FIG. 1

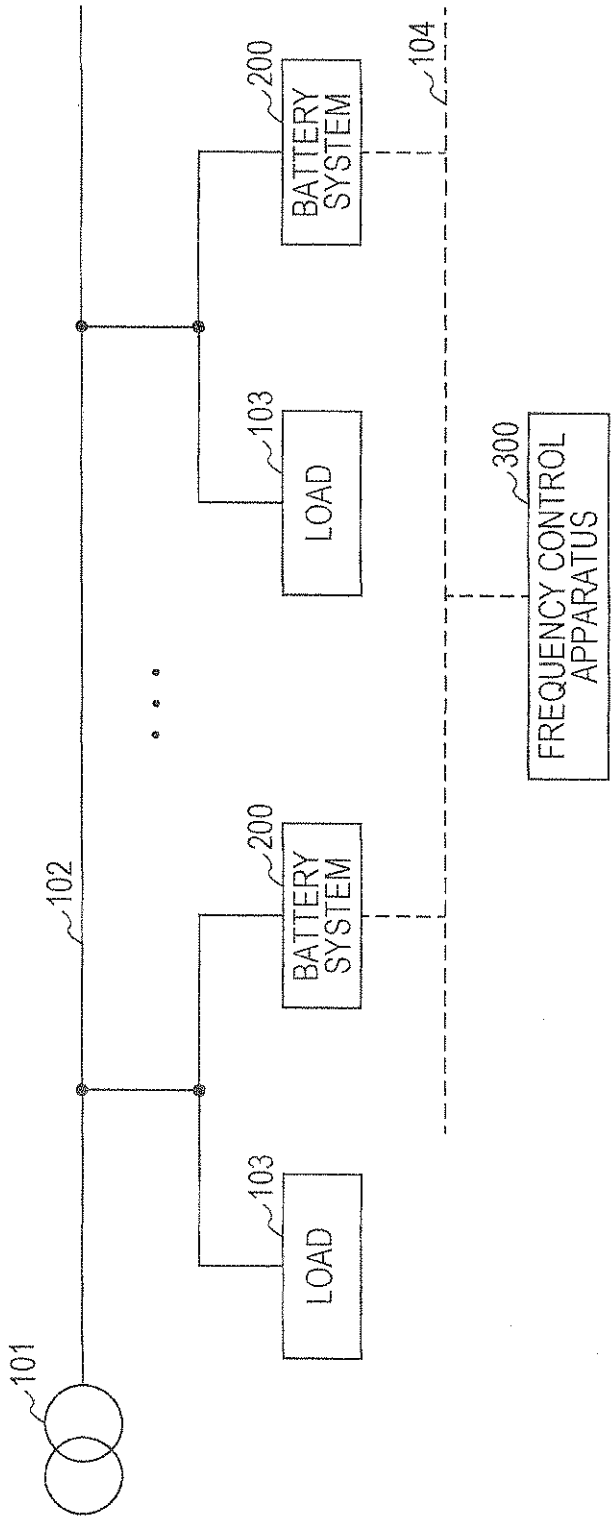

101
102
103
LOAD
200
BATTERY SYSTEM
103
LOAD
200
BATTERY SYSTEM
104
300
FREQUENCY CONTROL APPARATUS

FIG. 2

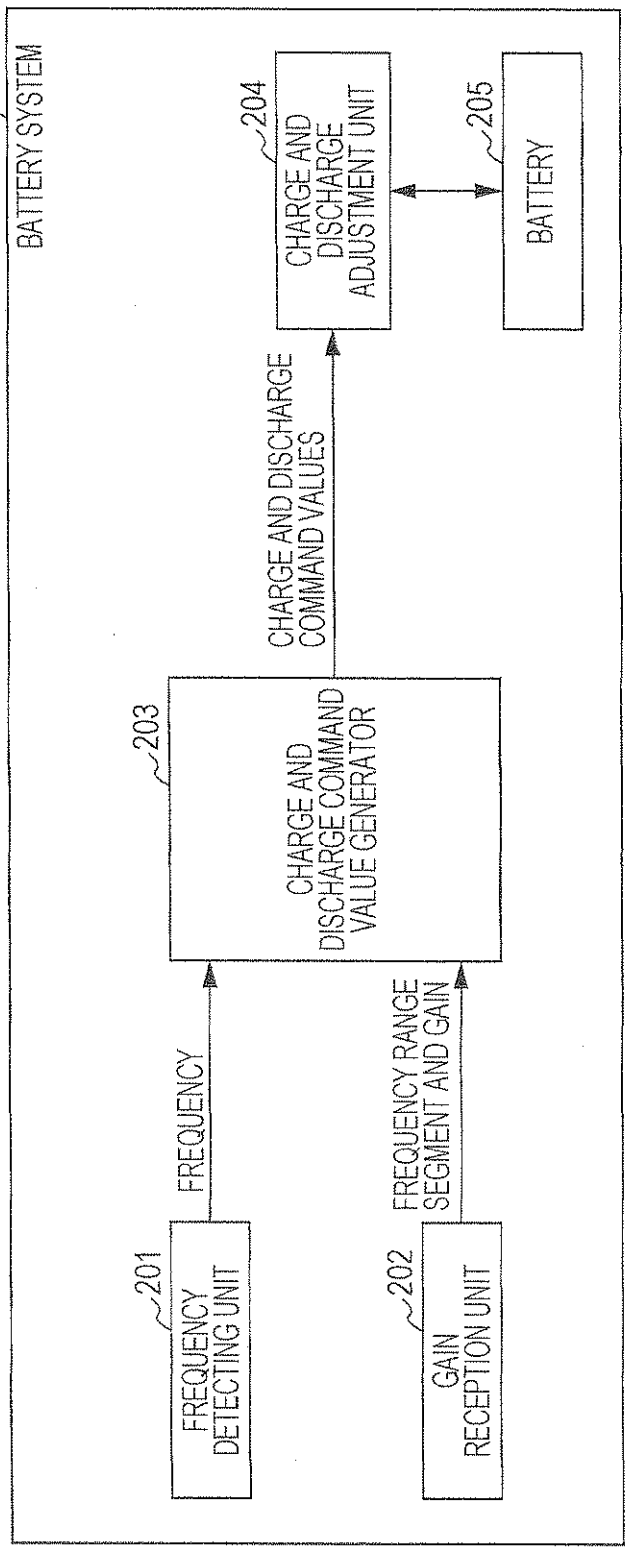

200
BATTERY SYSTEM
201
FREQUENCY DETECTING UNIT
202
GAIN RECEPTION UNIT
203
CHARGE AND DISCHARGE COMMAND VALUE GENERATOR
204
CHARGE AND DISCHARGE ADJUSTMENT UNIT
205
BATTERY
FREQUENCY
FREQUENCY RANGE SEGMENT AND GAIN
CHARGE AND DISCHARGE COMMAND VALUES

