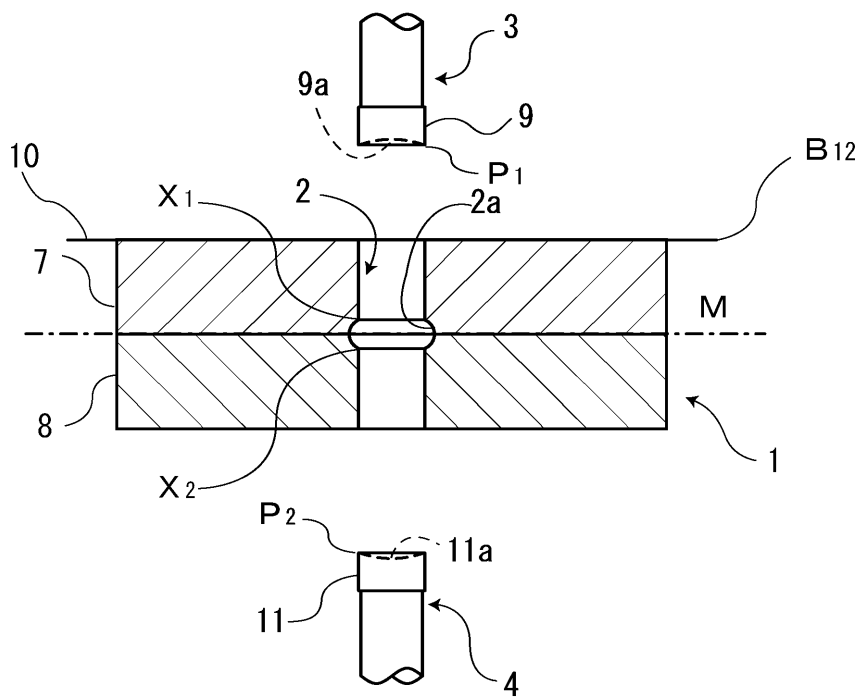


FIG. 1

(A)



(B)

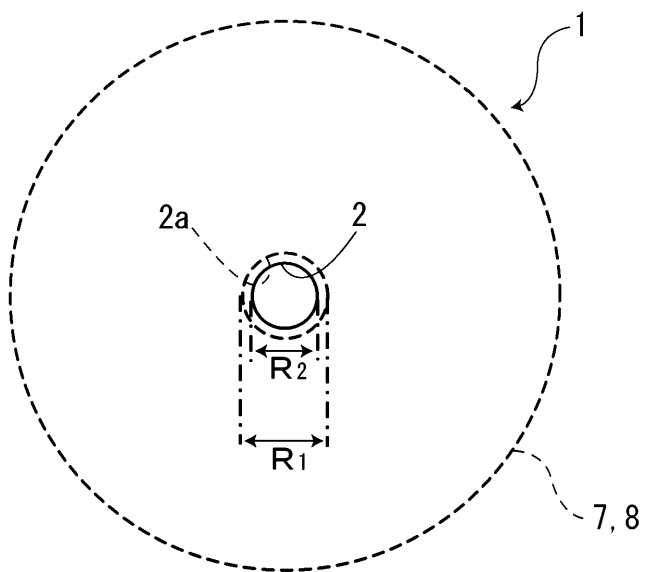
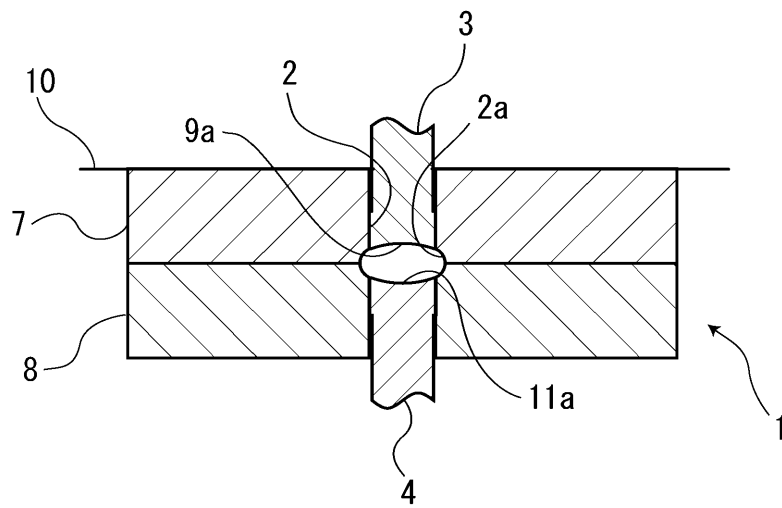
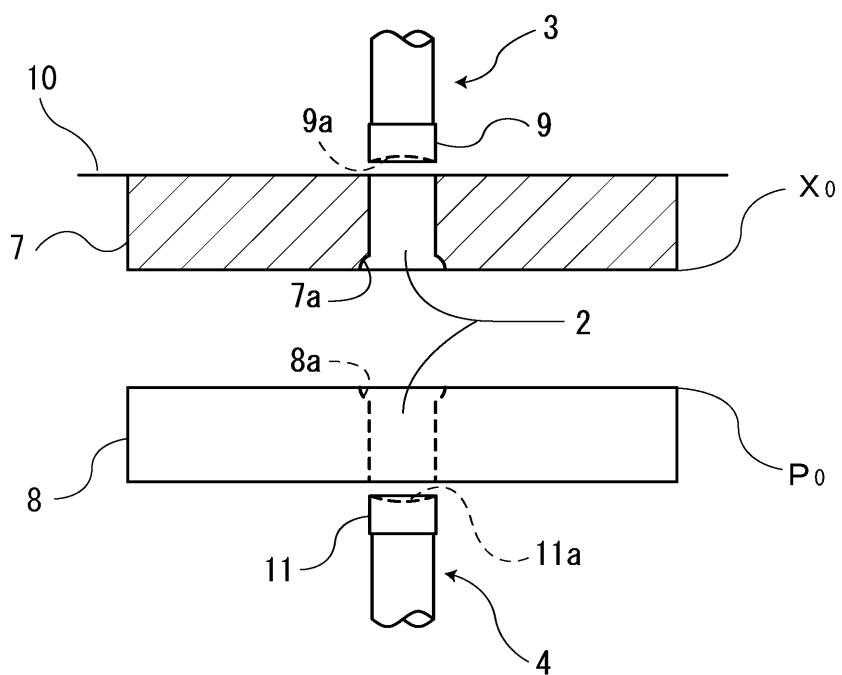


FIG. 2

(A)



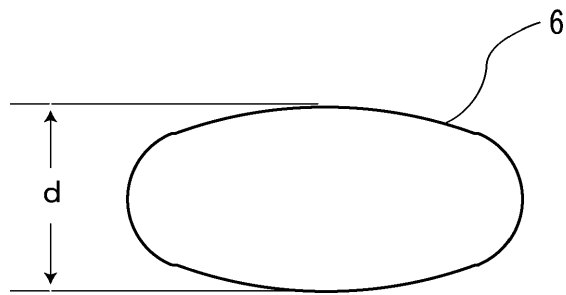
(B)



3/20

FIG. 3

(A)



(B)

