

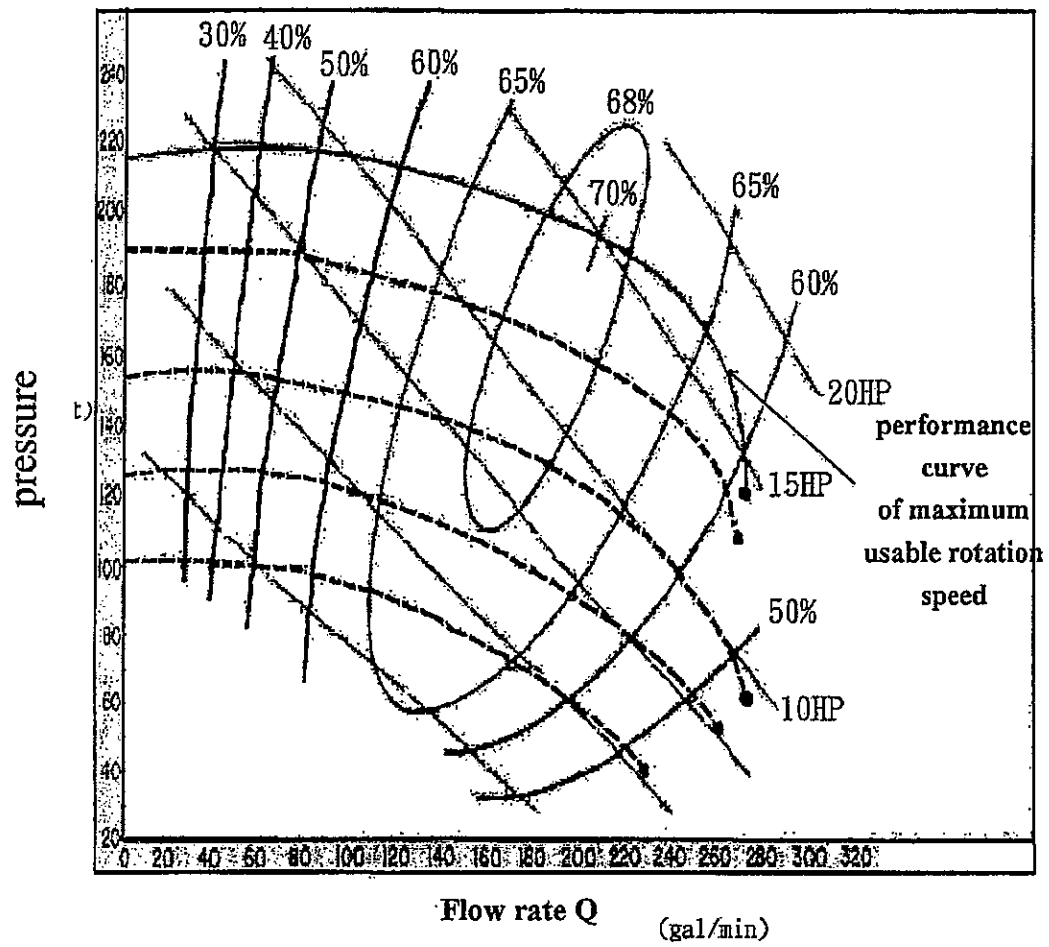


FIG.1

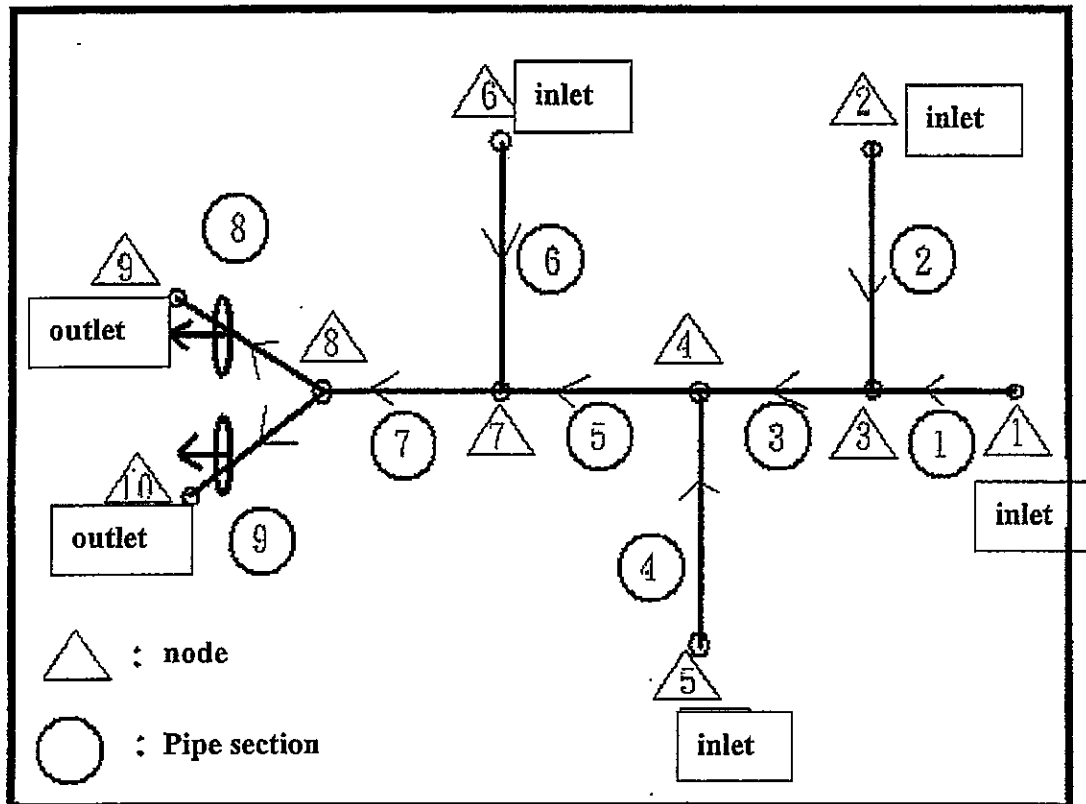


FIG. 2

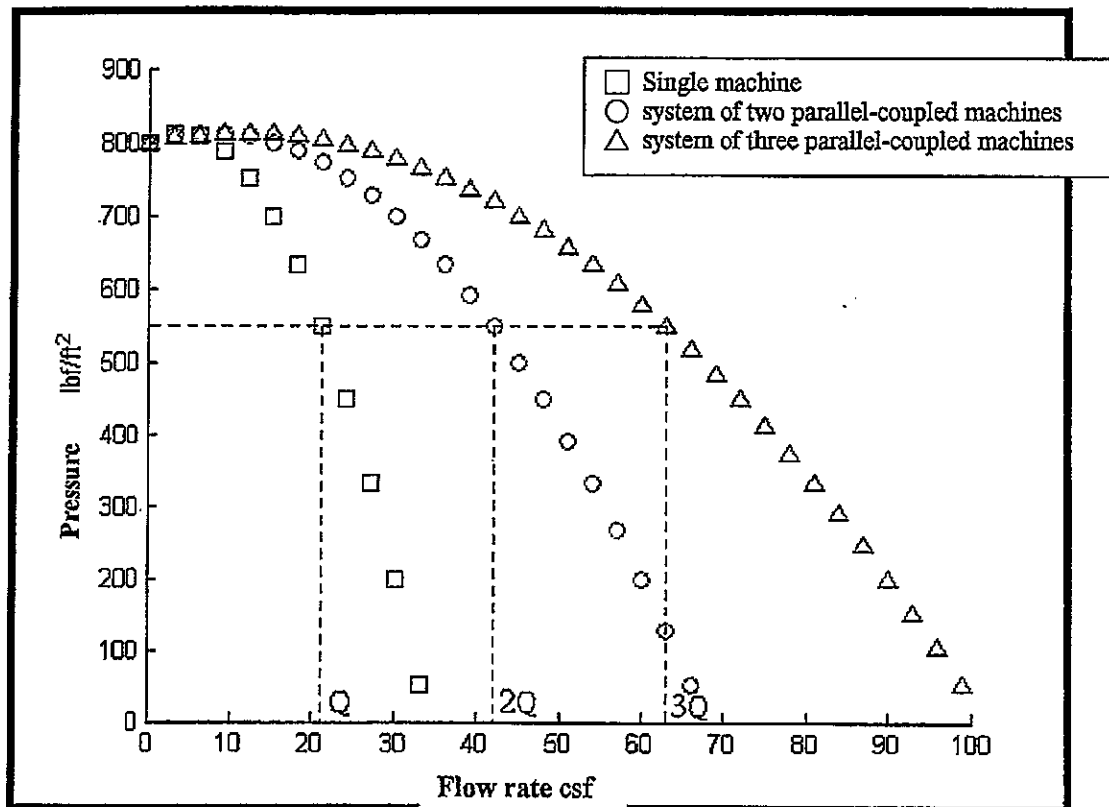


FIG. 3

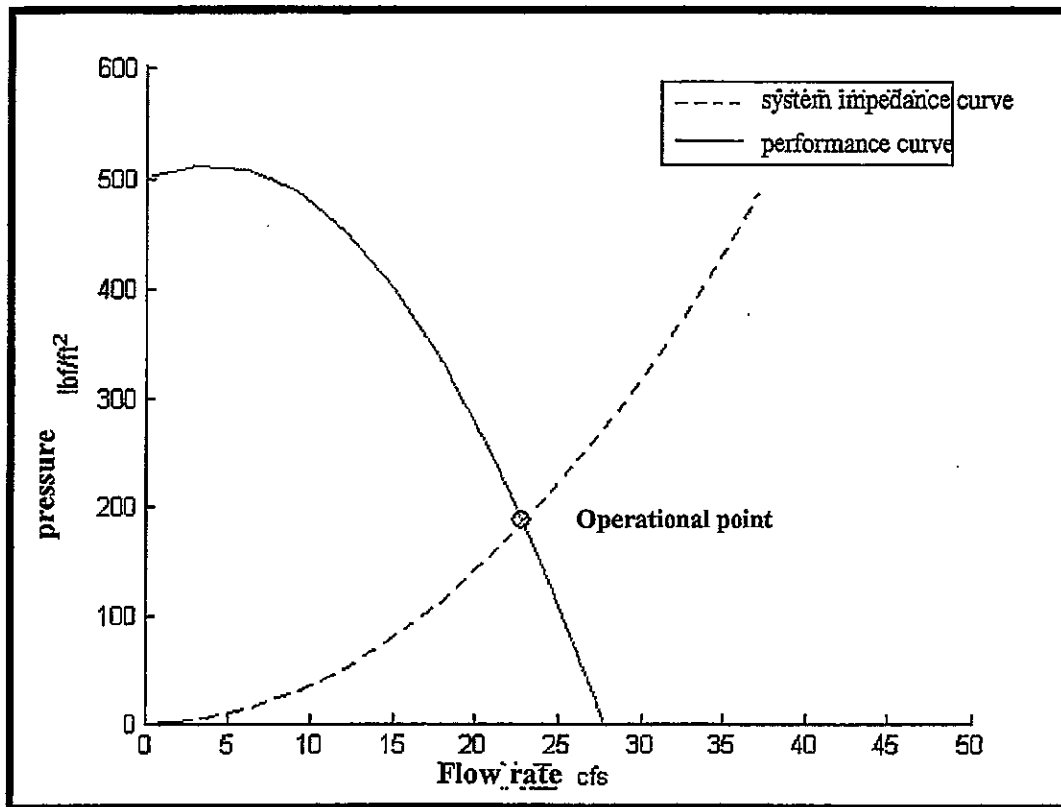


FIG.4

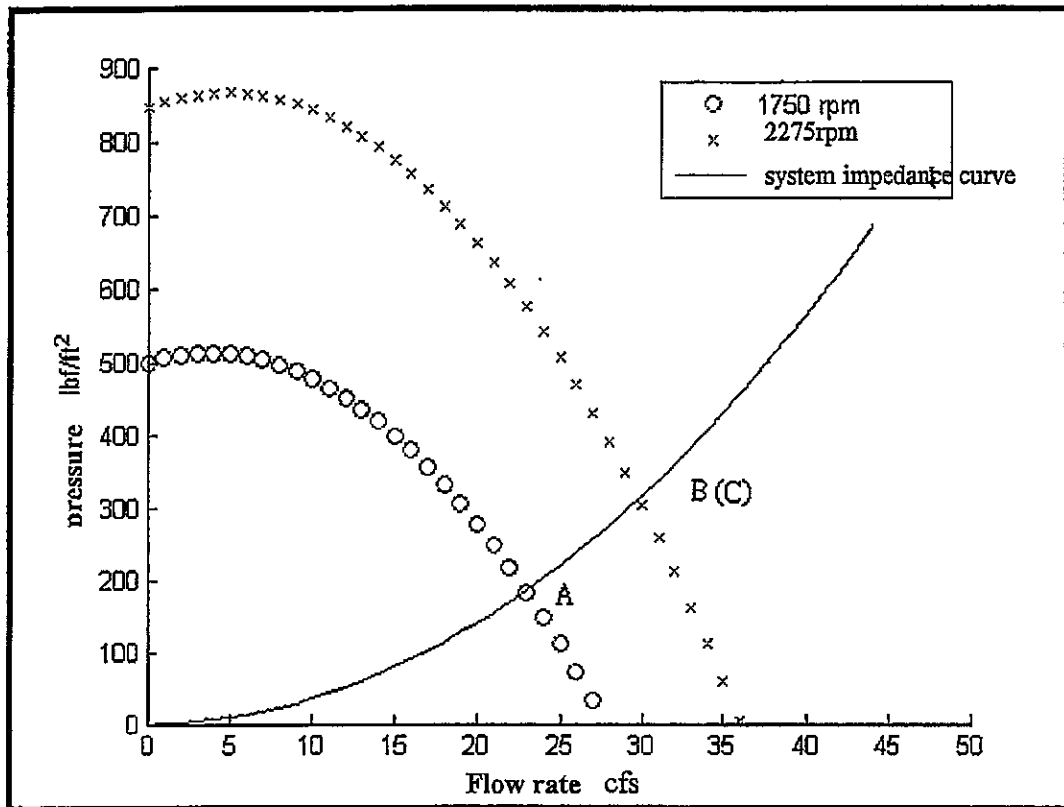


FIG. 5

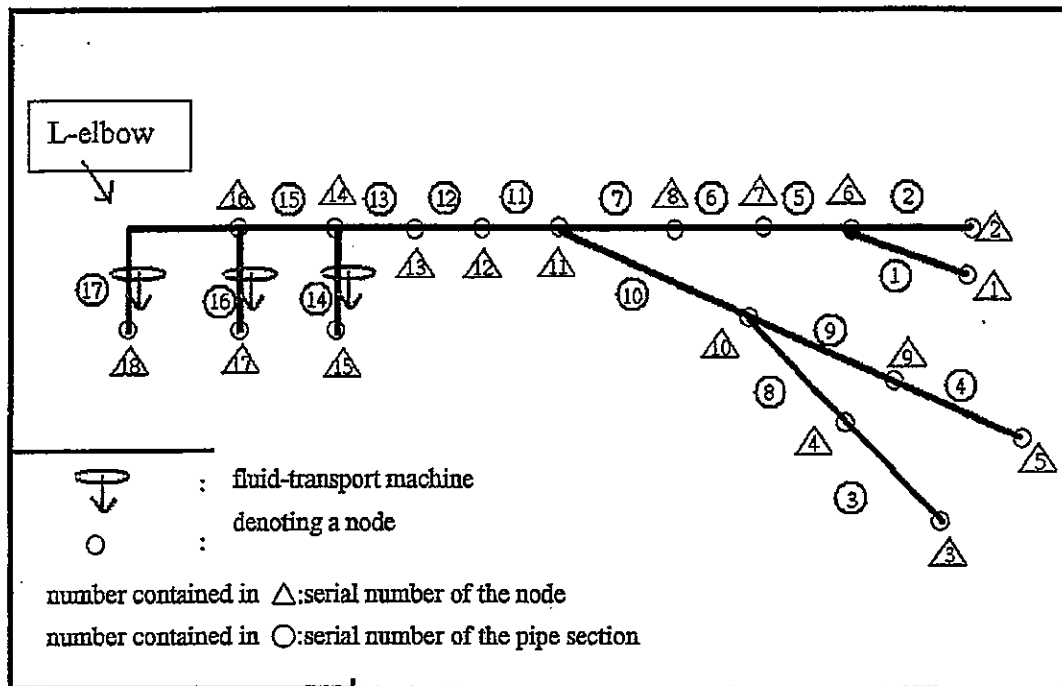


FIG. 6

serial number of a pipe	diameter(in)	length (ft)	roughness (in)	Quantity of 45° corners	Quantity of 90° corners
1	6	25	0.0018	0	1
2	6	10	0.0018	0	1
3	6	35	0.0018	0	2
4	6	10	0.0018	0	2
5	6	3.3	0.0018	0	0
6	10	3.3	0.0018	0	0
7	12	15	0.0018	0	0
8	10	3.3	0.0018	0	0
9	10	3.3	0.0018	0	0
10	10	10	0.0018	0	0
11	12	88	0.0018	0	7
12	15.75	42	0.0018	0	1
13	20	83	0.0018	2	2
14	20	10	0.0018	0	0
15	20	10	0.0018	0	0
16	20	10	0.0018	0	0
17	20	15	0.0018	0	1
density of working fluid (lbm/ft ³)		0.075			
fluid viscosity coefficient (lbf • s/ft ²)		3.84e-7			