FIG. 3

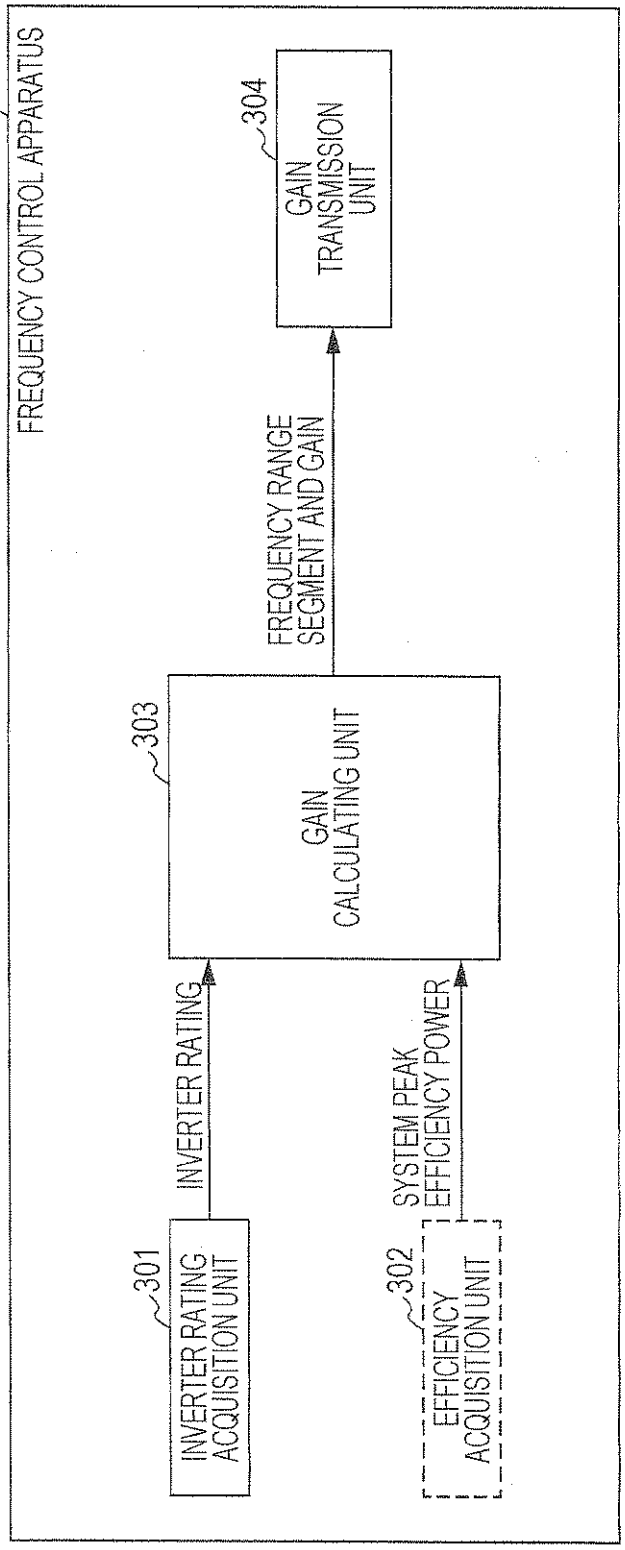

300
FREQUENCY CONTROL APPARATUS
304
GAIN TRANSMISSION UNIT
FREQUENCY RANGE SEGMENT AND GAIN
303
GAIN CALCULATING UNIT
INVERTER RATING
SYSTEM PEAK EFFICIENCY POWER
301
INVERTER RATING ACQUISITION UNIT
302
EFFICIENCY ACQUISITION UNIT

FIG. 4

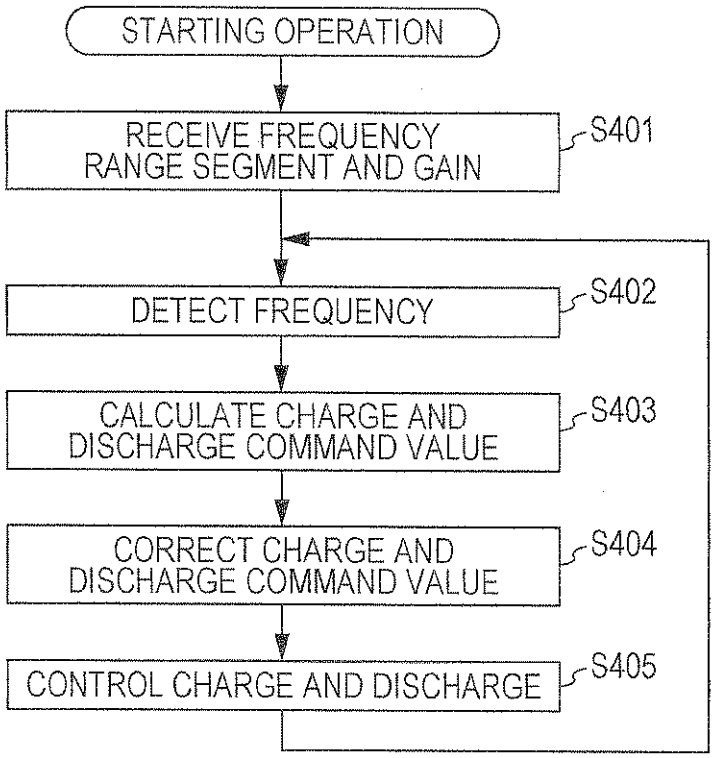

STARTING OPERATION
RECEIVE FREQUENCY RANGE SEGMENT AND GAIN
S401
DETECT FREQUENCY
S402
CALCULATE CHARGE AND DISCHARGE COMMAND VALUE
S403
CORRECT CHARGE AND DISCHARGE COMMAND VALUE
S404
CONTROL CHARGE AND DISCHARGE
S405