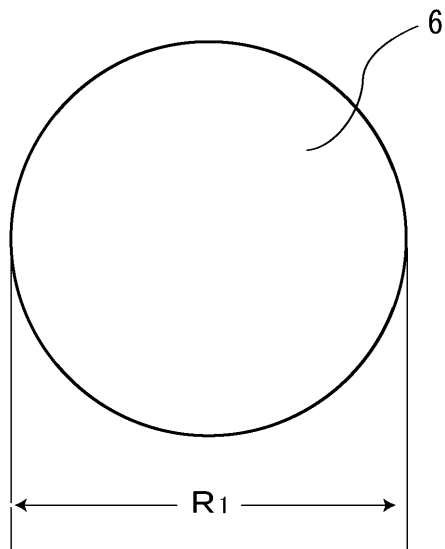


FIG. 4

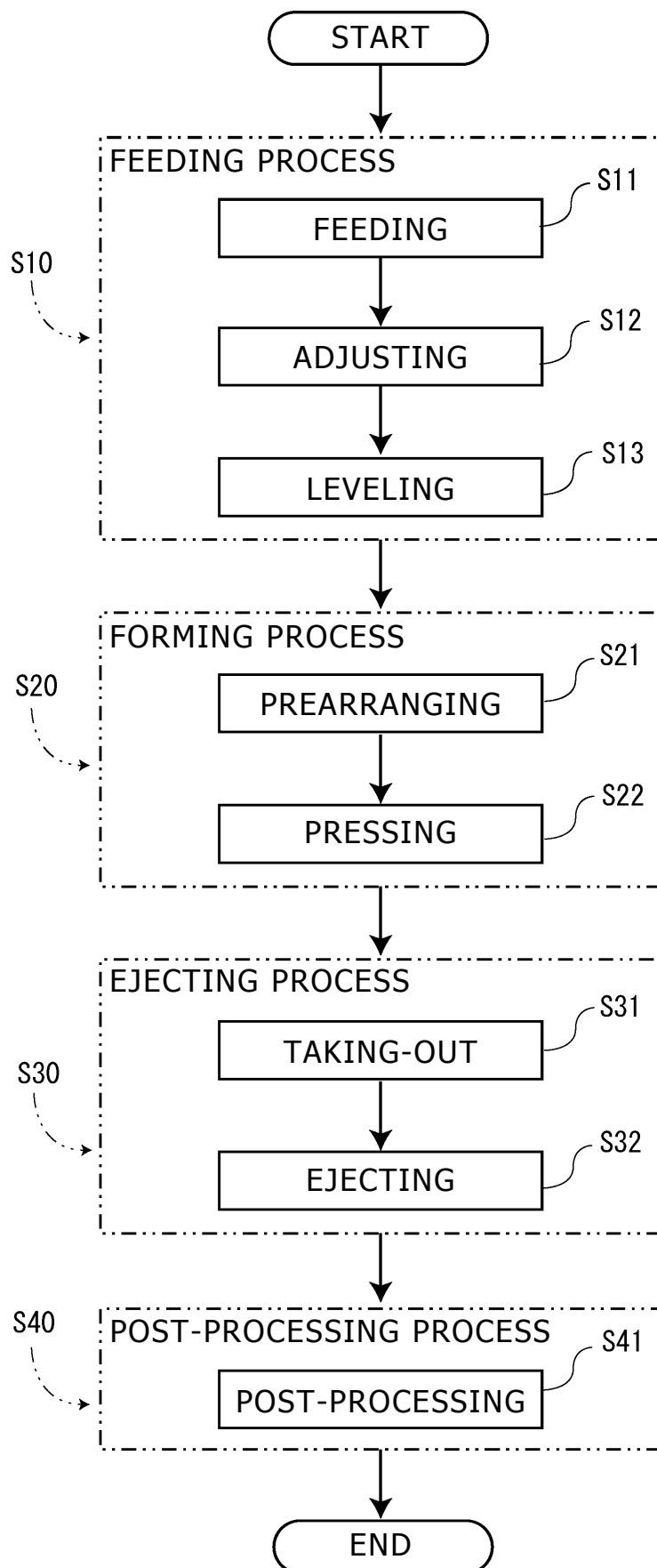


FIG. 5

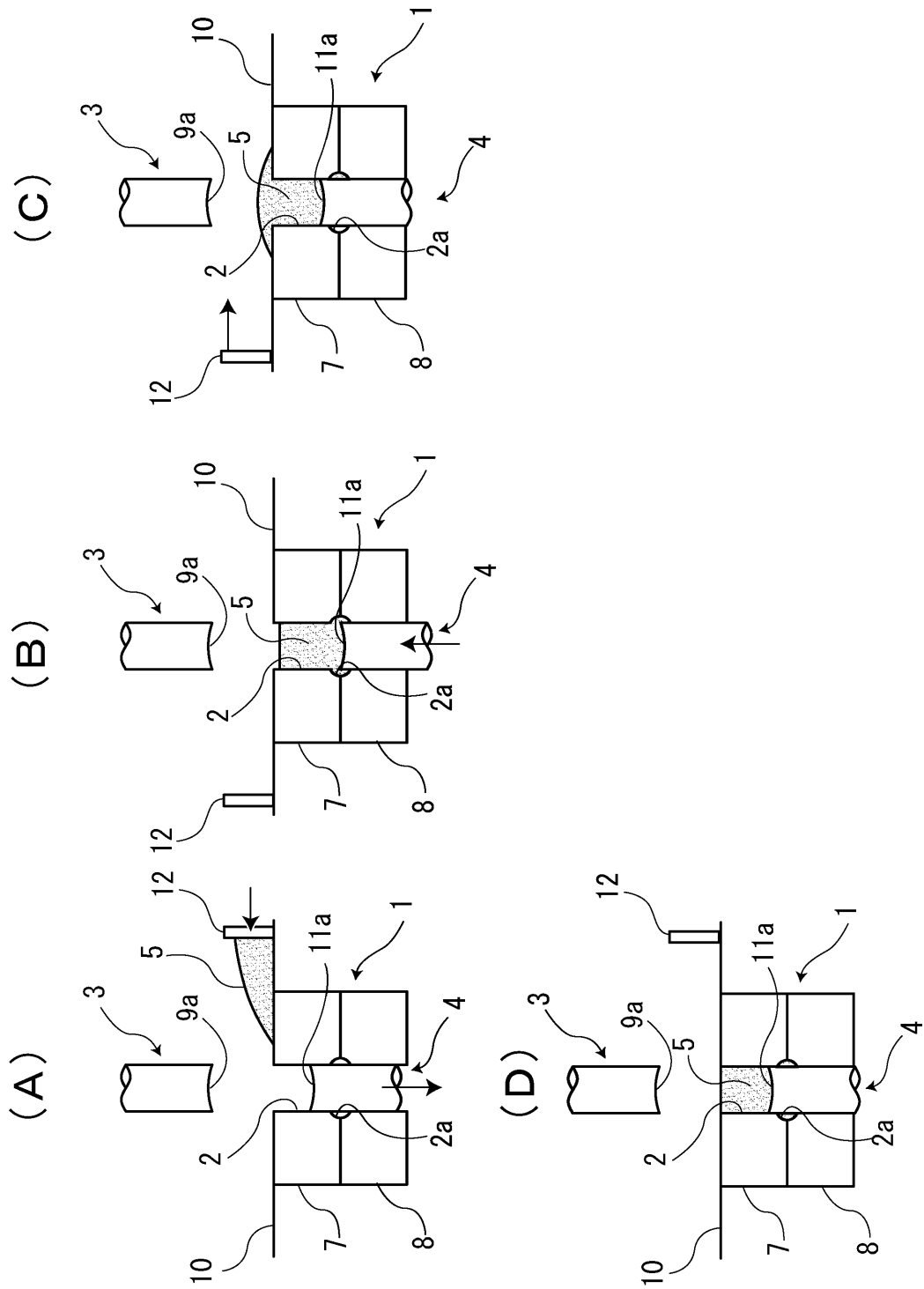


FIG. 6

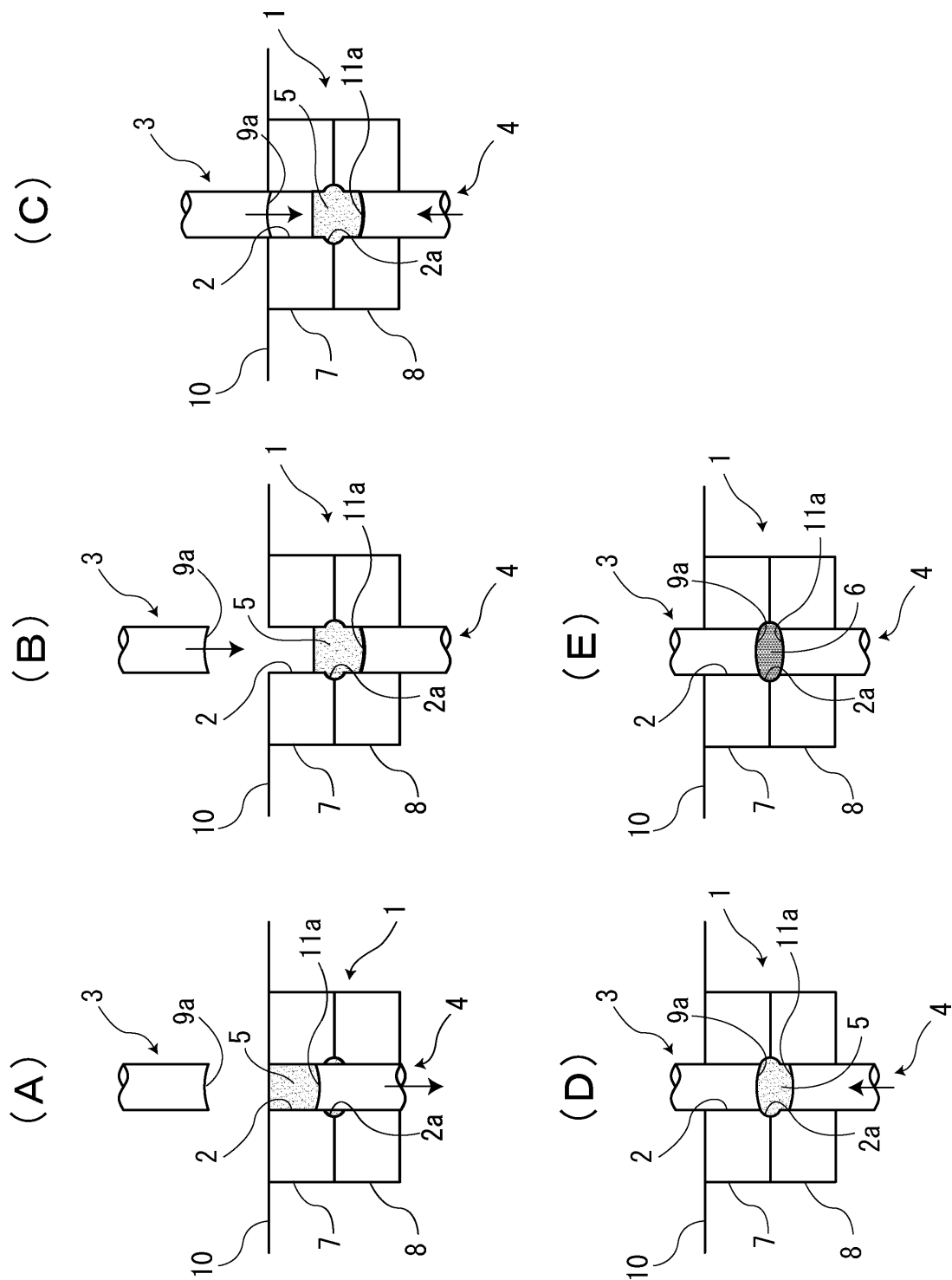


FIG. 7

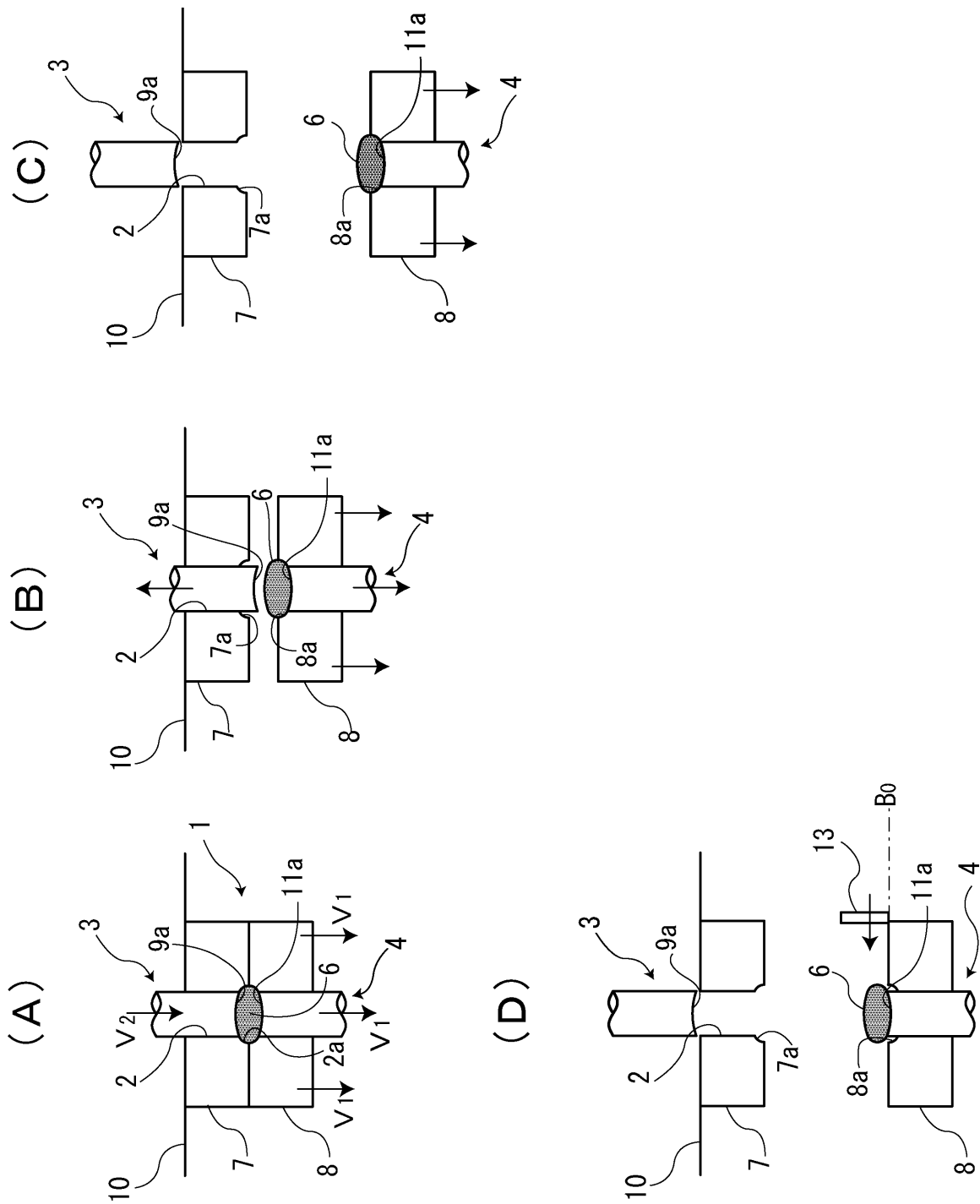


FIG. 8

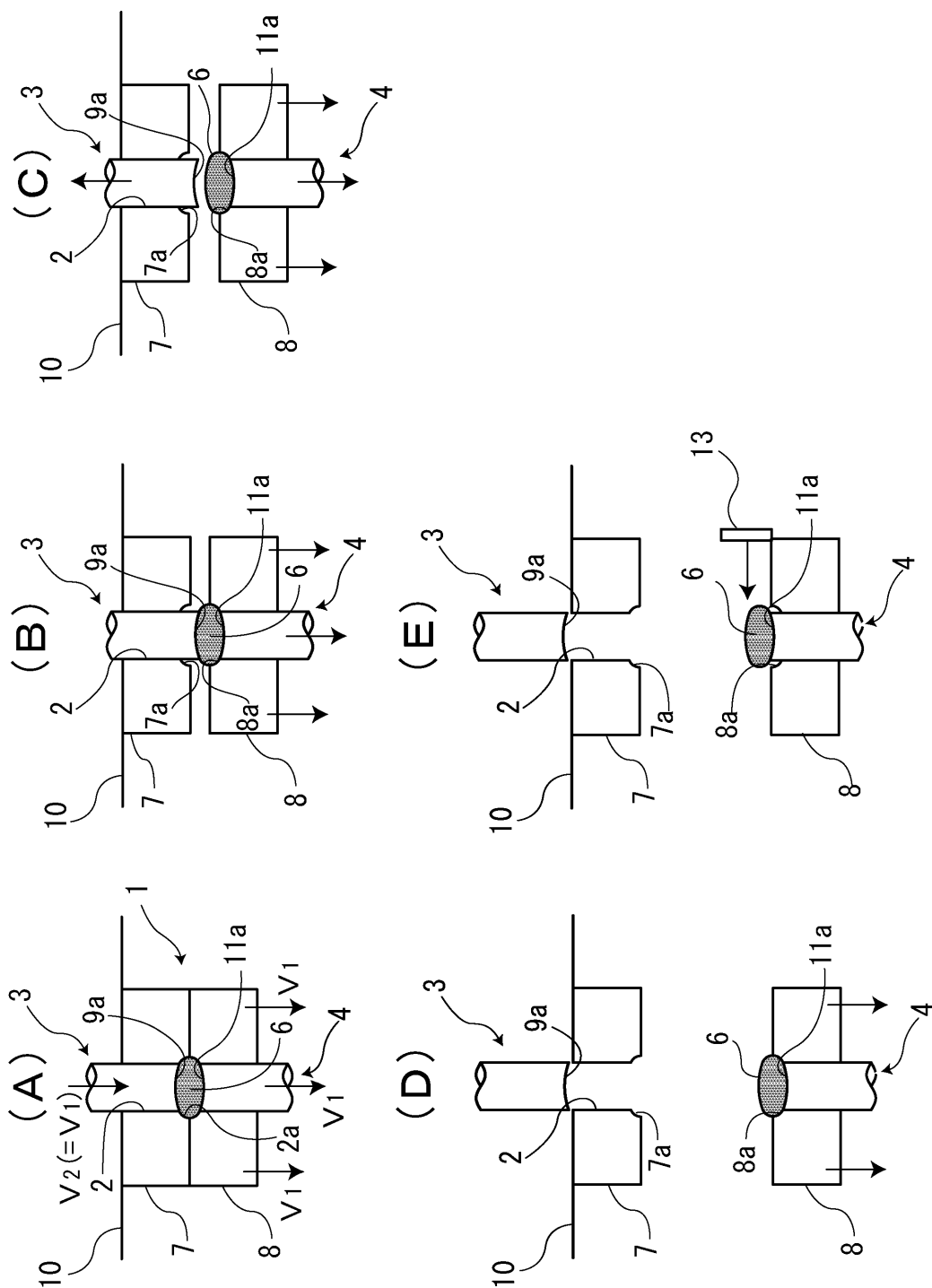


FIG. 9

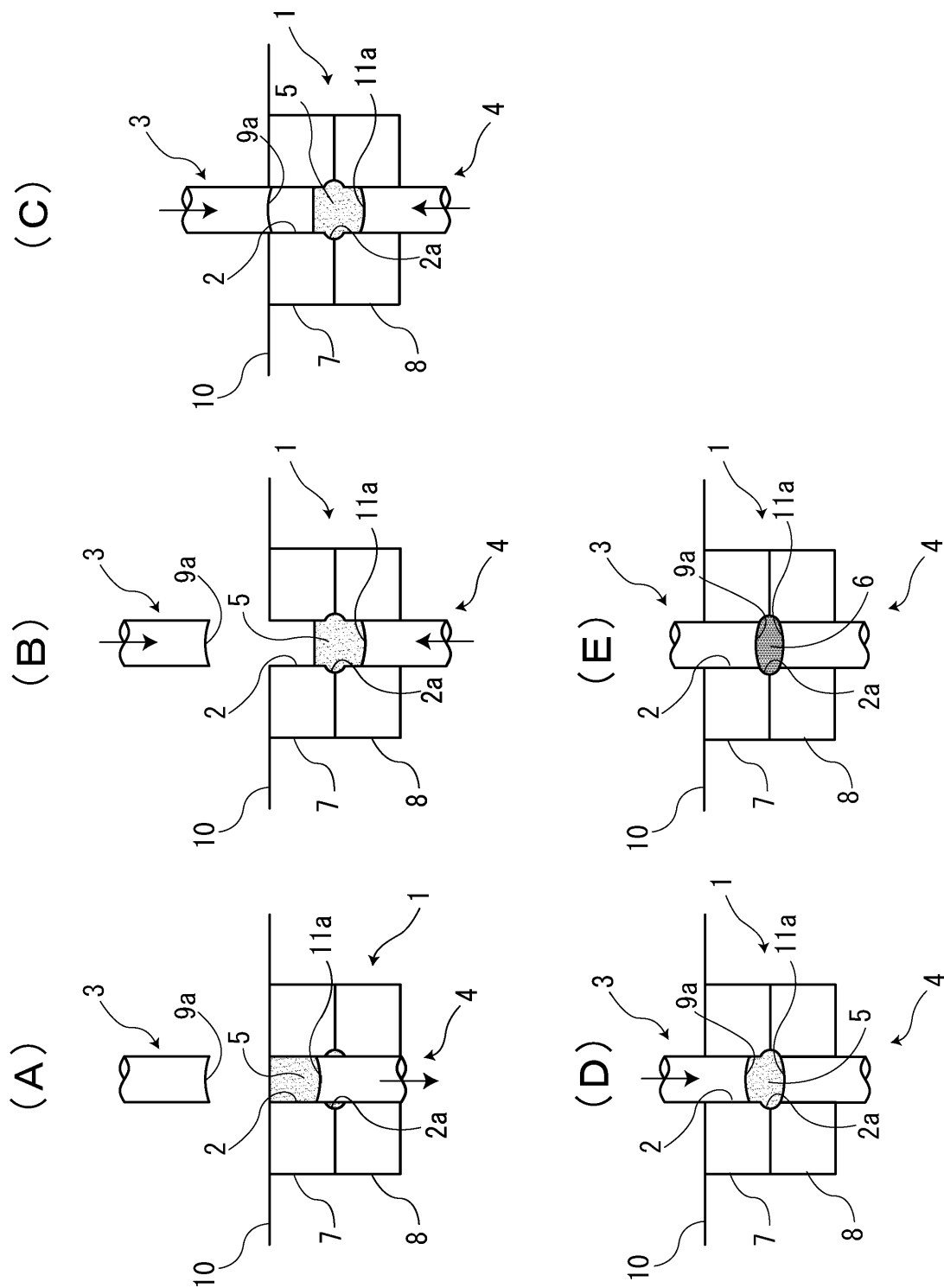


FIG. 10

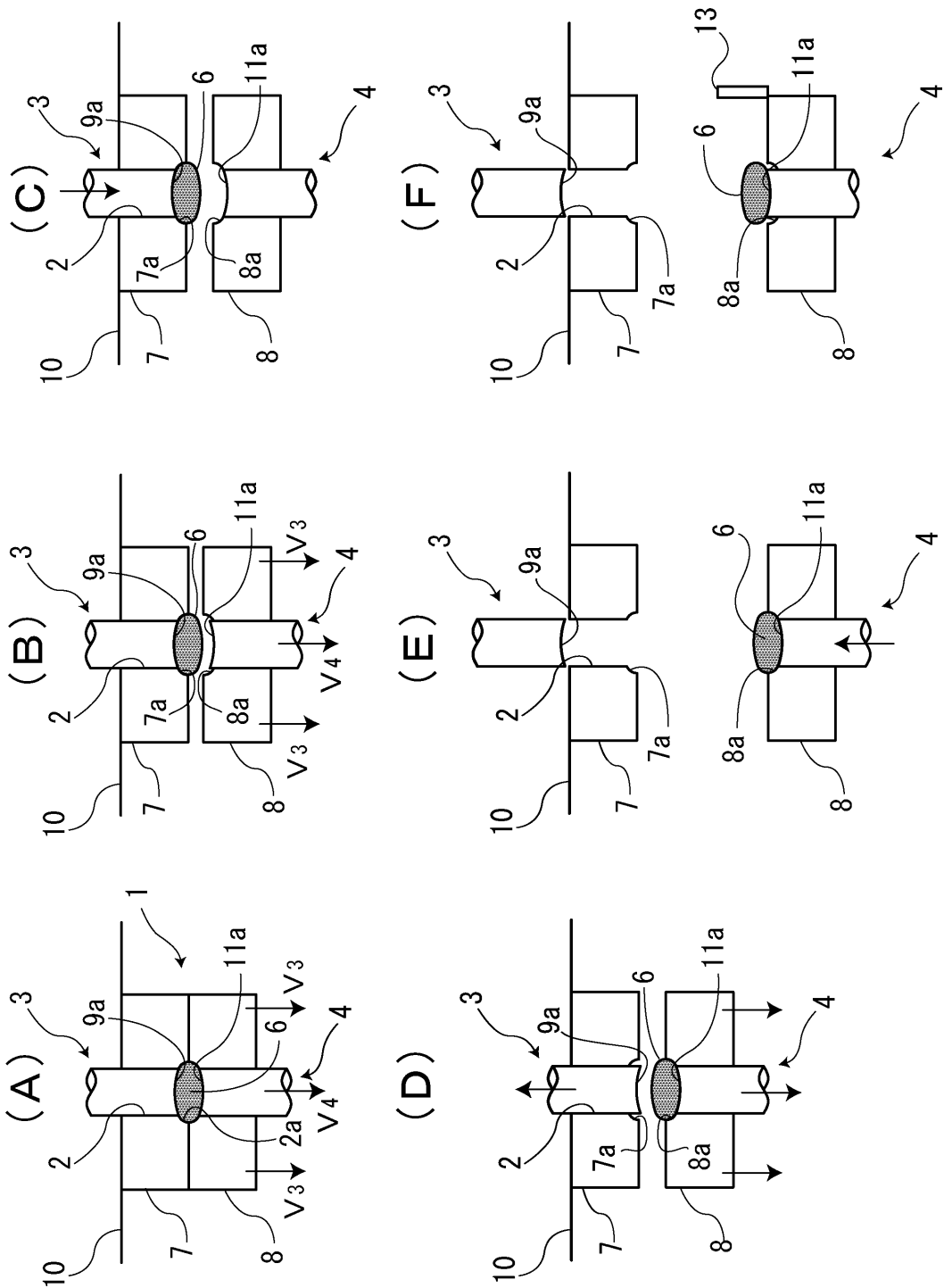


FIG. 11

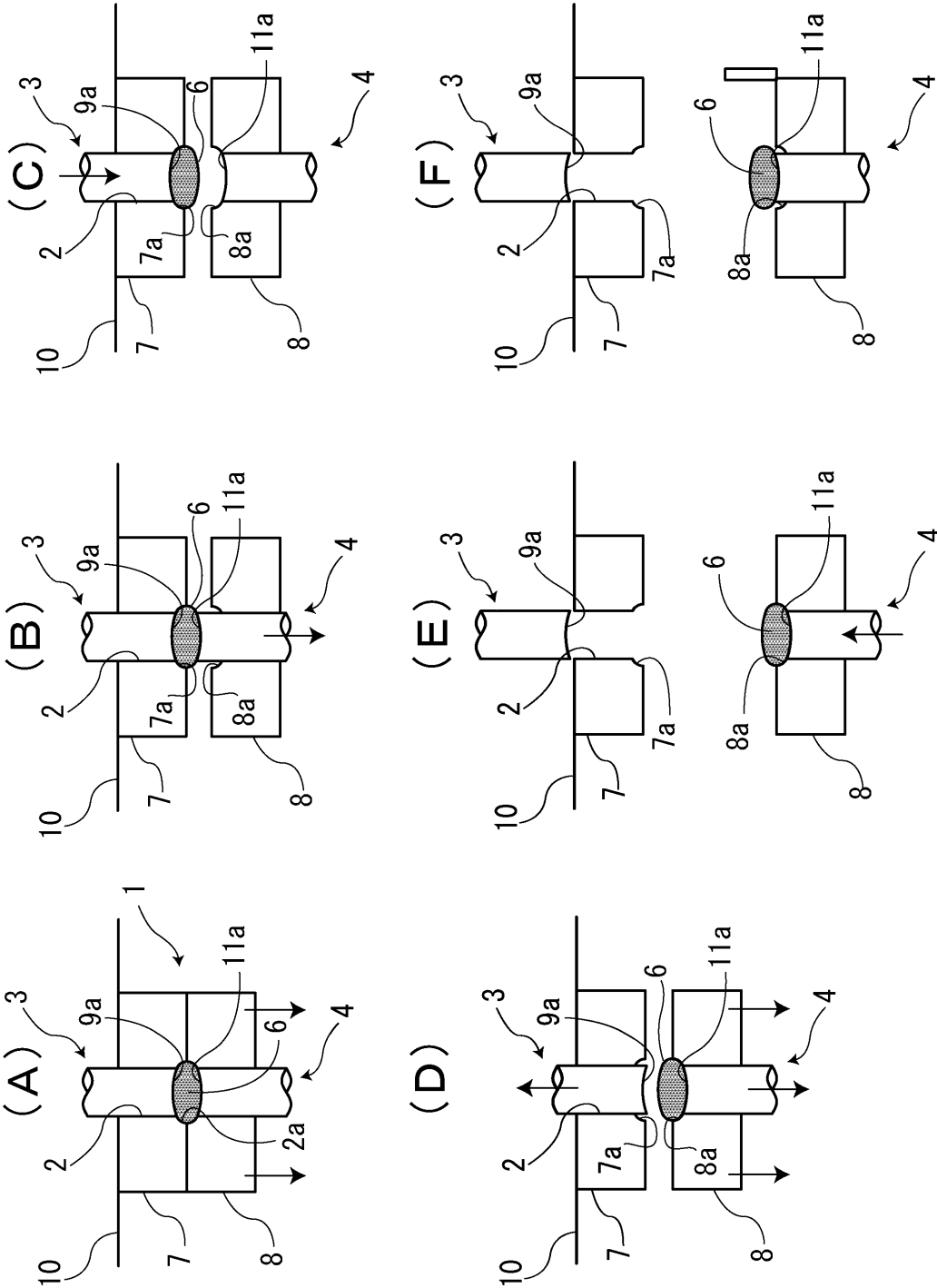