FIG. 7

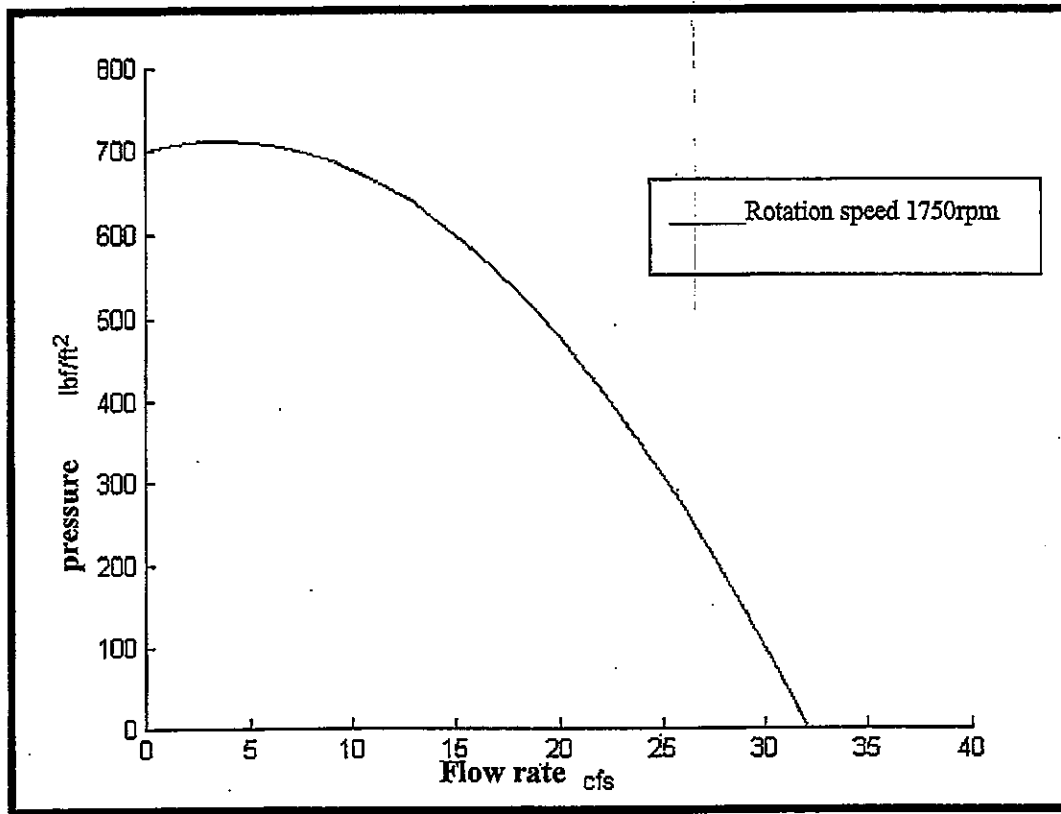


FIG. 8

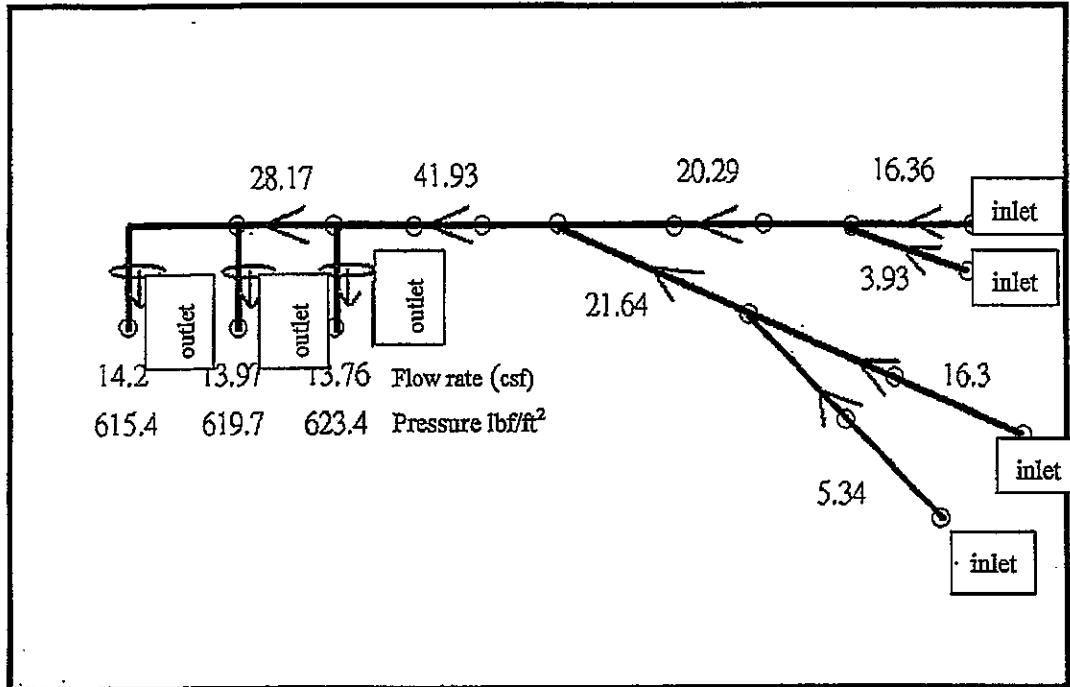


