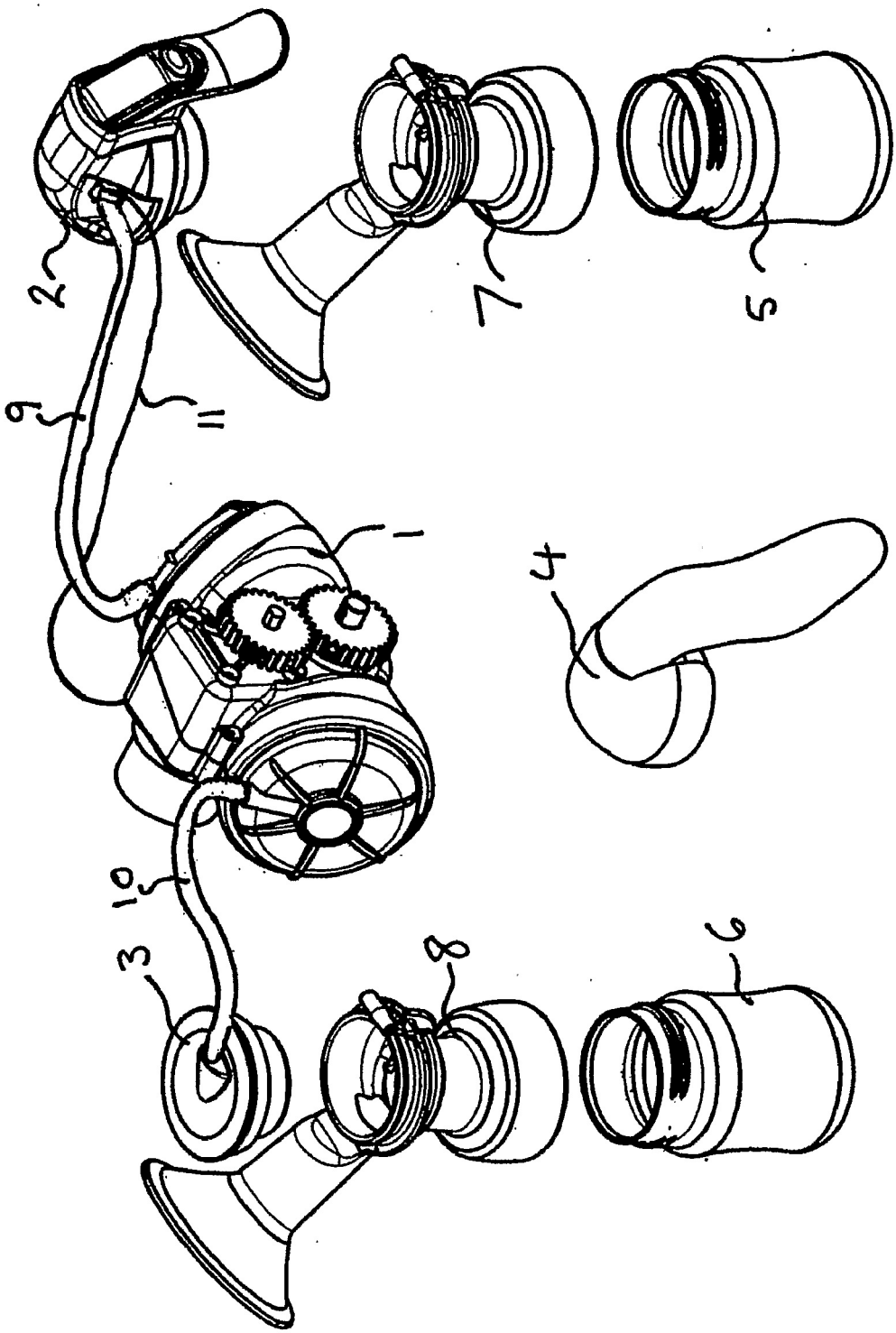


Figure 1

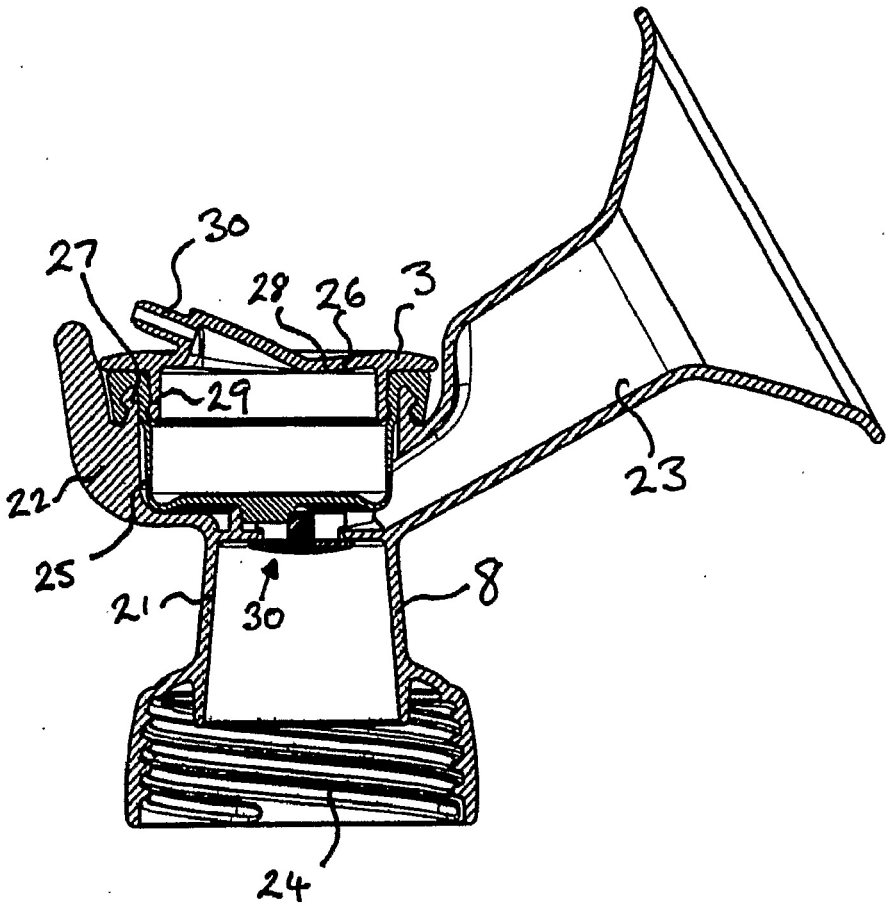


Figure 2

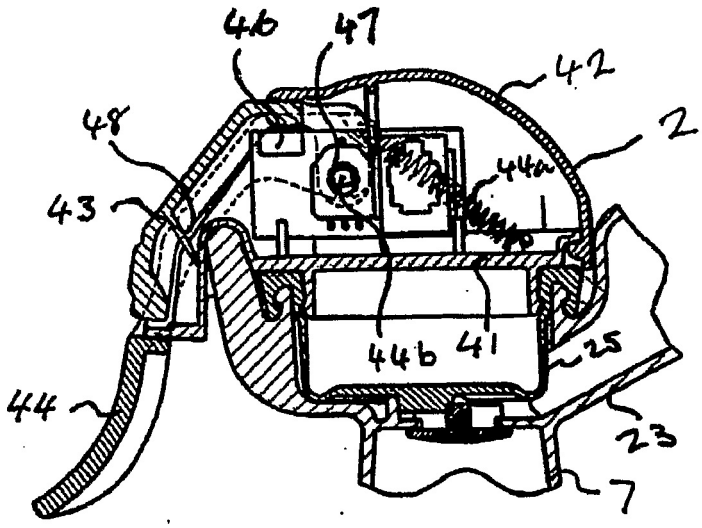


Figure 3