FIG. 5

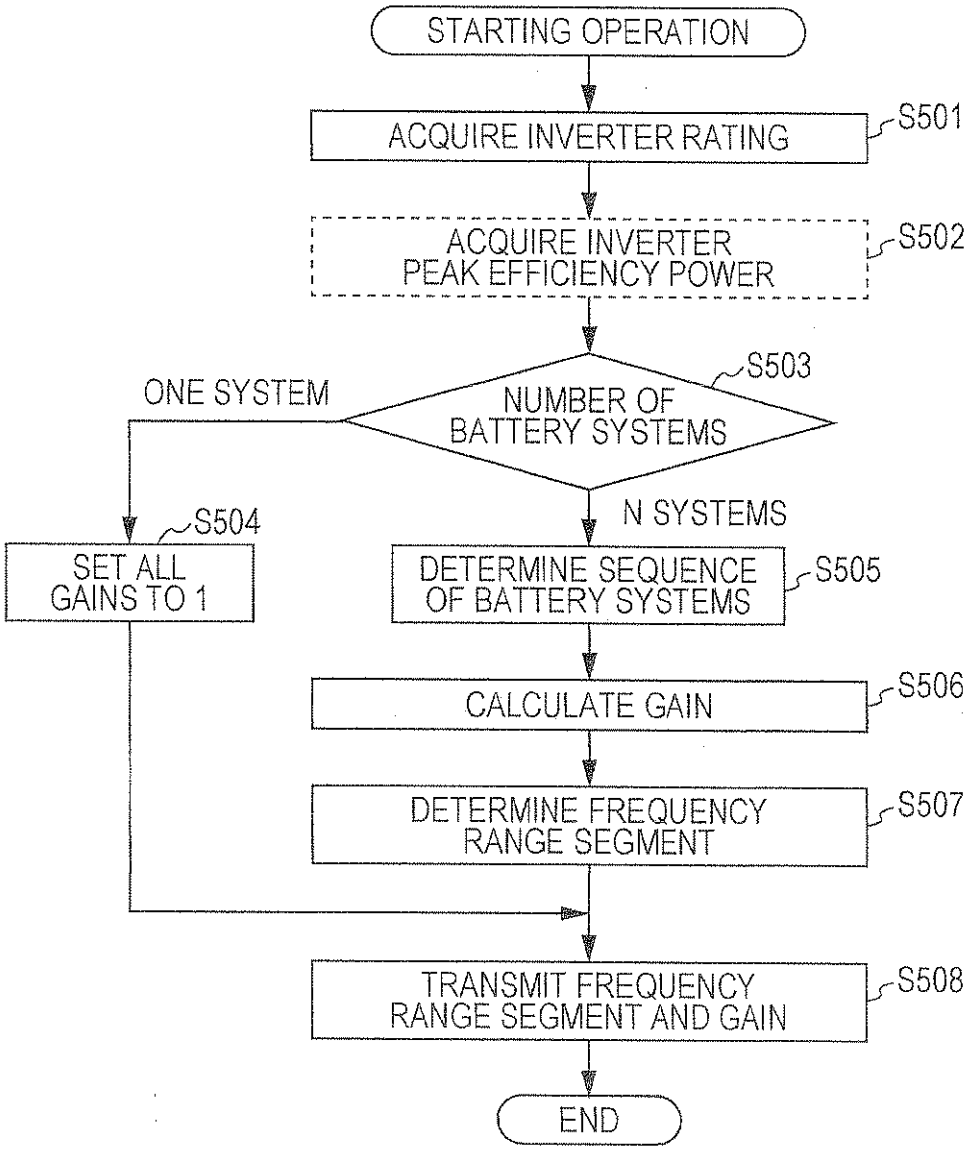

STARTING OPERATION
ACQUIRE INVERTER RATING
S501
ACQUIRE INVERTER PEAK EFFICIENCY POWER
S502
NUMBER OF BATTERY SYSTEMS
S503
ONE SYSTEM
N SYSTEMS
SET ALL GAINS TO 1
S504
DETERMINE SEQUENCE OF BATTERY SYSTEMS
S505
CALCULATE GAIN
S506
DETERMINE FREQUENCY RANGE SEGMENT
S507
TRANSMIT FREQUENCY RANGE SEGMENT AND GAIN
S508
END