FIG. 9

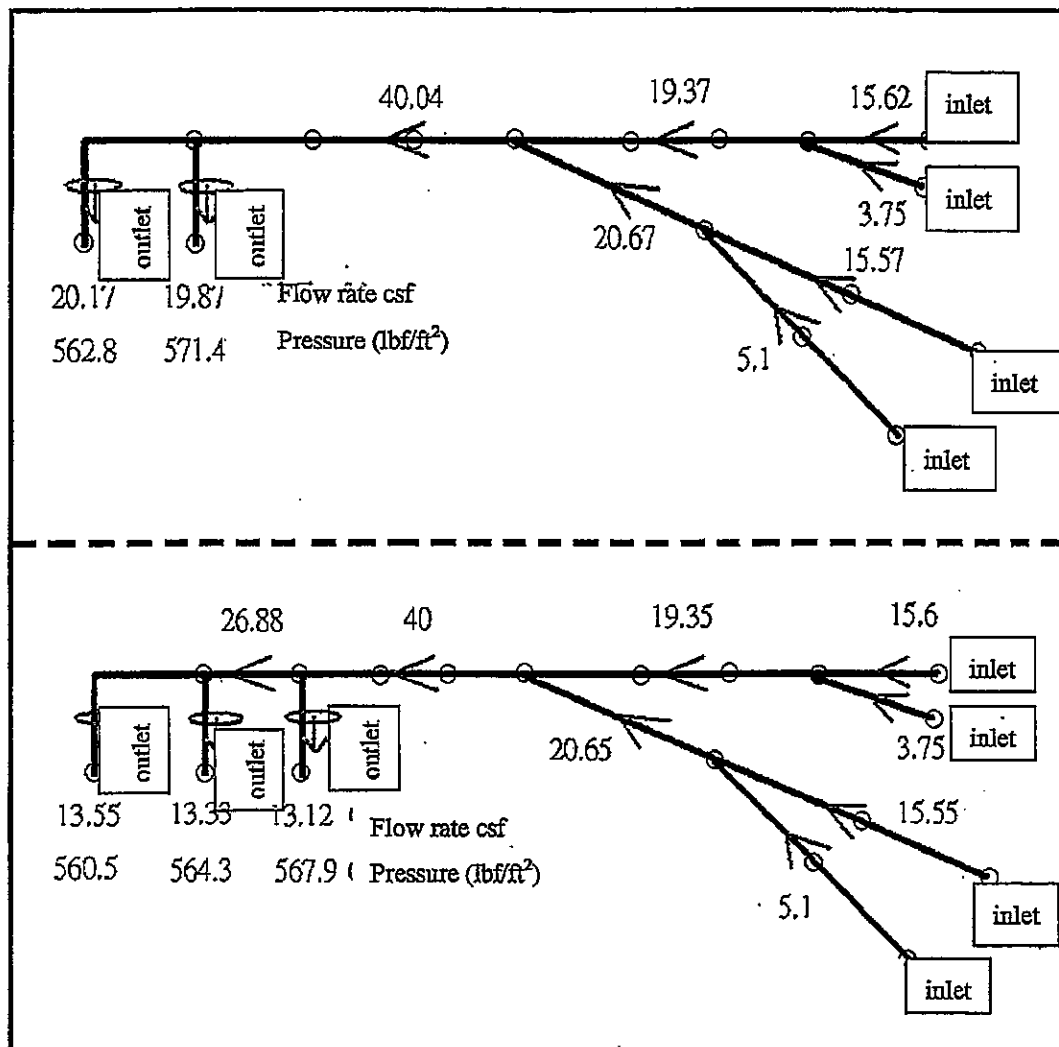


FIG. 10

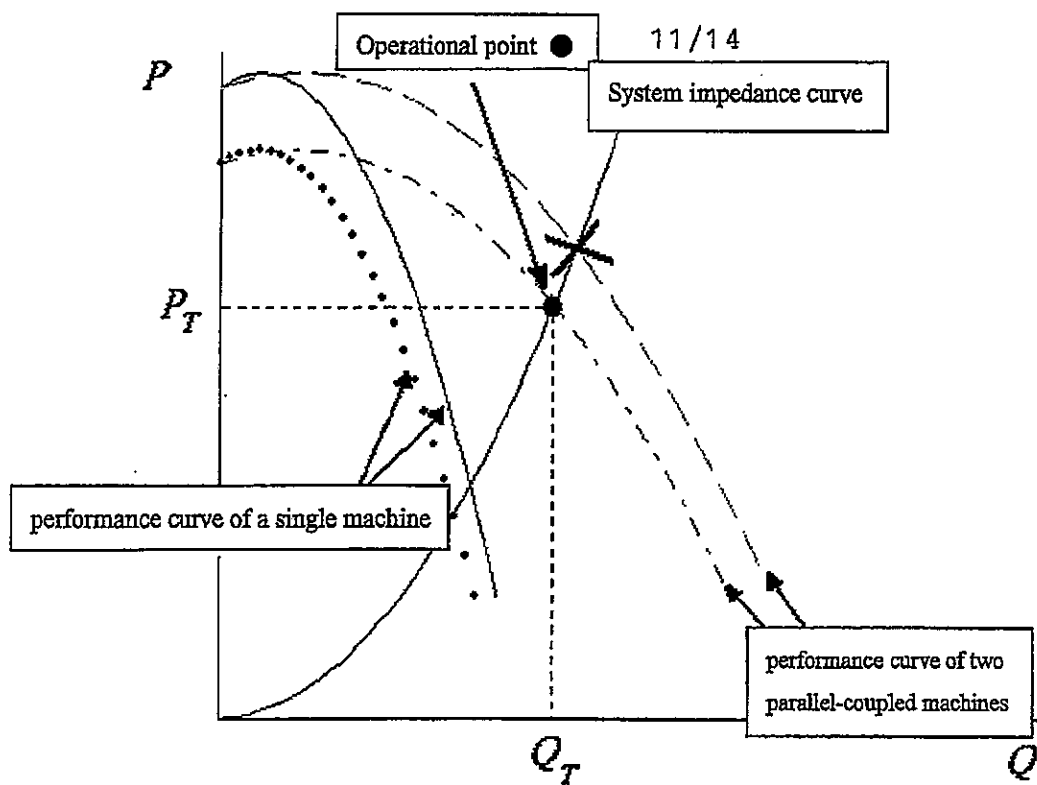