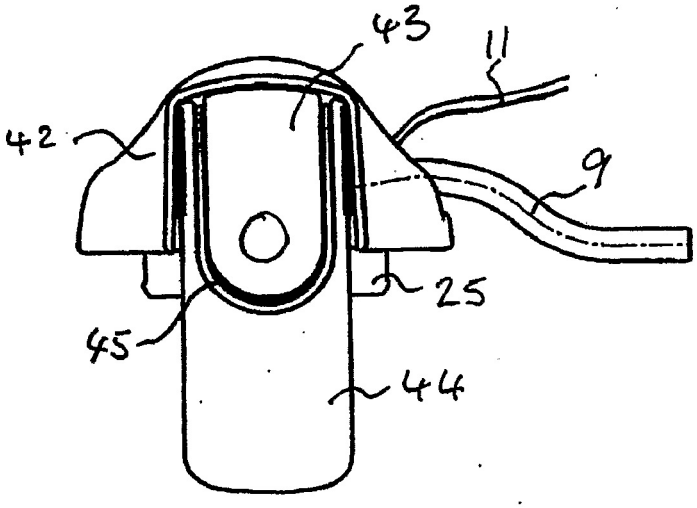


Figure 4

Block diagram of pump

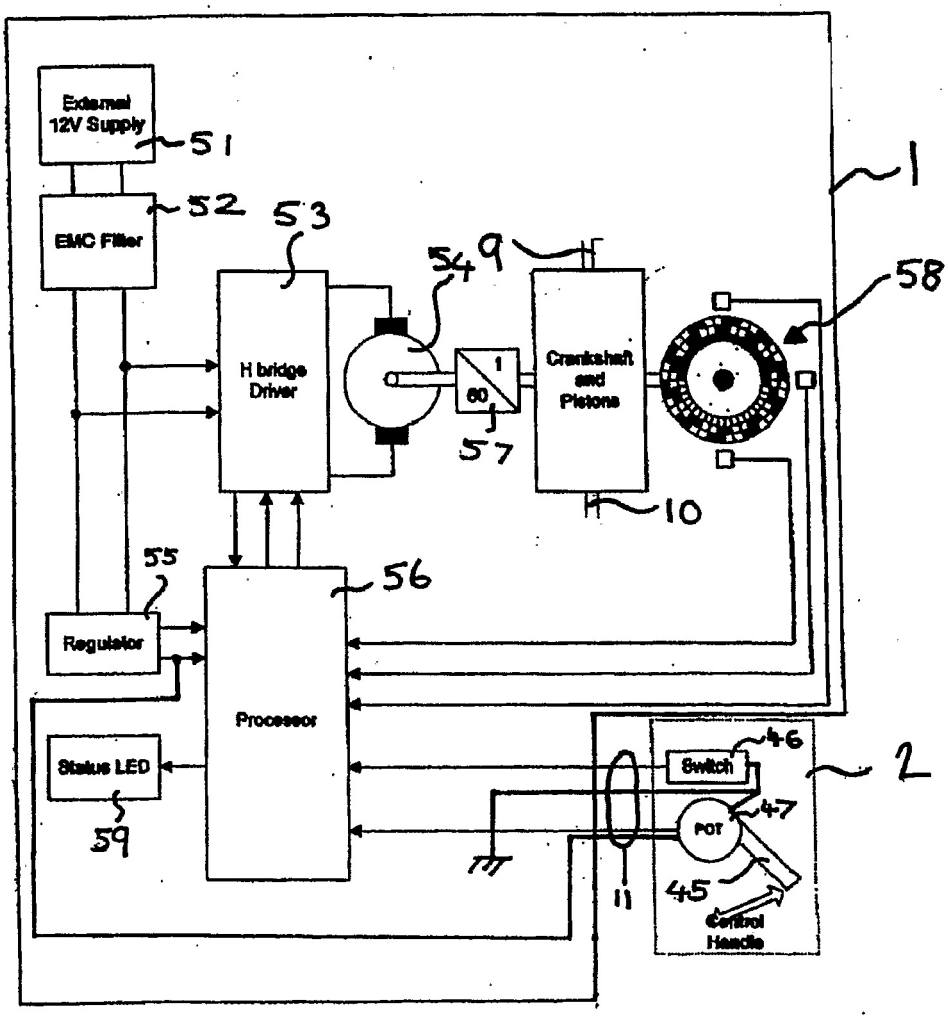


Figure 5

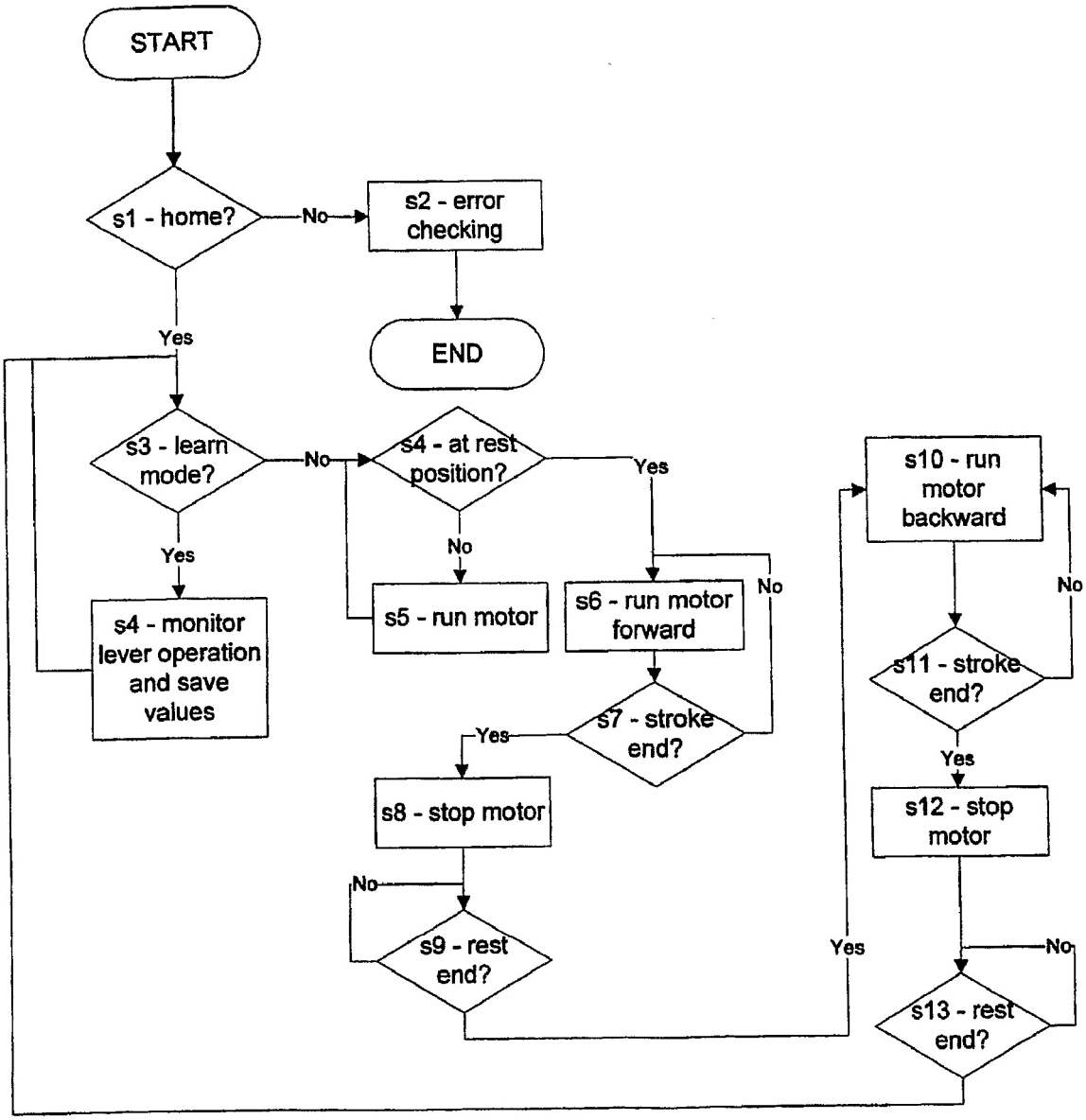

START
s1 - home?
No
s2 - error checking
END
Yes
s3 - learn mode?
No
s4 - at rest position?
Yes
No
Yes
s4 - monitor lever operation and save values
s5 - run motor
s6 - run motor forward
No
s7 - stroke end?
Yes
s8 - stop motor
No
s9 - rest end?
s10 - run motor backward
No
s11 - stroke end?
Yes
s12 - stop motor
Yes
No
s13 - rest end?