FIG. 6A

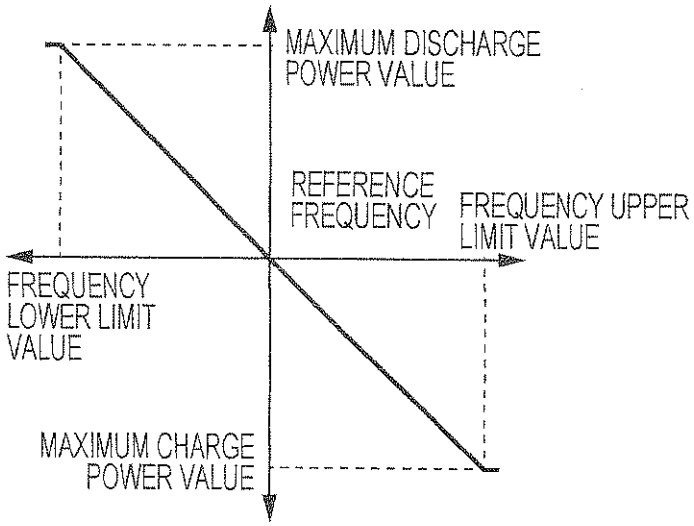

MAXIMUM DISCHARGE POWER VALUE
REFERENCE FREQUENCY
FREQUENCY UPPER LIMIT VALUE
FREQUENCY LOWER LIMIT VALUE
MAXIMUM CHARGE POWER VALUE

FIG. 6B

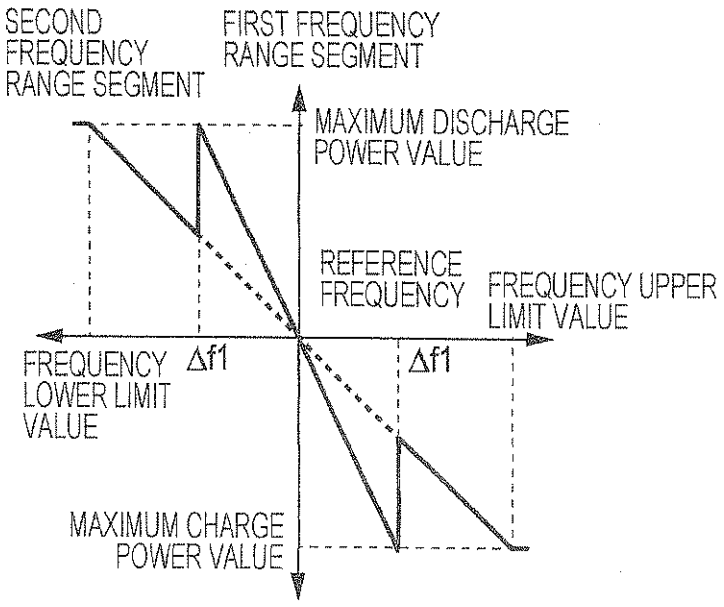

SECOND FREQUENCY RANGE SEGMENT
FIRST FREQUENCY RANGE SEGMENT
MAXIMUM DISCHARGE POWER VALUE
REFERENCE FREQUENCY
FREQUENCY UPPER LIMIT VALUE
FREQUENCY LOWER LIMIT VALUE
Δf1
Δf1
MAXIMUM CHARGE POWER VALUE

FIG. 6C

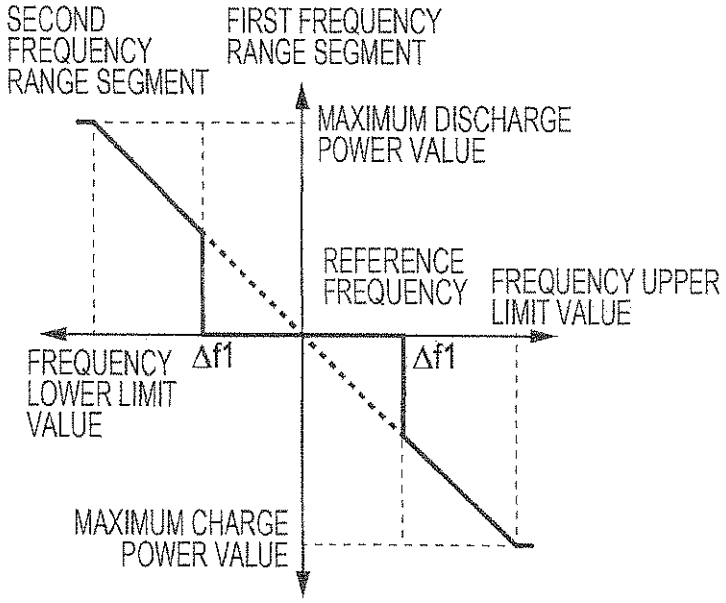


FIG. 6D

COMMAND TO CORRECT FIRST BATTERY SYSTEM	COMMAND TO CORRECT SECOND BATTERY SYSTEM
IF $\|\Delta f\| \leq \Delta f1$, THEN SET GAIN TO 2 IF NOT, THEN SET GAIN TO 1	IF $\|\Delta f\| \leq \Delta f1$, THEN SET GAIN TO 0 IF NOT, THEN SET GAIN TO 1

