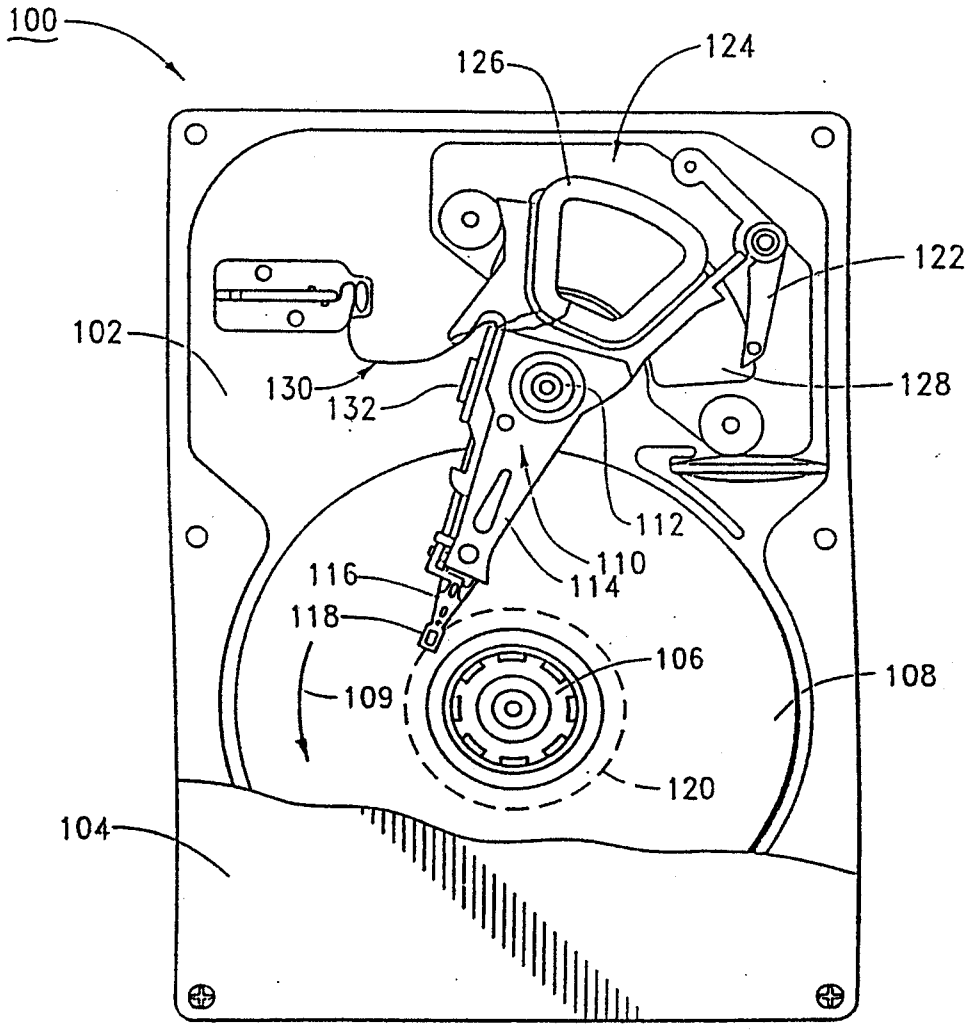

100
126
124
122
102
130
132
128
112
110
114
116
118