FIG. 12

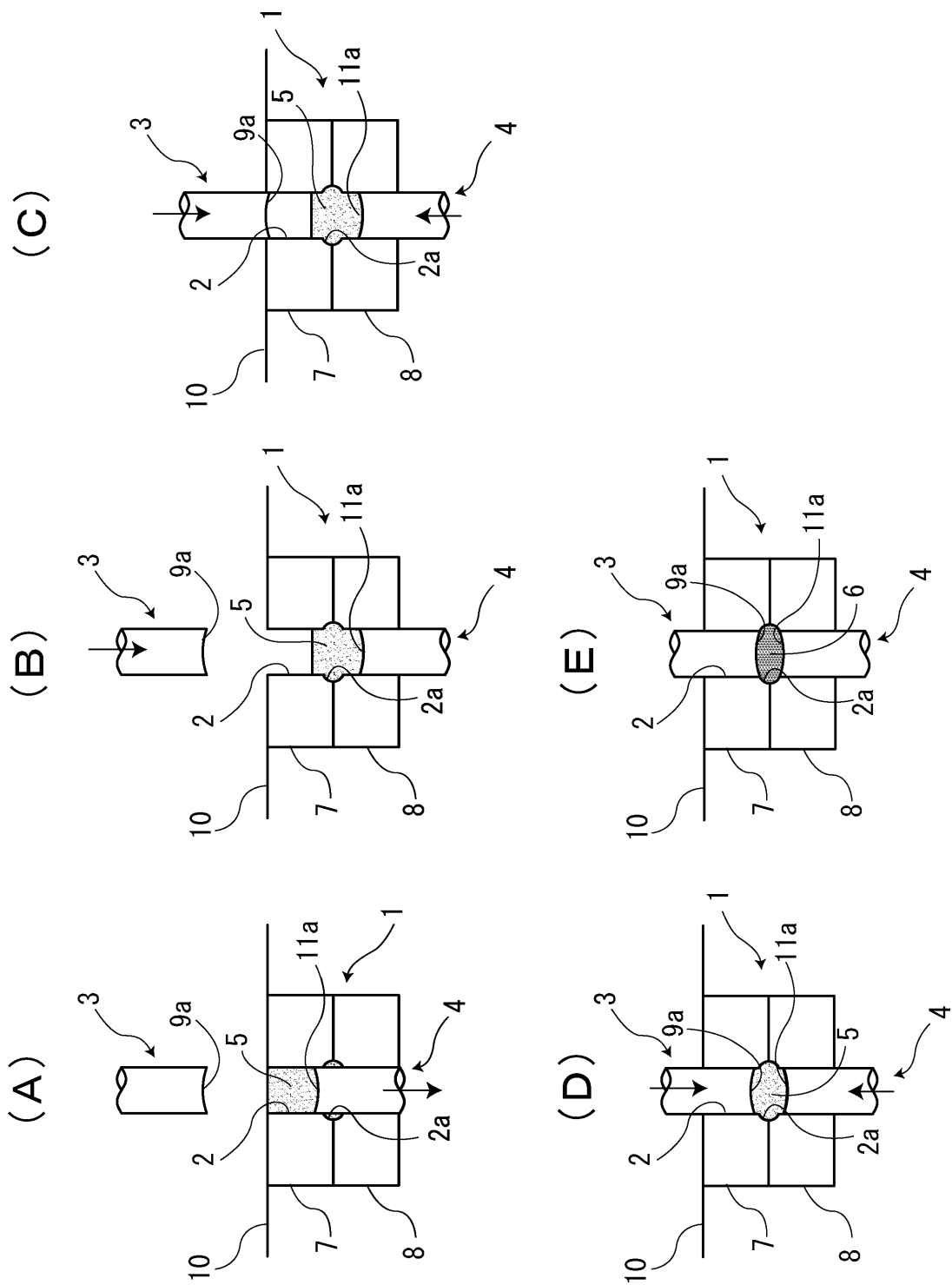


FIG. 13

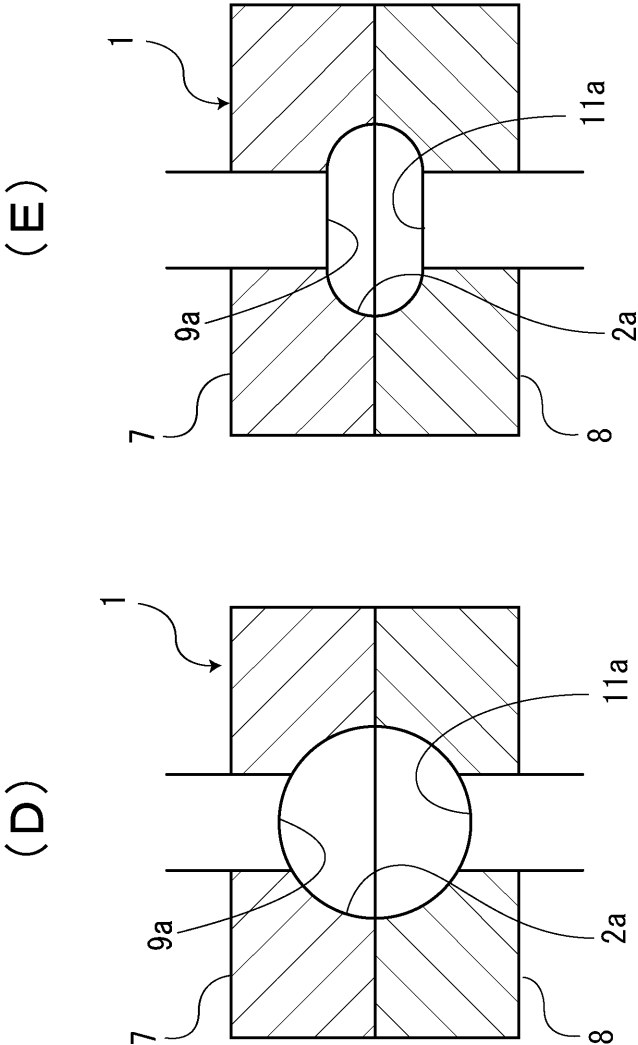
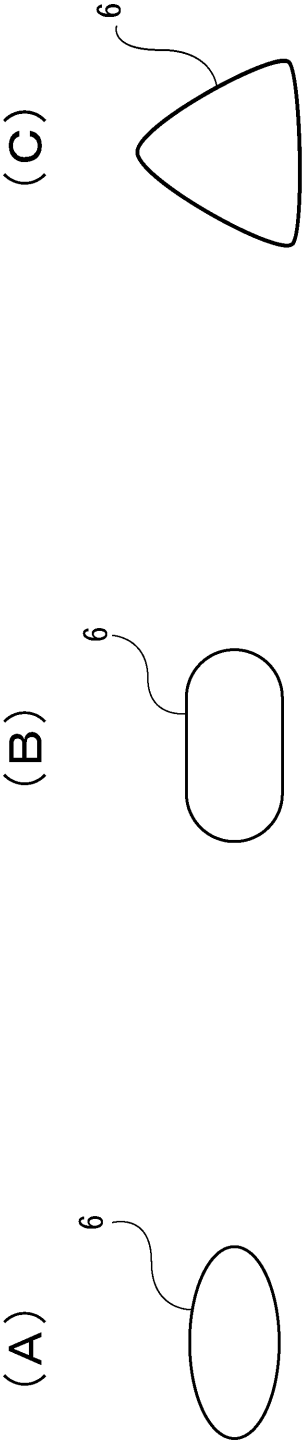
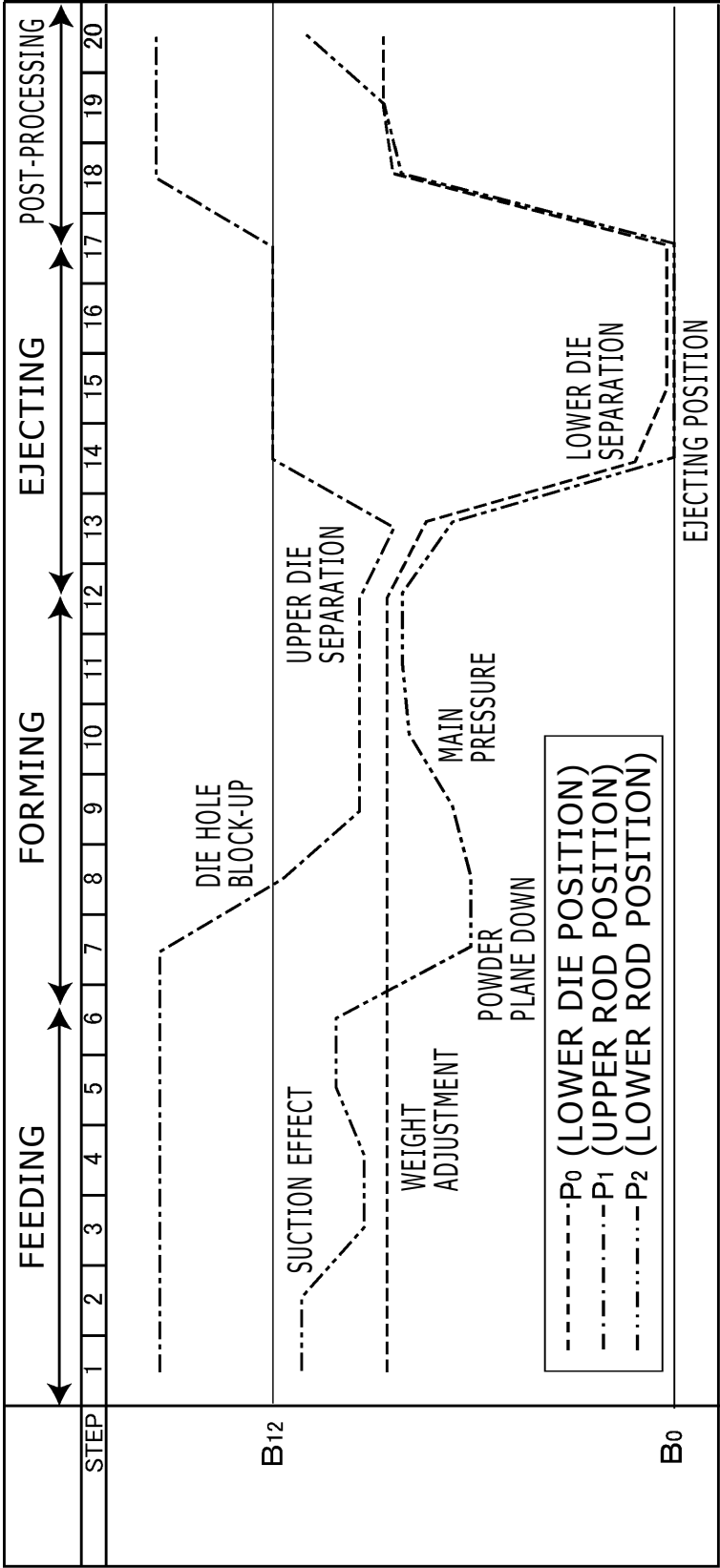
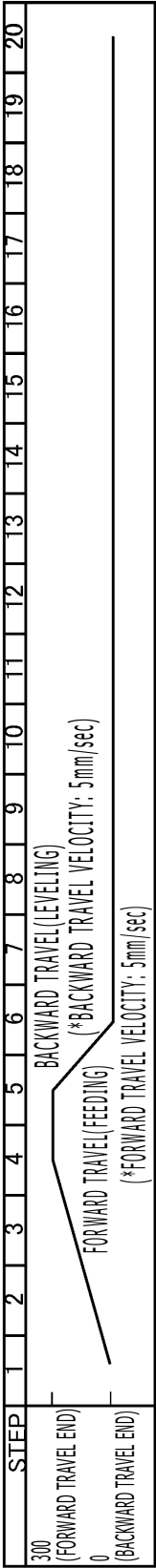


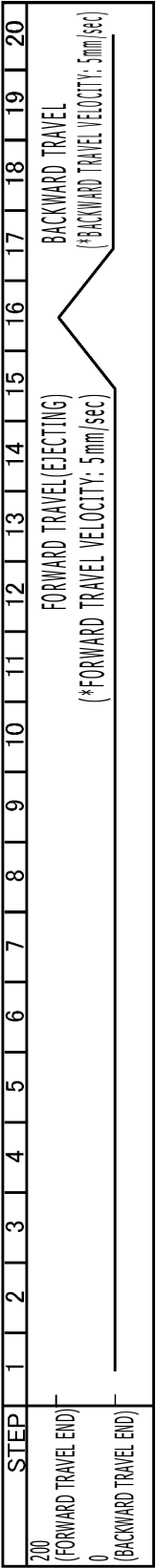
FIG. 14



(A)



(B)



(C)

(A)

STEP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HOLD TIME(sec)	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UPPER