FIG. 7

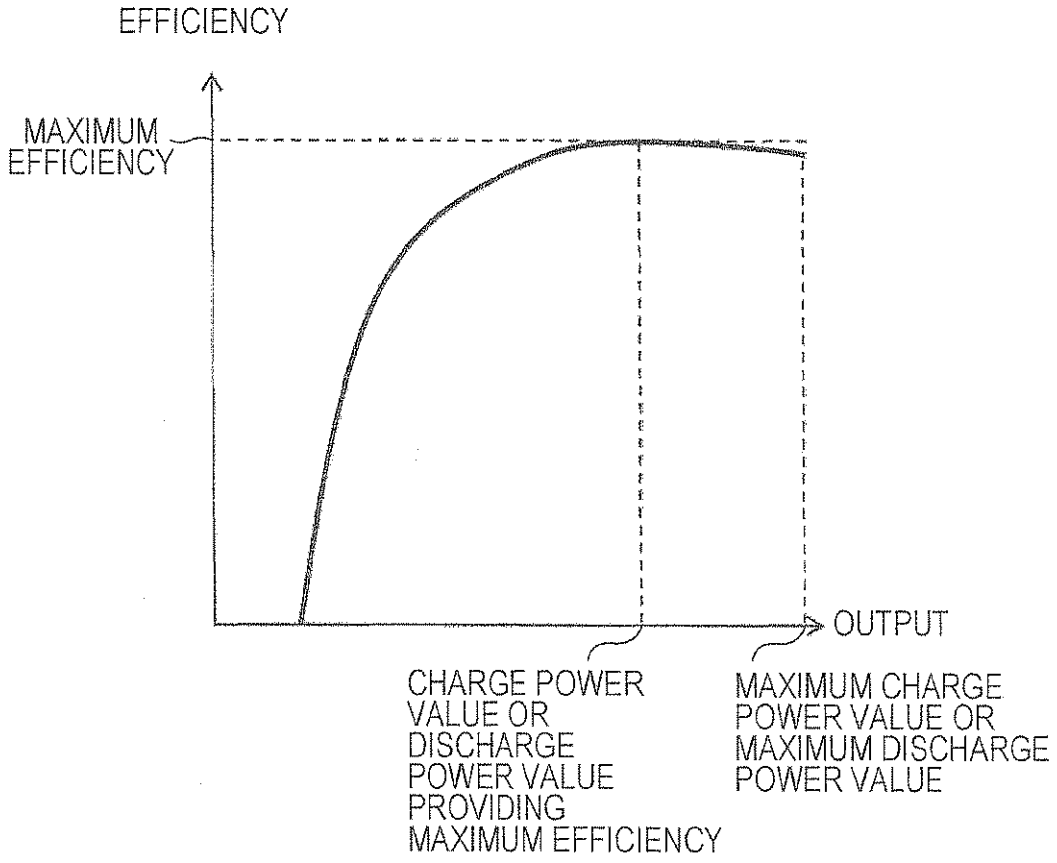

EFFICIENCY
MAXIMUM EFFICIENCY
OUTPUT
CHARGE POWER VALUE OR DISCHARGE POWER VALUE PROVIDING MAXIMUM EFFICIENCY
MAXIMUM CHARGE POWER VALUE OR MAXIMUM DISCHARGE POWER VALUE

FIG. 8A

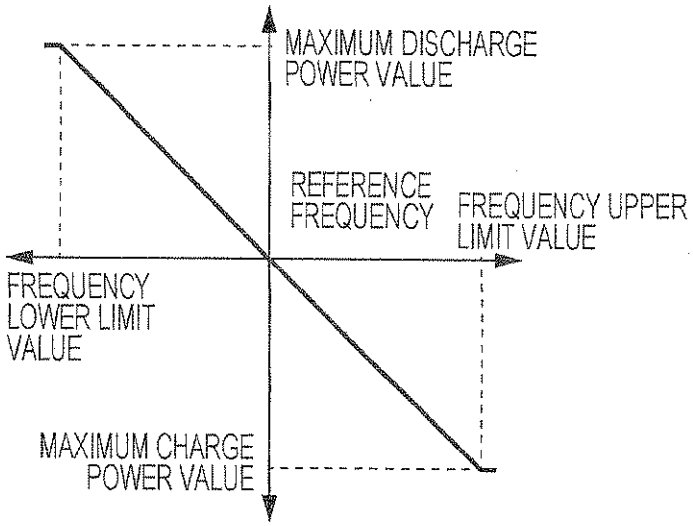

MAXIMUM DISCHARGE POWER VALUE
REFERENCE FREQUENCY
FREQUENCY UPPER LIMIT VALUE
FREQUENCY LOWER LIMIT VALUE
MAXIMUM CHARGE POWER VALUE

