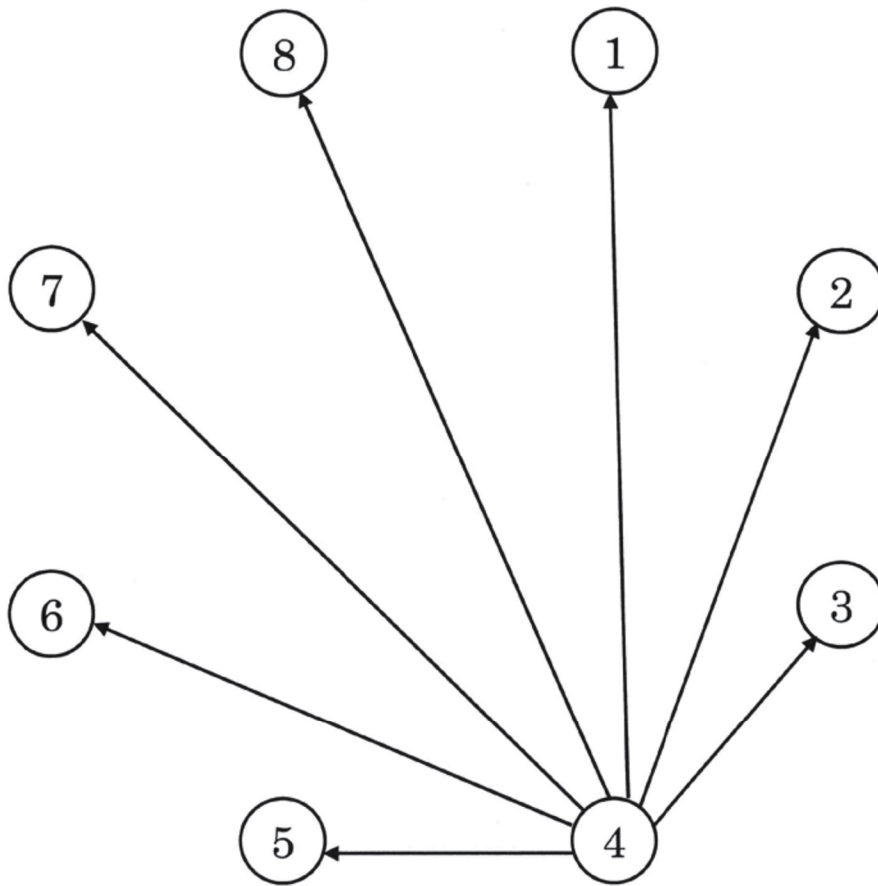


FIG. 26

159a

release parameter	high speed ← level → low speed (stable)							
	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8
number of switches of opening pressure during initial release (FSN)	1 (FSN1)	1	1	1 (FSN4)	2	3	3	4 (FSN8)

FIG. 27A

159b

release parameter	high speed ← level → low speed (stable)							
	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8
number of switches of opening pressure during main release (SSN)	1 (SSN1)	1	2	2 (SSN4)	2	3	4	4 (SSN8)