106
108
109
120
104

FIG. 1

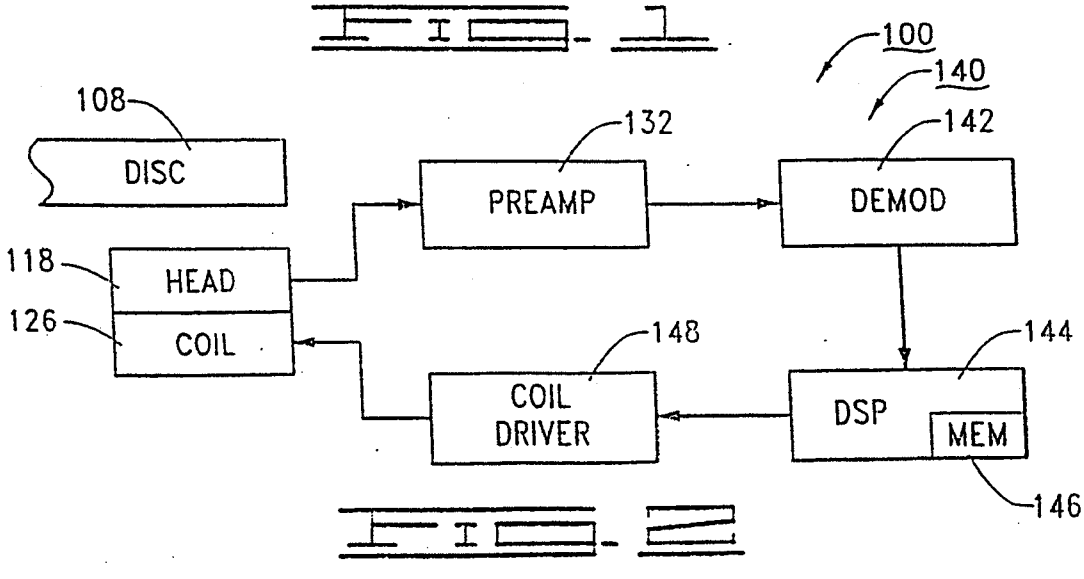
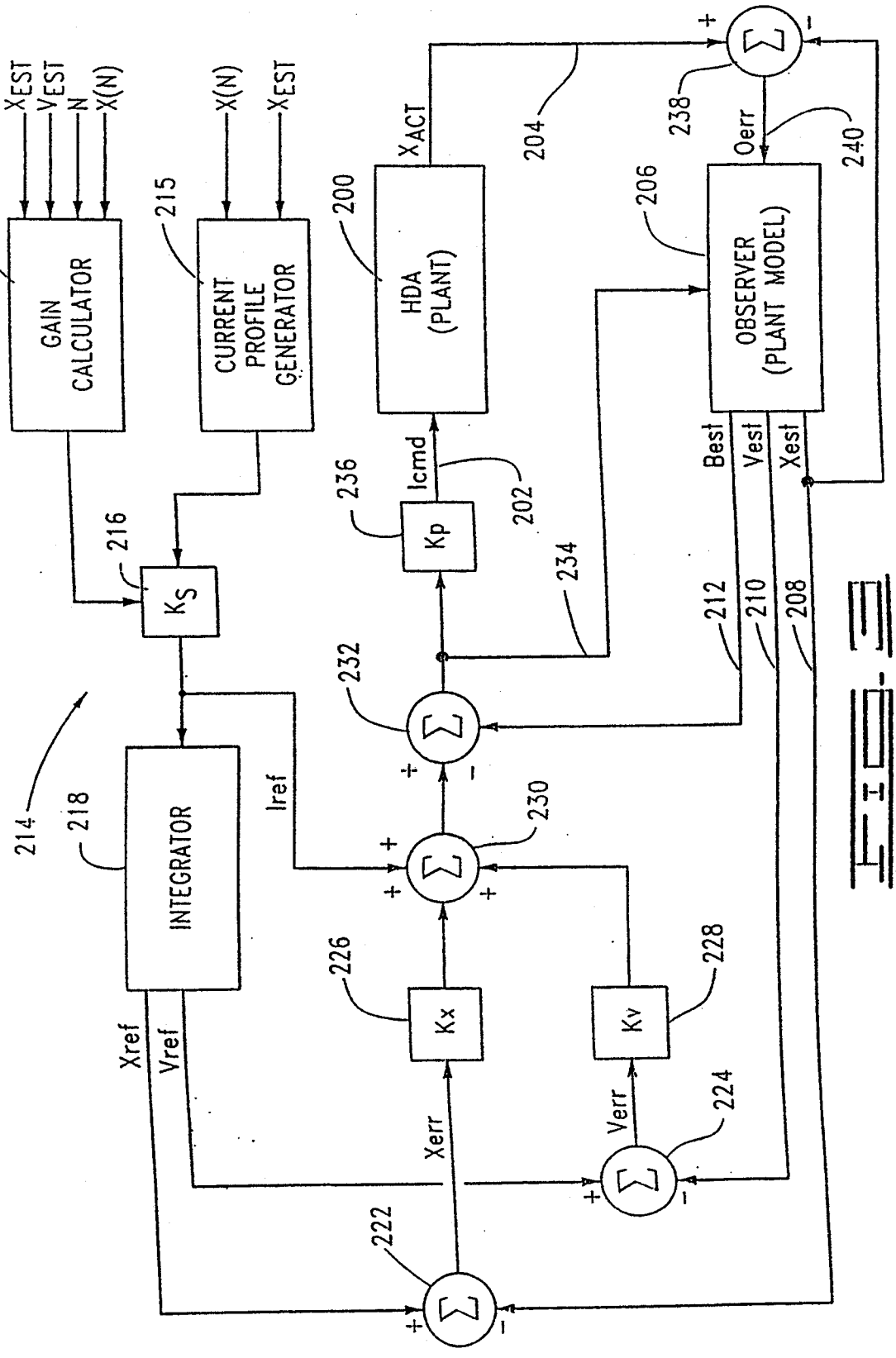