ROD POSITION(mm)	50.0	50.0	50.0	50.0	50.0	50.0	50.0	-3.0	-14.7	-14.7	-14.7	-14.7	-16.7	0.0	0.0	0.0	0.0	50.0	50.0	50.0
UPPER ROD VELOCITY(mm/sec)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	40.0	20.0	20.0	5.0	1.0	V2	30.0	1.0	1.0	1.0	20.0	1.0	1.0
LOWER ROD POSITION(mm)	-6.0	-6.0	-15.0	-15.0	-12.0	-12.0	-25.0	-25.0	-20.7	-17.2	-17.1	-17.1	-20.0	-58.1	-58.1	-57.7	-57.7	-16.6	-15.6	-6.0
LOWER ROD VELOCITY(mm/sec)	1.0	1.0	10.0	1.0	5.0	5.0	10.0	5.0	20.0	20.0	5.0	1.0	V1	30.0	1.0	1.0	1.0	20.0	20.0	20.0
LOWER DIE POSITION(mm)	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	39.5	1.5	0.0	0.0	0.0	41.8	42.0	42.0
LOWER DIE VELOCITY(mm/sec)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	V1	30.0	5.0	1.0	1.0	20.0	20.0	20.0

(B)

V1(mm/s)	V2(mm/s)	TABLET THICKNESS(mm)	HARDNESS(kgf)	FRIABILITY(%)	STATE OBSERVED AFTER FRIABILITY TESTING
3	10	4.788	10.1	0.00	NO CHIPPED OR LIKE
3	15	4.801	10.8	0.00	NO CHIPPED OR LIKE
3	20	4.804	11.3	0.00	NO CHIPPED OR LIKE
3	30	4.802	11.0	0.01	NO CHIPPED OR LIKE
3	40	4.809	10.2	0.00	NO CHIPPED OR LIKE
5	10	4.775	12.1	0.00	NO CHIPPED OR LIKE
5	20	4.795	10.5	0.00	NO CHIPPED OR LIKE
5	30	4.806	11.3	0.00	NO CHIPPED OR LIKE
5	35	4.816	10.9	0.00	NO CHIPPED OR LIKE
5	40	4.826	11.0	0.00	NO CHIPPED OR LIKE
5	60	4.787	10.6	0.00	NO CHIPPED OR LIKE

(C)