FIG. 11

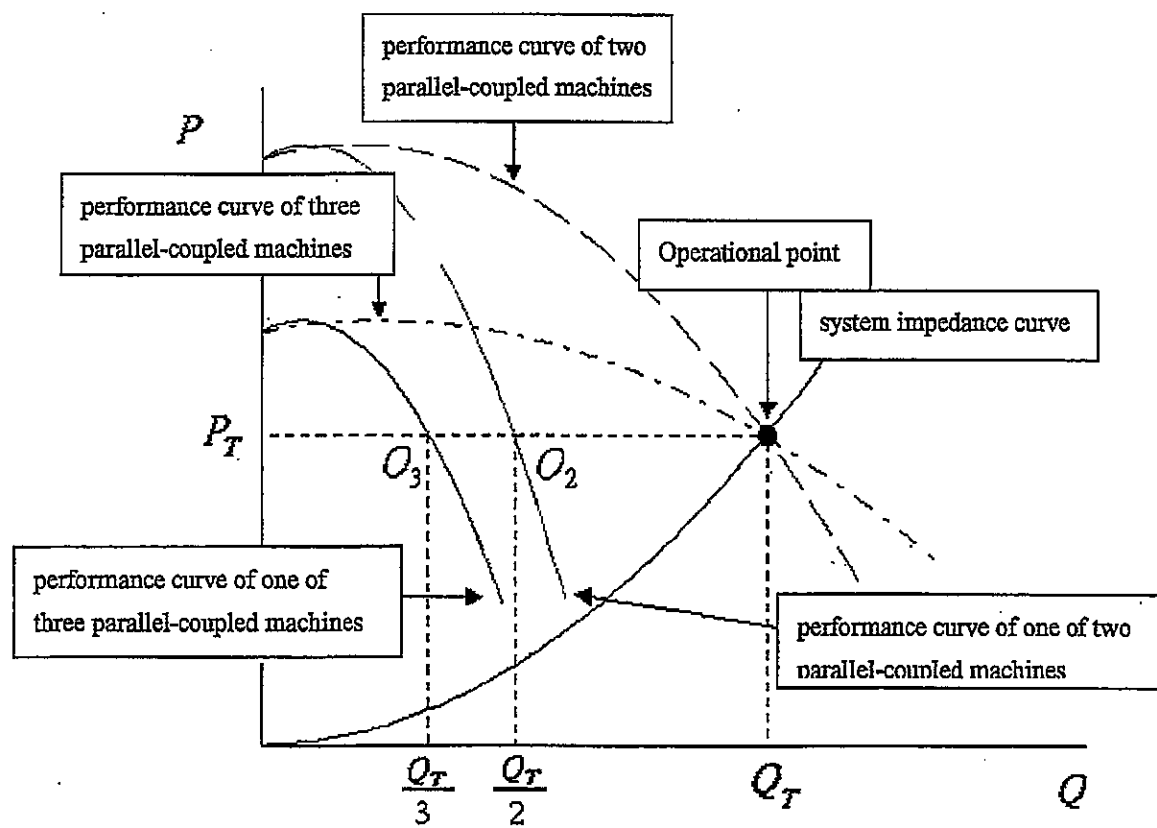


FIG. 12