FIG. 27B

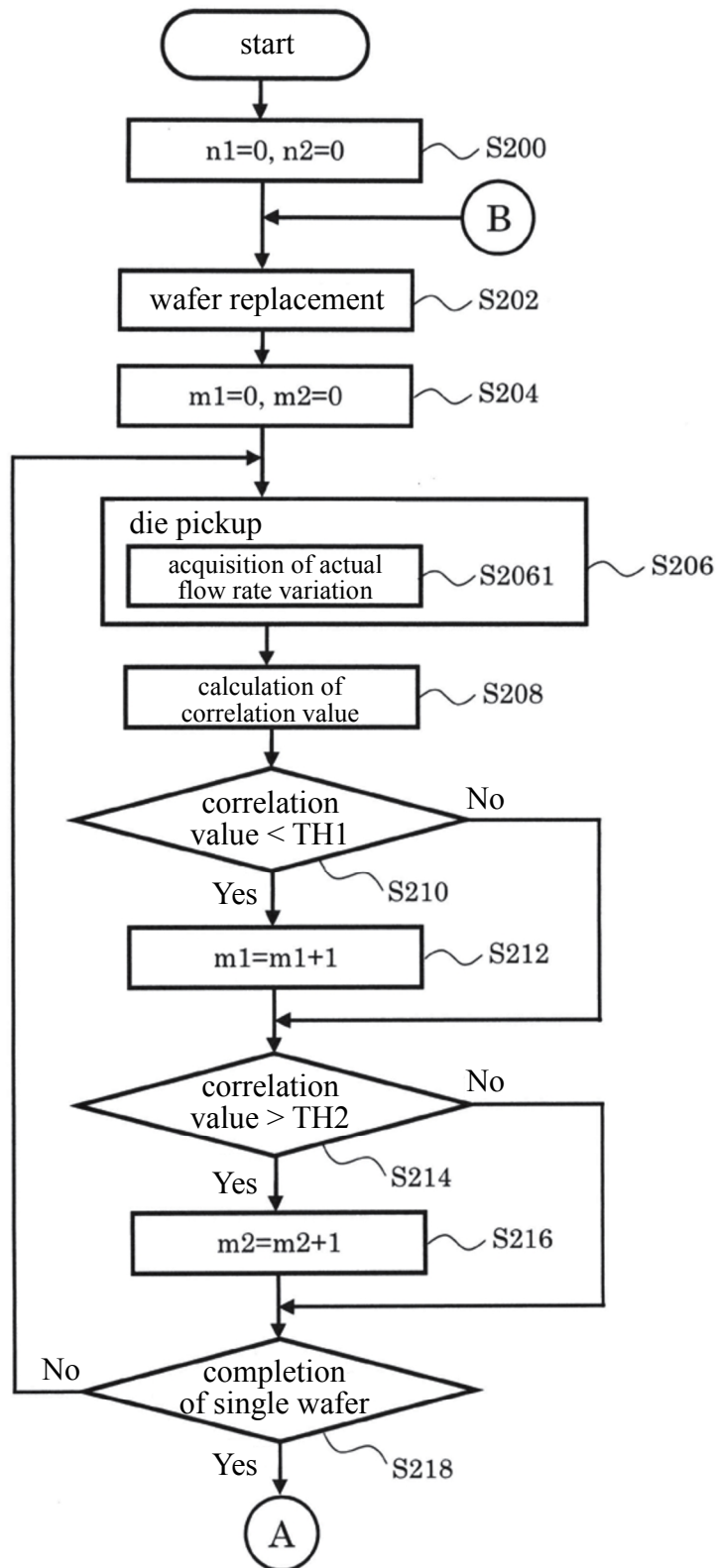


FIG. 28

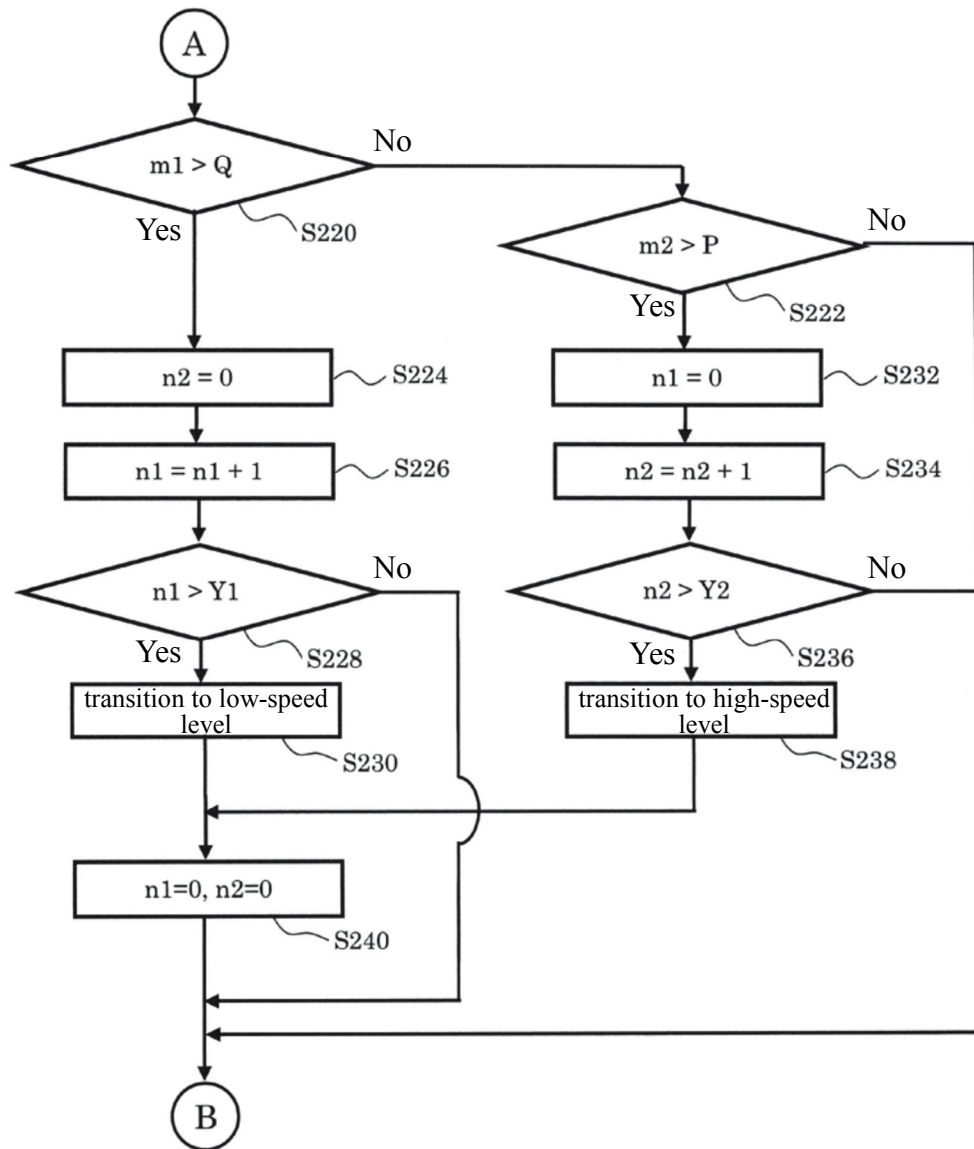


FIG. 29

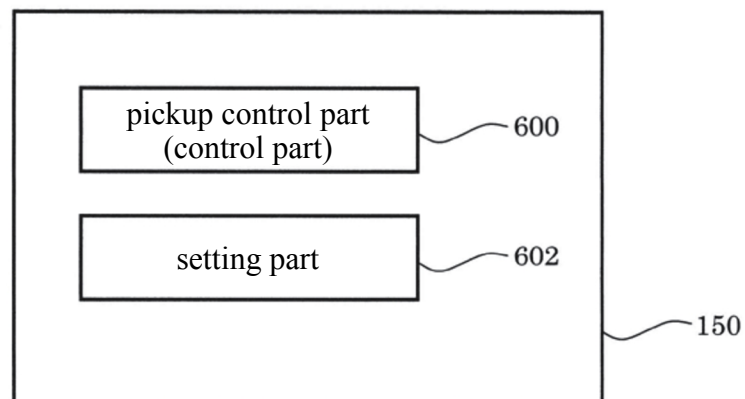


FIG. 30