Figure 6

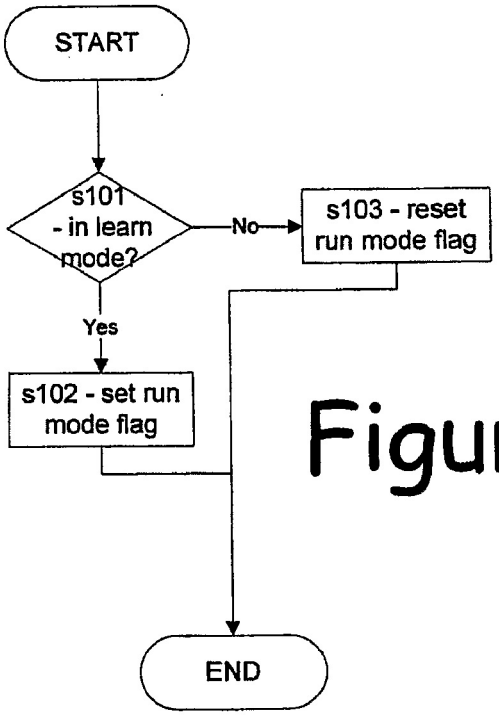

START
s101 - in learn mode?
No
s103 - reset run mode flag
Yes
s102 - set run mode flag
END

Figure 7

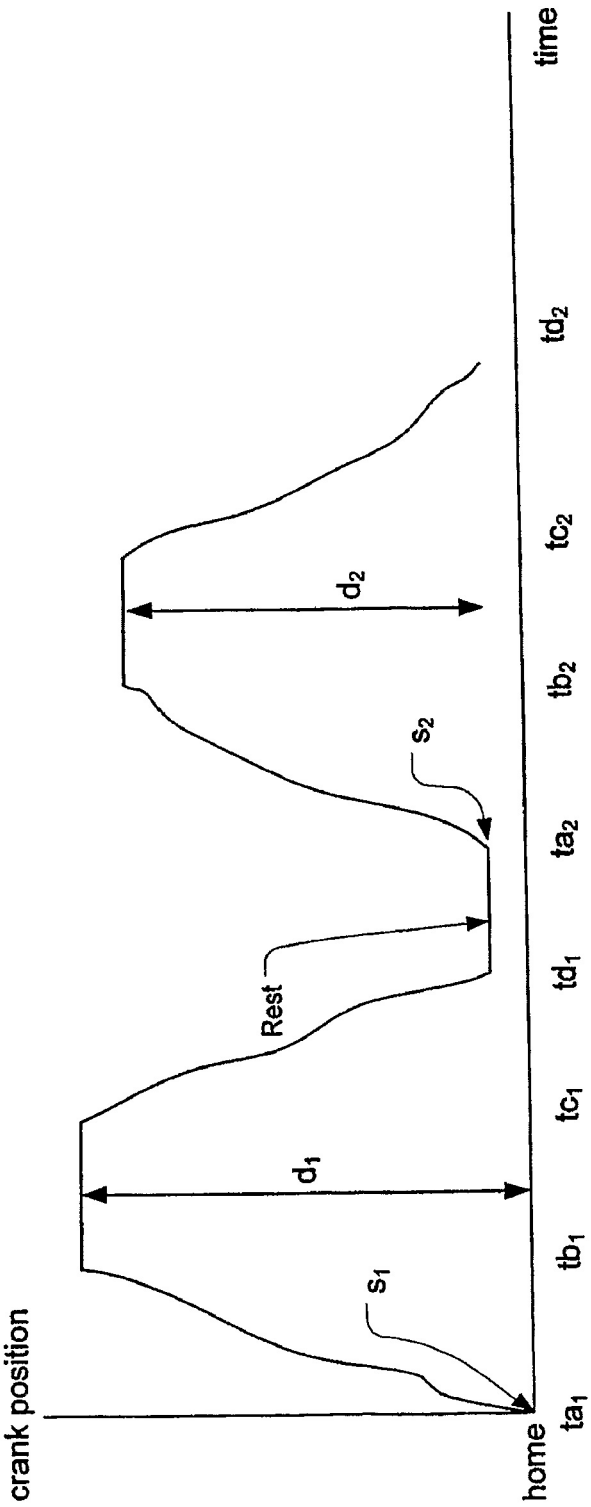

crank position
time
home
ta_1
tb_1
tc_1
td_1
ta_2
tb_2
tc_2
td_2
s_1
s_2
d_1
d_2
Rest