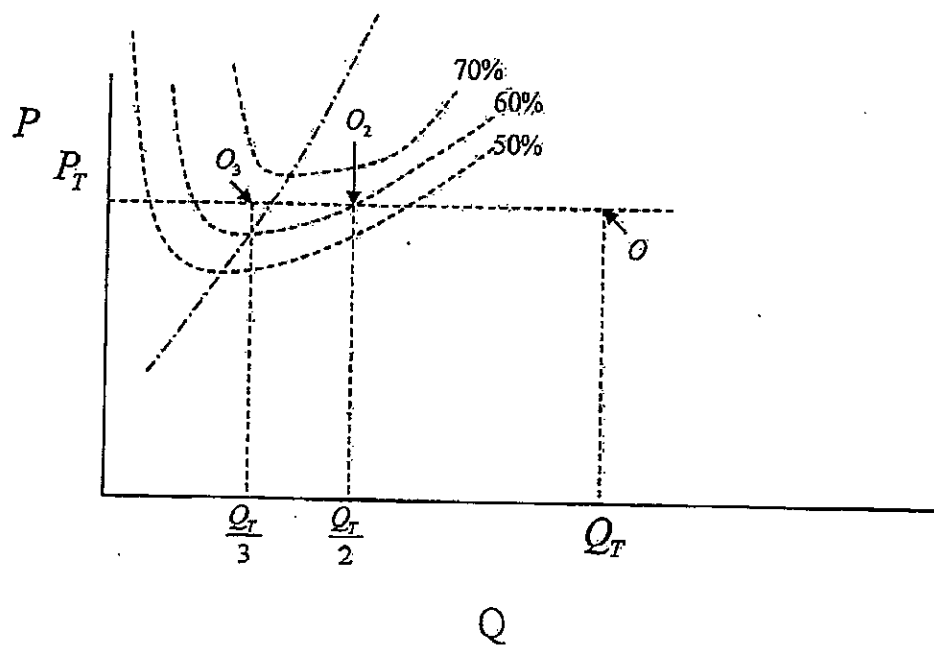


FIG. 13

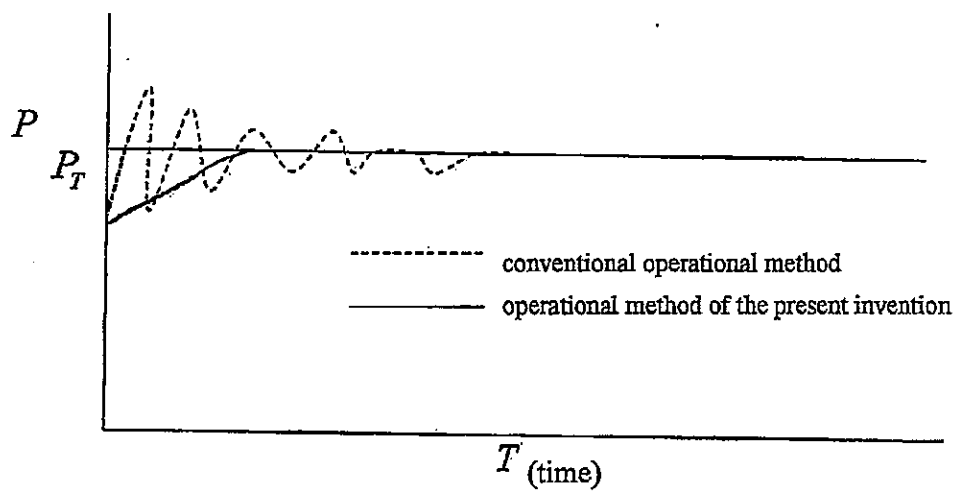


FIG. 14