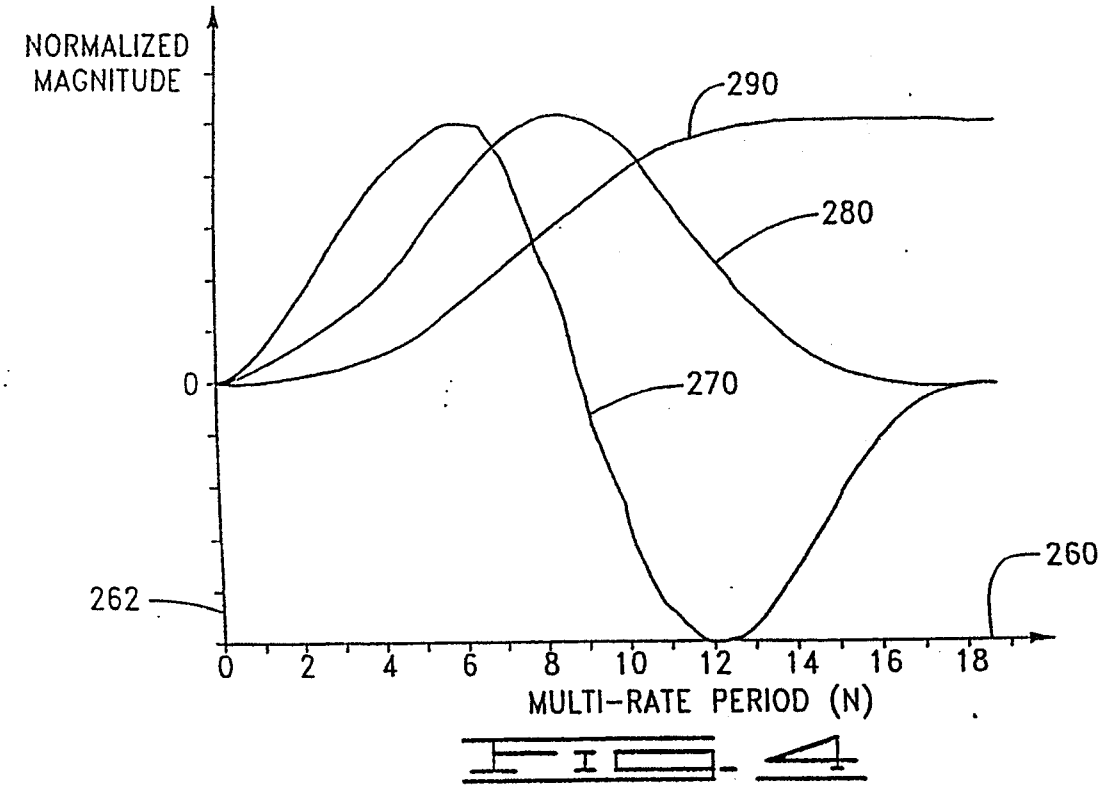
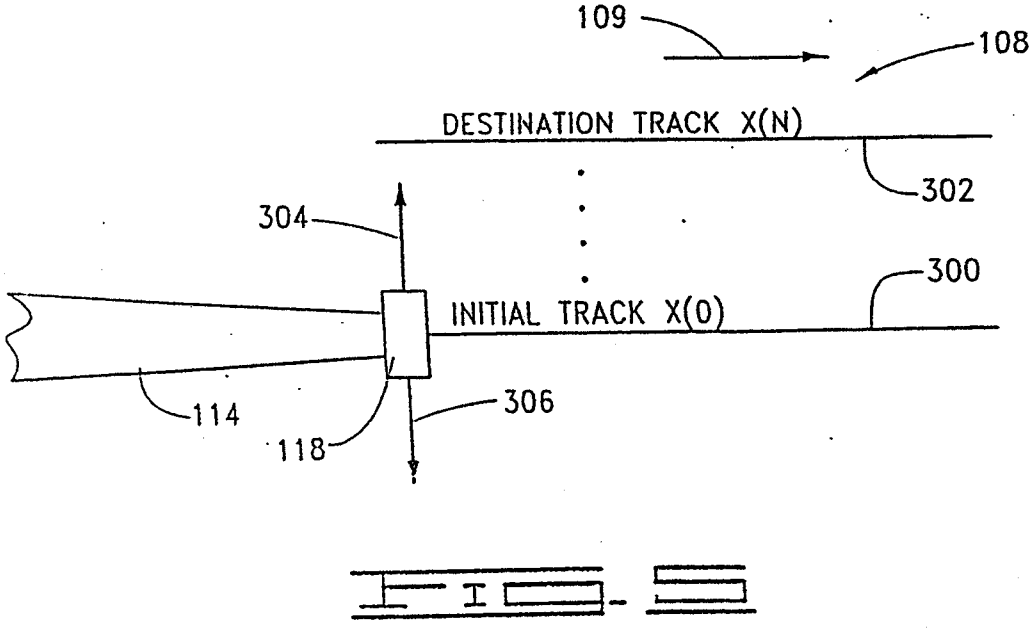