INTERVAL	TABLET THICKNESS(mm)	HARDNESS(kgf)	FRIABILITY(%)	STATE OBSERVED AFTER FRIABILITY TESTING
0.5sec	4.818	10.5	0.39	CHIPPED 13-TABLET SURFACES ADJACENT TO UPPER DIE
0.1sec	4.822	10.8	0.22	CHIPPED 13-TABLET SURFACES ADJACENT TO UPPER DIE
0.05sec	4.828	10.2	0.22	CHIPPED 8-TABLET SURFACES ADJACENT TO UPPER DIE
0.025sec	4.818	10.8	0.21	CHIPPED 10-TABLET SURFACES ADJACENT TO UPPER DIE
0.01sec	4.813	10.4	0.22	CHIPPED 10-TABLET SURFACES ADJACENT TO UPPER DIE
0.005sec	4.815	10.5	0.25	CHIPPED 10-TABLET SURFACES ADJACENT TO UPPER DIE

FIG. 16

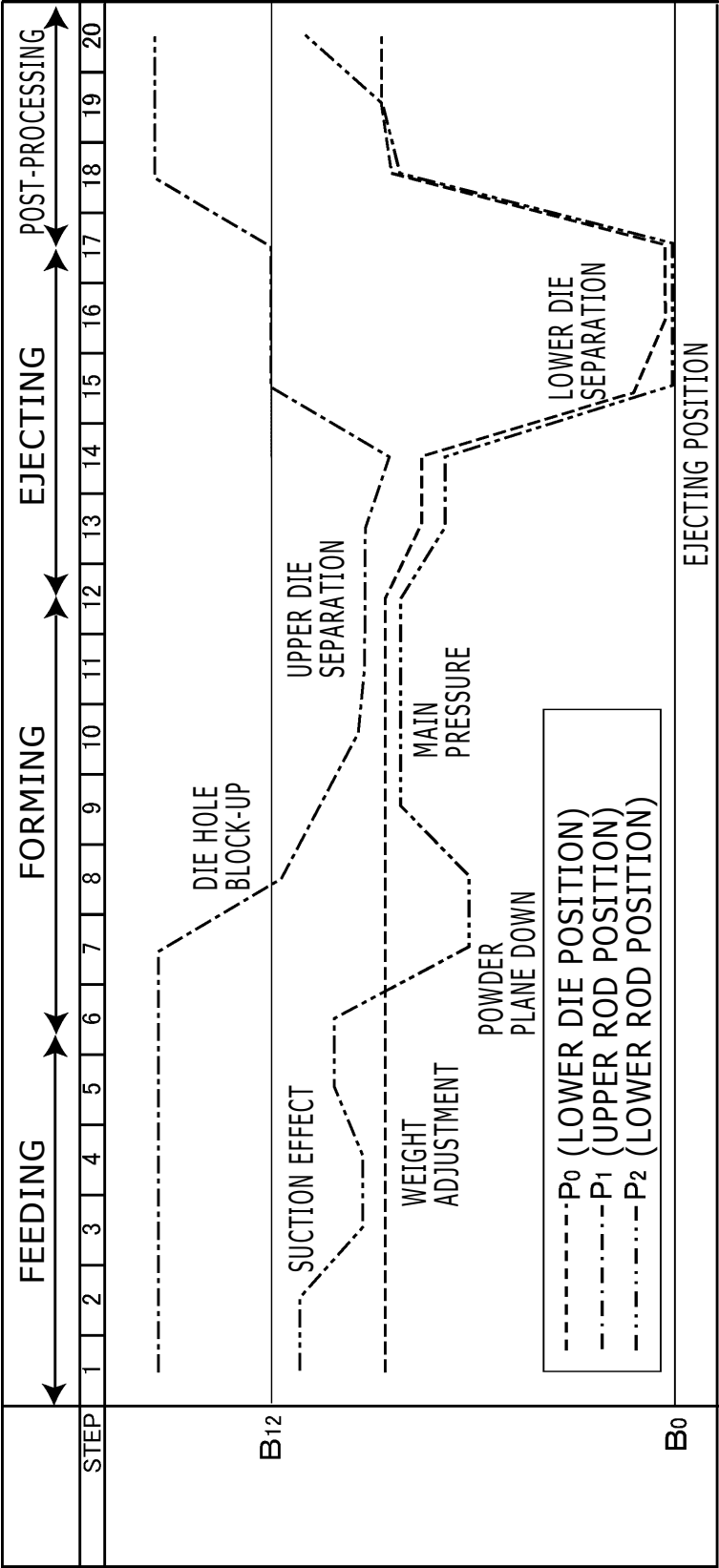


FIG. 17

(A)

STEP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HOLD TIME(sec)	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UPPER ROD POSITION(mm)	50.0	50.0	50.0	50.0	50.0	50.0	50.0	-3.0	-11.3	-14.8	-14.9	-14.9	-14.9	-16.4	0.0	0.0	0.0	50.0	50.0	50.0
UPPER ROD VELOCITY(mm/sec)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	40.0	20.0	20.0	5.0	1.0	1.0	1.0	30.0	1.0	1.0	20.0	1.0	1.0
LOWER ROD POSITION(mm)	-6.0	-6.0	-15.0	-15.0	-12.0	-12.0	-25.0	-25.0	-17.5	-17.5	-17.5	-17.5	-20.0	-20.0	-58.1	-57.7	-57.7	-16.6	-15.6	-6.0
LOWER ROD VELOCITY(mm/sec)	1.0	1.0	10.0	1.0	5.0	5.0	10.0	5.0	20.0	20.0	5.0	1.0	V ₂	1.0	30.0	1.0	1.0	20.0	20.0	20.0
LOWER DIE POSITION(mm)	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	39.5	39.5	1.5	0.0	0.0	41.8	42.0	42.0
LOWER DIE VELOCITY(mm/sec)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	V ₁	1.0	30.0	5.0	1.0	20.0	20.0	20.0

(B)

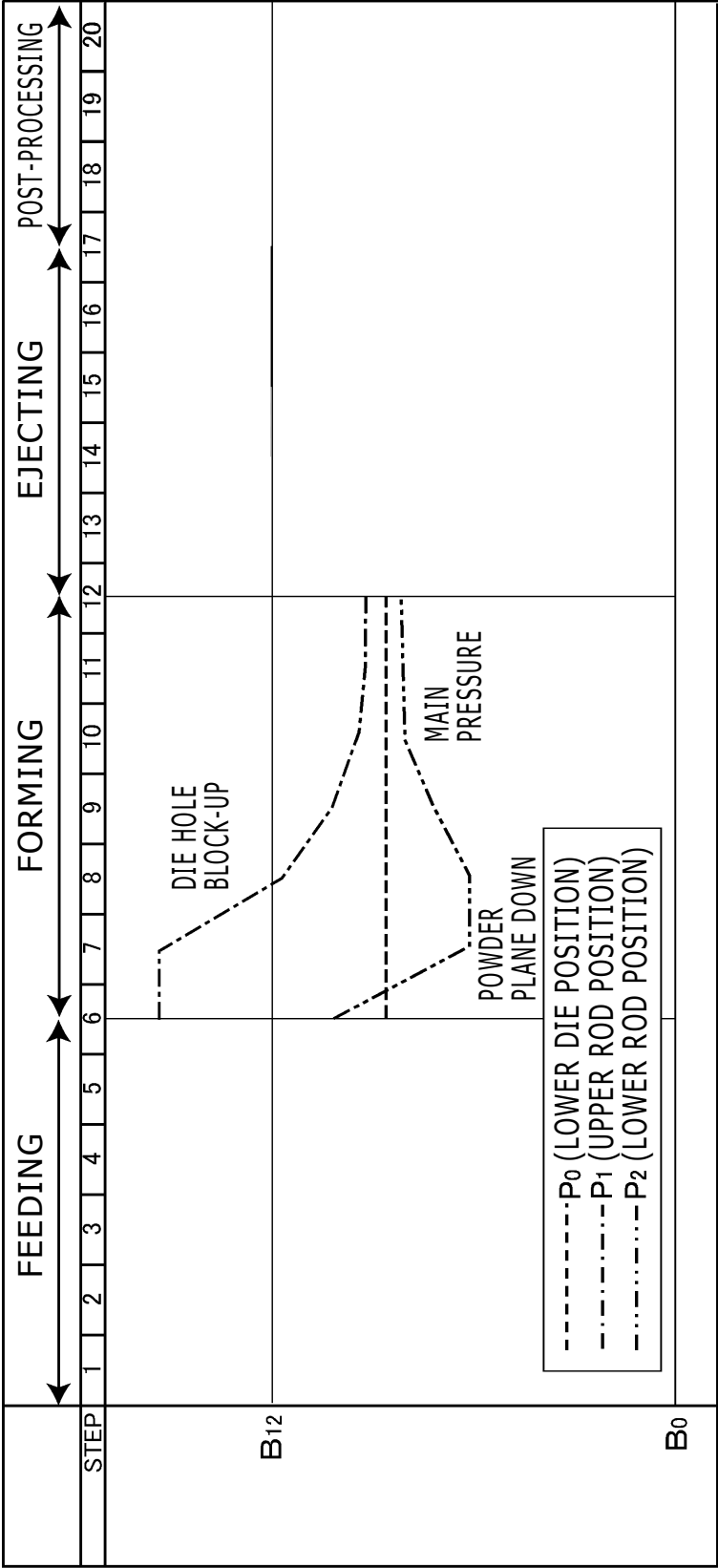
V ₃ (mm/s)	V ₄ (mm/s)	TABLET THICKNESS(mm)	HARDNESS(kgf)	FRIABILITY(%)	STATE OBSERVED AFTER FRIABILITY TESTING
3	10	4.832	9.4	0.12	SHED-OFF FEW TABLET SURFACES ADJACENT TO UPPER DIE
3	20	4.797	10.7	0.93	CHIPPED 23-TABLET SURFACES ADJACENT TO LOWER DIE
3	30	4.793	9.3	1.54	CHIPPED 23-TABLET SURFACES ADJACENT TO LOWER DIE
3	50	4.819	9.8	0.40	CHIPPED 34-TABLET SURFACES ADJACENT TO LOWER DIE
5	10	4.830	8.6	0.66	CHIPPED 23-TABLET SURFACES ADJACENT TO UPPER AND LOWER DIES
5	30	4.827	9.1	1.18	CHIPPED 23-TABLET SURFACES ADJACENT TO UPPER AND LOWER DIES
5	50	4.832	8.9	0.31	CHIPPED 14-TABLET SURFACES ADJACENT TO LOWER DIE
7	30	4.842	8.8	0.24	CHIPPED 5-TABLET SURFACES ADJACENT TO LOWER DIE
7	50	4.848	8.9	0.16	CHIPPED 16-TABLET SURFACES ADJACENT TO LOWER DIE