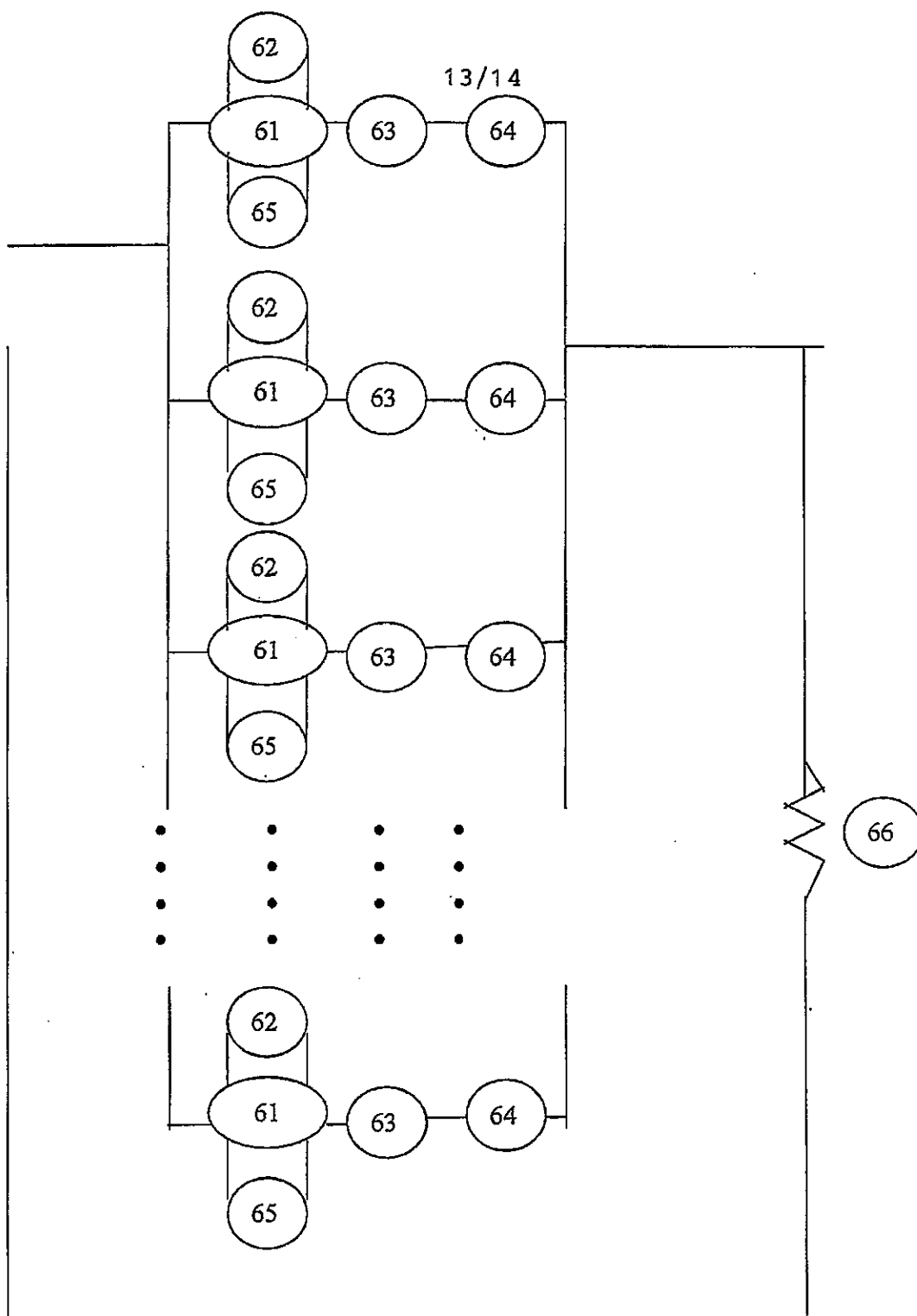


FIG. 15

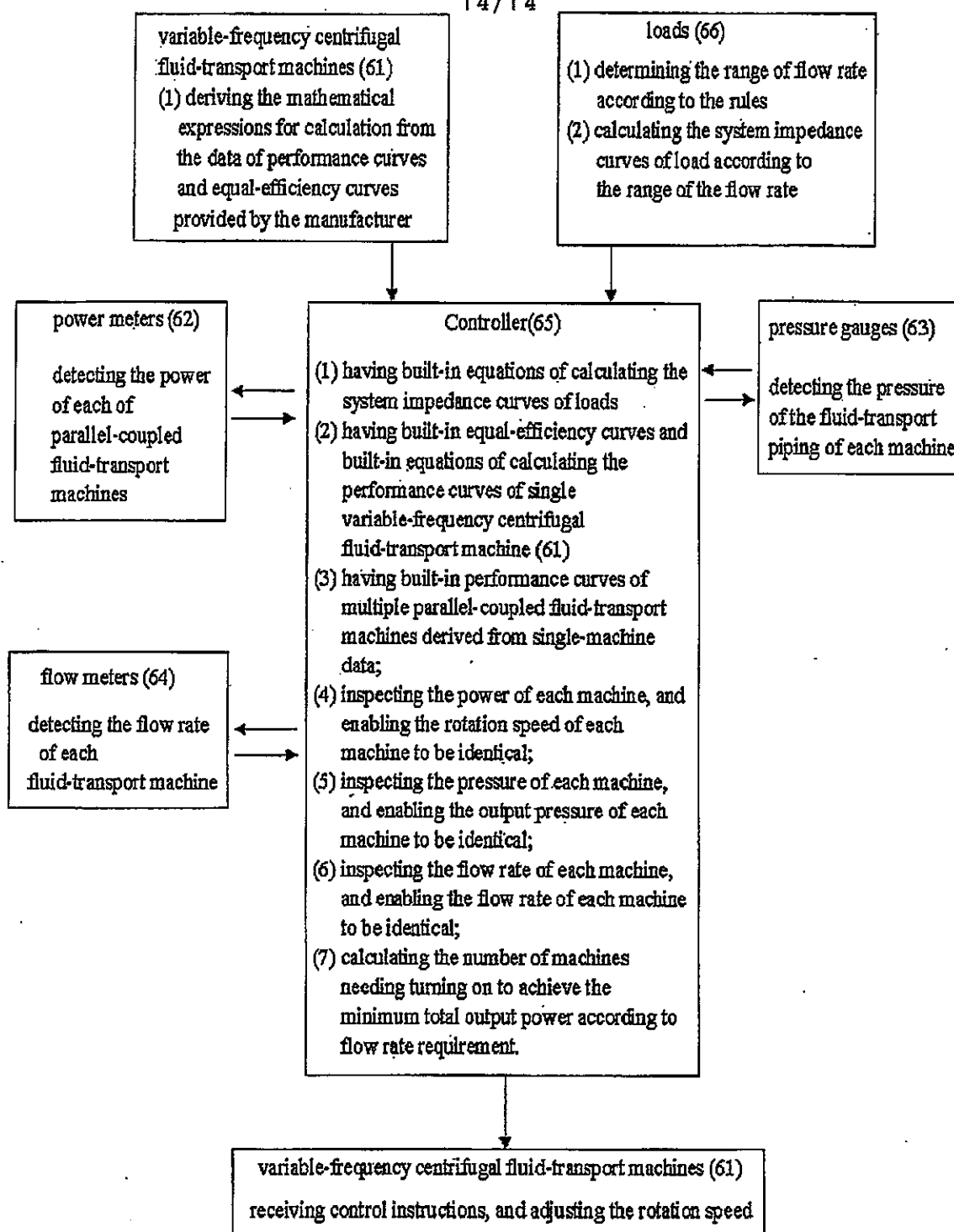


Fig.16