100
140
108
DISC
132
PREAMP
142
DEMOD
118
HEAD
126
COIL
148
COIL DRIVER
144
DSP
MEM
146

FIG. 2


XEST
VEST
N
X(N)
X(N)
XEST
217
215
GAIN CALCULATOR
CURRENT PROFILE GENERATOR
200
HDA (PLANT)
XACT
204
238
Oerr
240
206
OBSERVER (PLANT MODEL)
Best
Vest
Xest
236
Icmd
202
Kp
234
216
KS
212
210
208
232
214
218
INTEGRATOR
Iref
230
226
Kx
228
Kv
Xref
Vref
Xerr
Verr
224
222


NORMALIZED MAGNITUDE
290
280
270
260
262
0
0 2 4 6 8 10 12 14 16 18
MULTI-RATE PERIOD (N)


109
108
DESTINATION TRACK X(N)
302
304
300
INITIAL TRACK X(0)
114
118
306

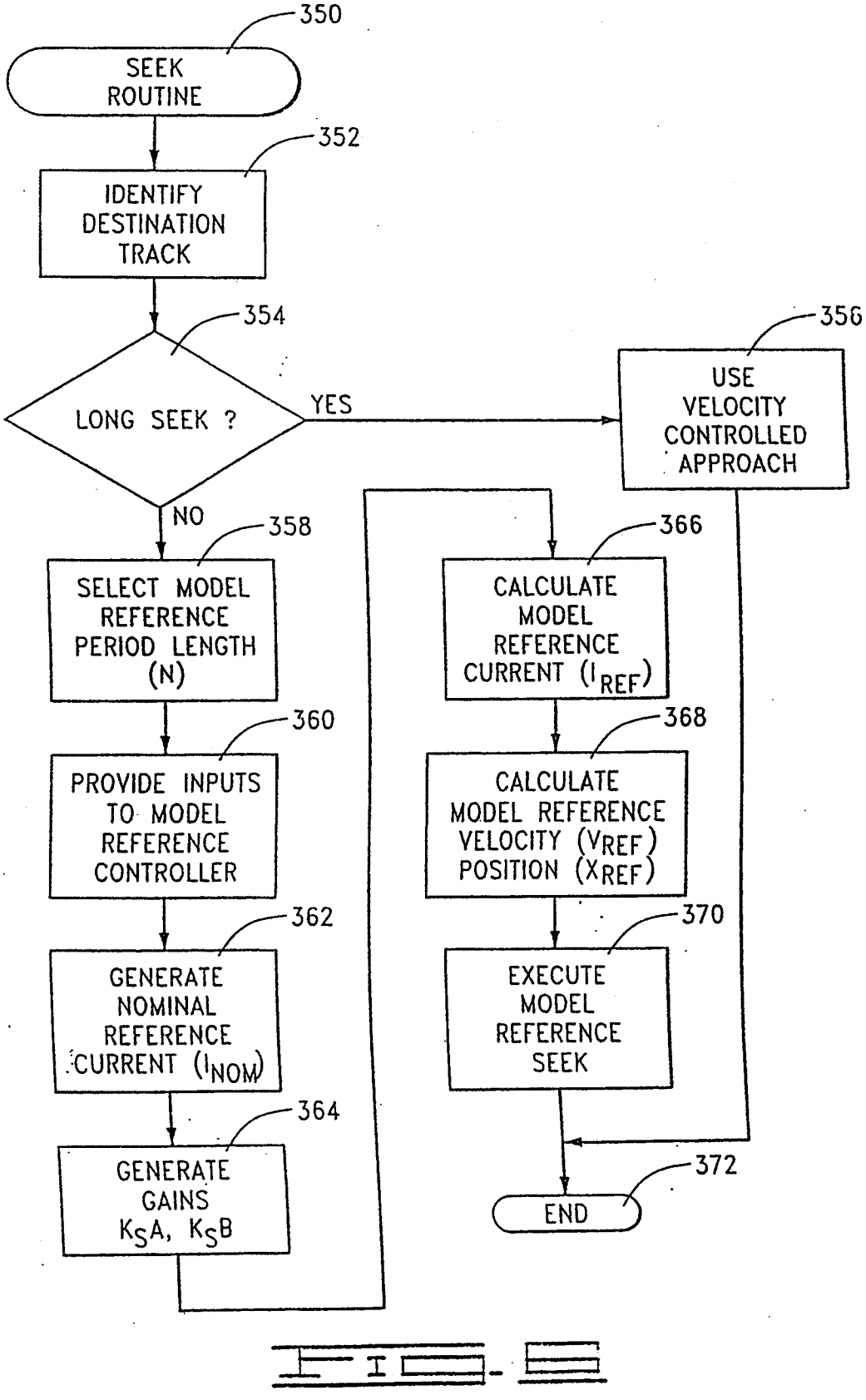

350
SEEK ROUTINE
352
IDENTIFY DESTINATION TRACK
354
LONG SEEK ?
YES
356
USE VELOCITY CONTROLLED APPROACH
NO
358
SELECT MODEL REFERENCE PERIOD LENGTH (N)
360
PROVIDE INPUTS TO MODEL REFERENCE CONTROLLER
362
GENERATE NOMINAL REFERENCE CURRENT (I_{NOM})
364
GENERATE GAINS K_SA, K_SB
366
CALCULATE MODEL REFERENCE CURRENT (I_{REF})
368
CALCULATE MODEL REFERENCE VELOCITY (V_{REF}) POSITION (X_{REF})
370
EXECUTE MODEL REFERENCE SEEK
372
END