FIG. 8B

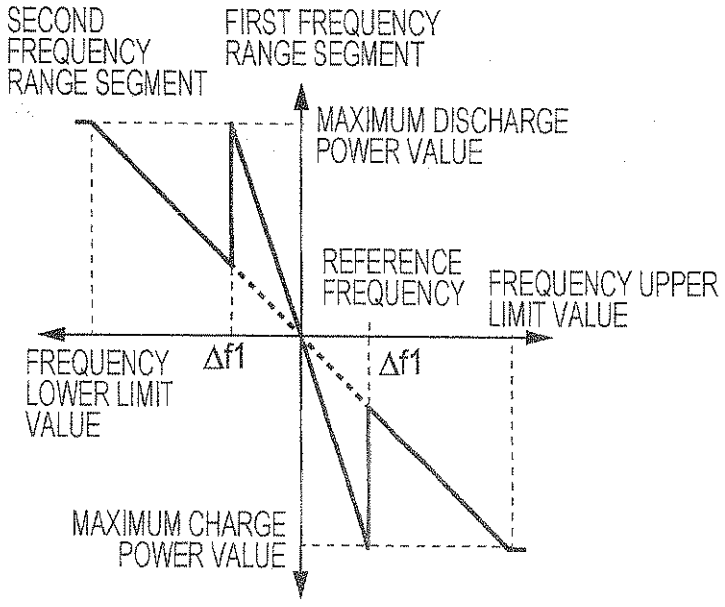

SECOND FREQUENCY RANGE SEGMENT
FIRST FREQUENCY RANGE SEGMENT
MAXIMUM DISCHARGE POWER VALUE
REFERENCE FREQUENCY
FREQUENCY UPPER LIMIT VALUE
FREQUENCY LOWER LIMIT VALUE
Δf1
Δf1
MAXIMUM CHARGE POWER VALUE

FIG. 8C

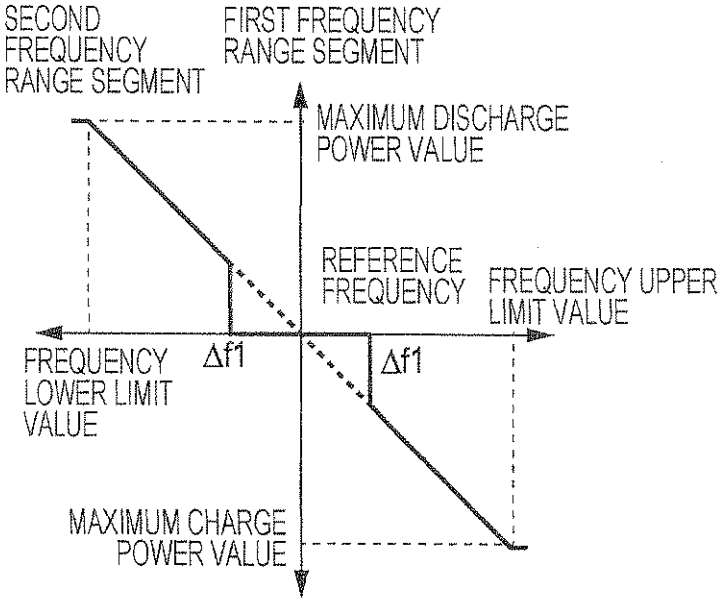


FIG. 8D

COMMAND TO CORRECT FIRST BATTERY SYSTEM	COMMAND TO CORRECT SECOND BATTERY SYSTEM
IF $\|\Delta f\| \leq \Delta f1$, THEN SET GAIN TO 3 IF NOT, THEN SET GAIN TO 1	IF $\|\Delta f\| \leq \Delta f1$, THEN SET GAIN TO 0 IF NOT, THEN SET GAIN TO 1