Figure 8

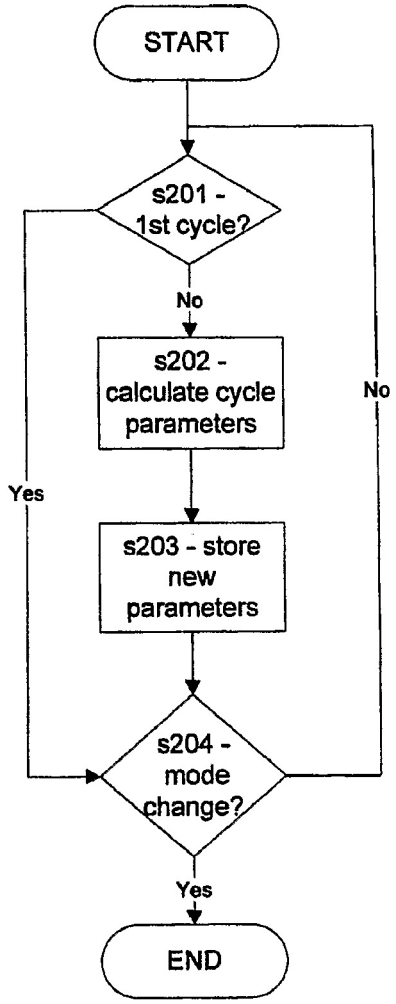

START
s201 - 1st cycle?
No
s202 - calculate cycle parameters
s203 - store new parameters
s204 - mode change?
Yes
No
Yes
END

Figure 9

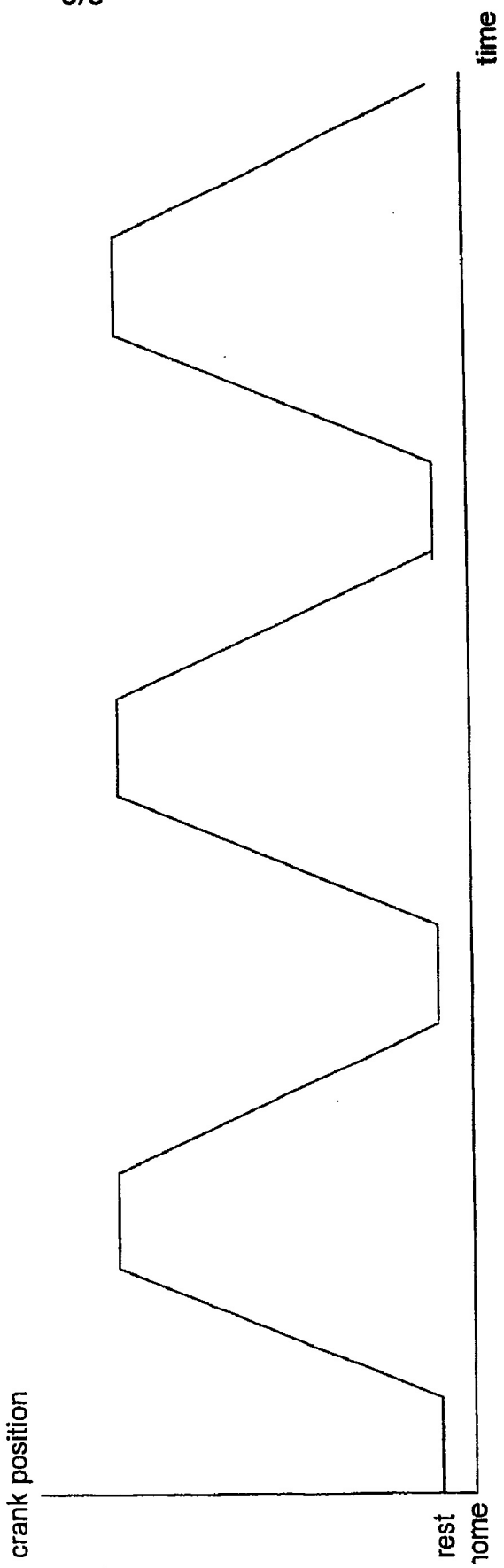


Figure 10