FIG. 3

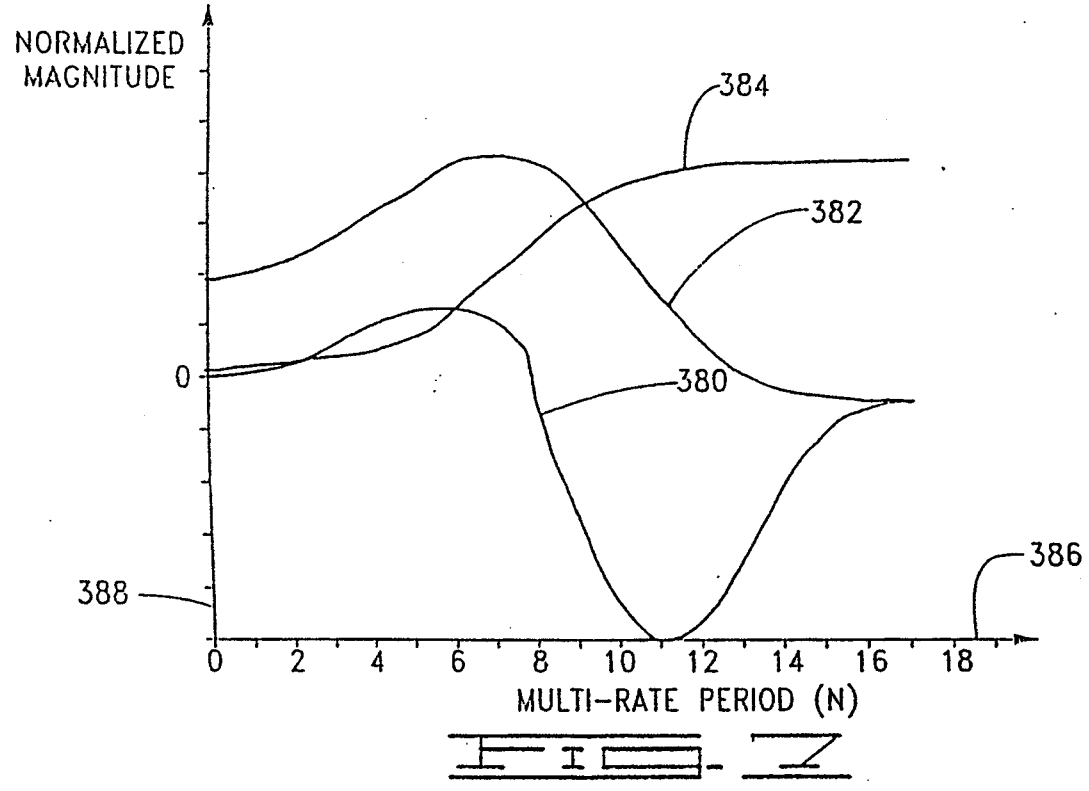

NORMALIZED MAGNITUDE
384
382
380
386
388
0
0 2 4 6 8 10 12 14 16 18
MULTI-RATE PERIOD (N)