(C)

INTERVAL	TABLET THICKNESS(mm)	HARDNESS(kgf)	FRIABILITY(%)	STATE OBSERVED AFTER FRIABILITY TESTING
0.5sec				
0.1sec	4.826	9.7	0.09	SHED-OFF FEW TABLET SURFACES ADJACENT TO UPPER DIE
0.05sec	4.833	9.7	0.10	SHED-OFF FEW TABLET SURFACES ADJACENT TO UPPER DIE
0.025sec	4.823	10.0	0.13	SHED-OFF FEW TABLET SURFACES ADJACENT TO UPPER DIE
0.01sec	4.823	9.5	0.10	SHED-OFF FEW TABLET SURFACES ADJACENT TO UPPER DIE
0.005sec	4.812	9.4	0.09	SHED-OFF FEW TABLET SURFACES ADJACENT TO UPPER DIE

FIG. 18

(A)



(B)

STEP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HOLD TIME(sec)							0.0	0.0	0.0	0.0	0.0	0.0	0.0							
UPPER ROD POSITION(mm)							50.0	-3.0	-11.2	-14.7	-14.8	-14.8								
UPPER ROD VELOCITY(mm/sec)							1.0	40.0	20.0	20.0	5.0	1.0								
LOWER ROD POSITION(mm)							-25.0	-25.0	-20.8	-17.3	-17.2	-17.2								
LOWER ROD VELOCITY(mm/sec)							10.0	5.0	20.0	20.0	5.0	1.0								
LOWER DIE POSITION(mm)							42.0	42.0	42.0	42.0	42.0	42.0								
LOWER DIE VELOCITY(mm/sec)							1.0	1.0	1.0	1.0	1.0	1.0								

19/20

FIG. 19

(A)

V1(mm/s)	V2(mm/s)	TABLET THICKNESS(mm)	HARDNESS(kgf)	FRIABILITY(%)	STATE OBSERVED AFTER FRIABILITY TESTING
0.5	1	4.715	10.4	0.31	CHIPPED 11-TABLET SURFACES ADJACENT TO UPPER DIE
0.5	3	4.779	10.1	0.00	NO CHIPPED OR LIKE
0.5	5	4.789	9.6	0.01	NO CHIPPED OR LIKE
0.5	7	4.818	9.0	0.00	NO CHIPPED OR LIKE
1	3	4.790	10.4	0.00	NO CHIPPED OR LIKE
1	5	4.811	9.6	0.00	NO CHIPPED OR LIKE
1	7	4.825	9.4	0.00	NO CHIPPED OR LIKE
3	10	4.786	9.1	0.18	CHIPPED 8-TABLET SURFACES ADJACENT TO UPPER DIE
3	15	4.797	9.7	0.04	CHIPPED 3-TABLET SURFACES ADJACENT TO UPPER DIE
3	17	4.739	9.7	0.03	CHIPPED 5-TABLET SURFACES ADJACENT TO UPPER DIE
3	20	4.823	9.3	0.01	CHIPPED 4-TABLET SURFACES ADJACENT TO UPPER DIE
3	25	4.838	9.4	0.10	CHIPPED 12-TABLET SURFACES ADJACENT TO UPPER DIE
3	30	4.845	9.9	0.28	CHIPPED 8-TABLET SURFACES ADJACENT TO UPPER DIE
3	35	4.829	9.0	0.16	CHIPPED 4-TABLET SURFACES ADJACENT TO UPPER DIE
3	40	4.828	8.3	0.09	CHIPPED 8-TABLET SURFACES ADJACENT TO UPPER DIE
3	45	4.826	9.0	0.16	CHIPPED 6-TABLET SURFACES ADJACENT TO UPPER DIE
5	10				
5	20	4.839	8.9	0.55	CHIPPED 17-TABLET SURFACES ADJACENT TO UPPER DIE
5	30	4.850	9.0	0.48	CHIPPED 13-TABLET SURFACES ADJACENT TO UPPER DIE
5	35	4.835	9.6	0.12	CHIPPED 7-TABLET SURFACES ADJACENT TO UPPER DIE
5	40	4.856	8.9	0.22	CHIPPED 11-TABLET SURFACES ADJACENT TO UPPER DIE
5	50				
5	60				
7	20				
7	30	4.829	8.6	1.06	CHIPPED 18-TABLET SURFACES ADJACENT TO UPPER DIE
7	35	4.829	8.9	1.13	CHIPPED 23-TABLET SURFACES ADJACENT TO UPPER DIE
7	40	4.826	8.1	0.54	CHIPPED 14-TABLET SURFACES ADJACENT TO UPPER DIE
7	45	4.812	9.0	0.60	CHIPPED 19-TABLET SURFACES ADJACENT TO UPPER DIE
7	50				
7	60				

(B)

V3(mm/s)	V4(mm/s)	TABLET THICKNESS(mm)	HARDNESS(kgf)	FRIABILITY(%)	STATE OBSERVED AFTER FRIABILITY TESTING
3	10	4.755	9.5	0.69	CHIPPED 23-TABLET SURFACES ADJACENT TO LOWER DIE
3	20				
3	30				
3	50				
5	10	4.772	9.8	0.04	CHIPPED 2-TABLET SURFACES ADJACENT TO LOWER DIE
5	30	4.754	8.7	0.69	CHIPPED 23-TABLET SURFACES ADJACENT TO LOWER DIE
5	50	4.768	8.9	0.10	CHIPPED 14-TABLET SURFACES ADJACENT TO LOWER DIE
7	30	4.767	8.8	0.11	CHIPPED 8-TABLET SURFACES ADJACENT TO LOWER DIE
7	50	4.761	9.4	0.00	CHIPPED 1-TABLET SURFACES ADJACENT TO LOWER DIE

(C)

V1(mm/s)	V2(mm/s)		TABLET THICKNESS(mm)	HARDNESS(kgf)	FRIABILITY(%)	STATE OBSERVED AFTER FRIABILITY TESTING
	LOWER ROD	LOWER DIE				
1	5	3	4.815	9.9	0.10	CHIPPED 7-TABLET SURFACES ADJACENT TO UPPER DIE
1	7	3	4.820	9.6	0.00	NO CHIPPED OR LIKE
1	5	7	4.799	9.0	0.04	NO CHIPPED OR LIKE
1	7	5	4.813	10.7	0.00	NO CHIPPED OR LIKE

FIG. 20

V3(mm/s)	V4(mm/s)	TABLET THICKNESS(mm)	HARDNESS(kgf)	FRIABILITY(%)	STATE OBSERVED AFTER FRIABILITY TESTING
3	10	4.771	11.6	0.19	CHIPPED 18-TABLET SURFACES ADJACENT TO UPPER DIE
3	20	4.750	9.4	1.36	CHIPPED 23-TABLET SURFACES ADJACENT TO UPPER DIE
3	30	4.741	9.3	1.39	CHIPPED 23-TABLET SURFACES ADJACENT TO UPPER DIE
3	50	4.759	11.0	0.19	CHIPPED 22-TABLET SURFACES ADJACENT TO UPPER DIE
5	10	4.788	10.7	0.00	NO CHIPPED OR LIKE
5	30	4.774	10.8	0.16	CHIPPED 12-TABLET SURFACES ADJACENT TO UPPER DIE
5	50	4.780	10.8	0.03	CHIPPED 2-TABLET SURFACES ADJACENT TO UPPER DIE
7	30	4.788	11.1	0.01	CHIPPED 1-TABLET SURFACES ADJACENT TO UPPER DIE
7	50	4.789	11.2	0.01	NO CHIPPED OR LIKE