FIG. 7

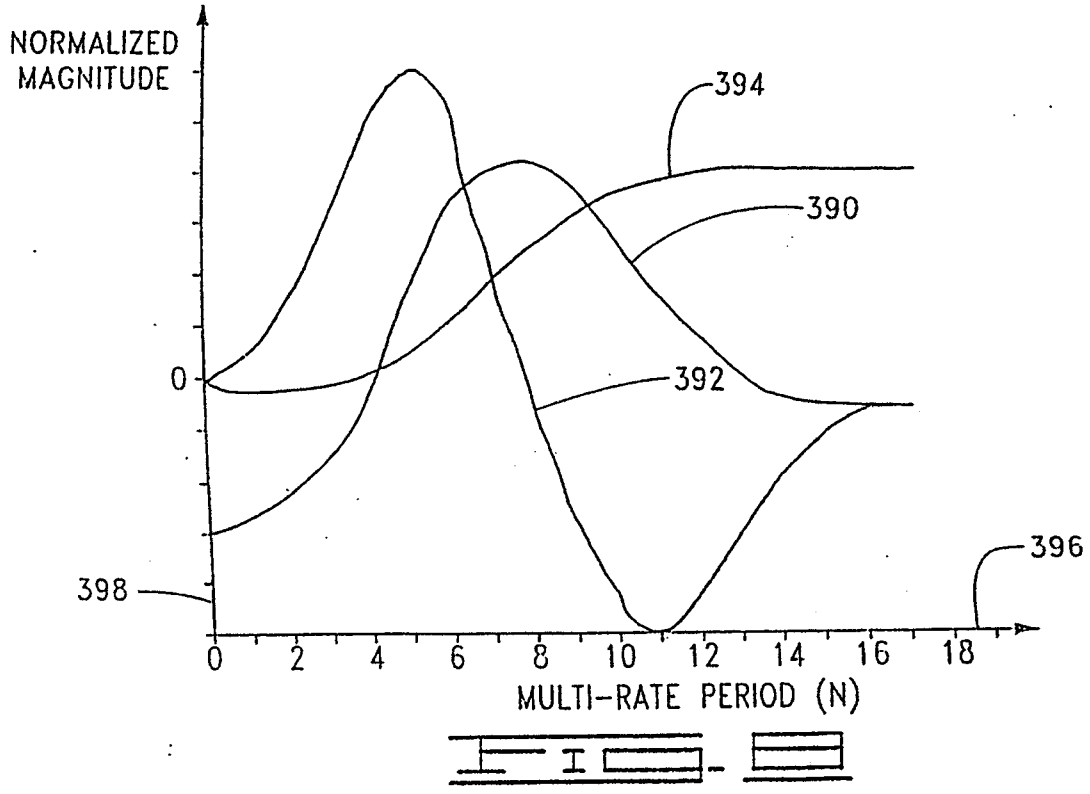

NORMALIZED MAGNITUDE
394
390
392
396
398
0
0 2 4 6 8 10 12 14 16 18
MULTI-RATE PERIOD (N)

FIG. 8