FIG. 9

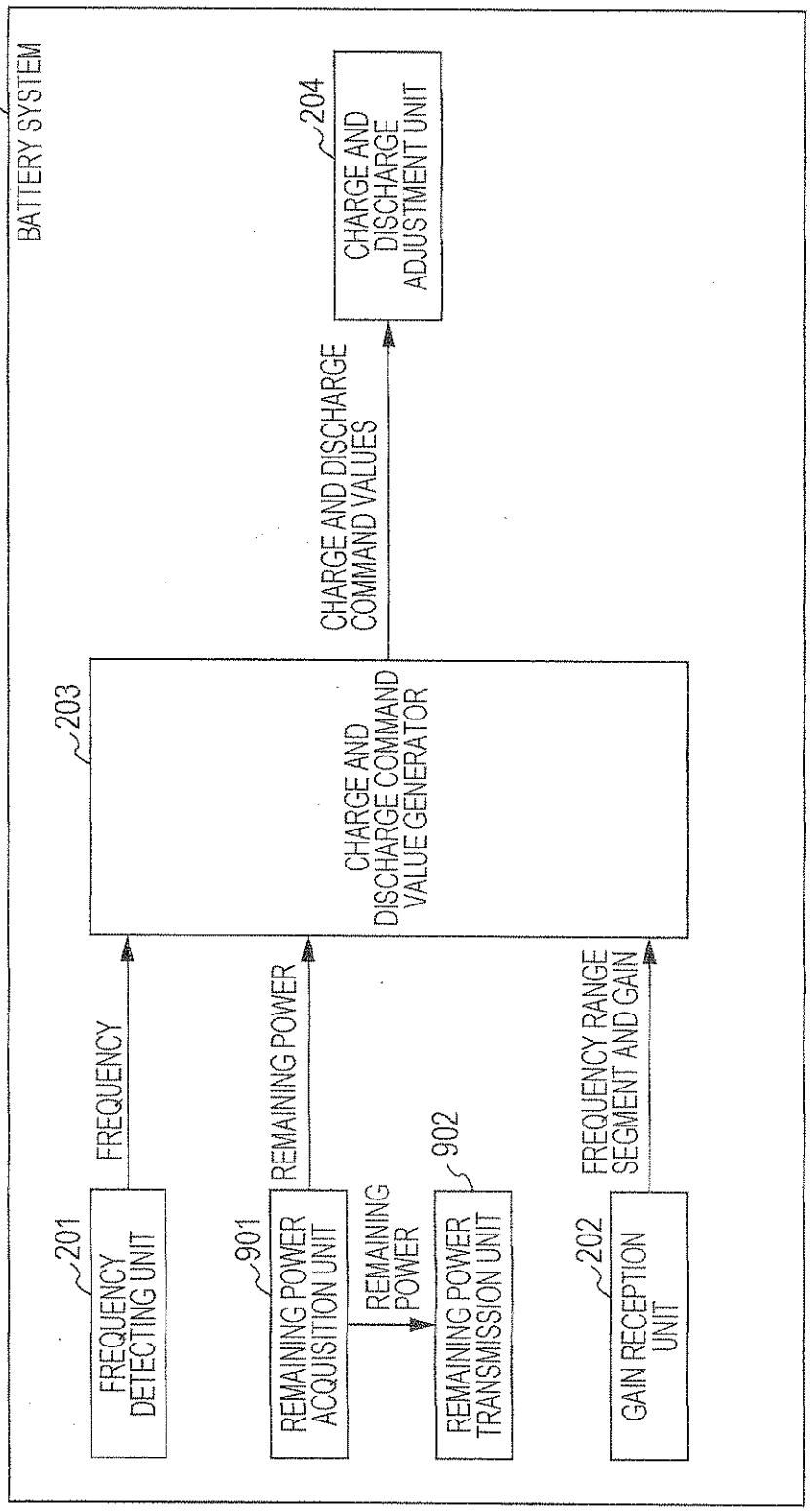

200
BATTERY SYSTEM
204
CHARGE AND DISCHARGE ADJUSTMENT UNIT
CHARGE AND DISCHARGE COMMAND VALUES
203
CHARGE AND DISCHARGE COMMAND VALUE GENERATOR
FREQUENCY
REMAINING POWER
FREQUENCY RANGE SEGMENT AND GAIN
201
FREQUENCY DETECTING UNIT
901
REMAINING POWER ACQUISITION UNIT
REMAINING POWER
902
REMAINING POWER TRANSMISSION UNIT
202
GAIN RECEPTION UNIT

FIG. 10

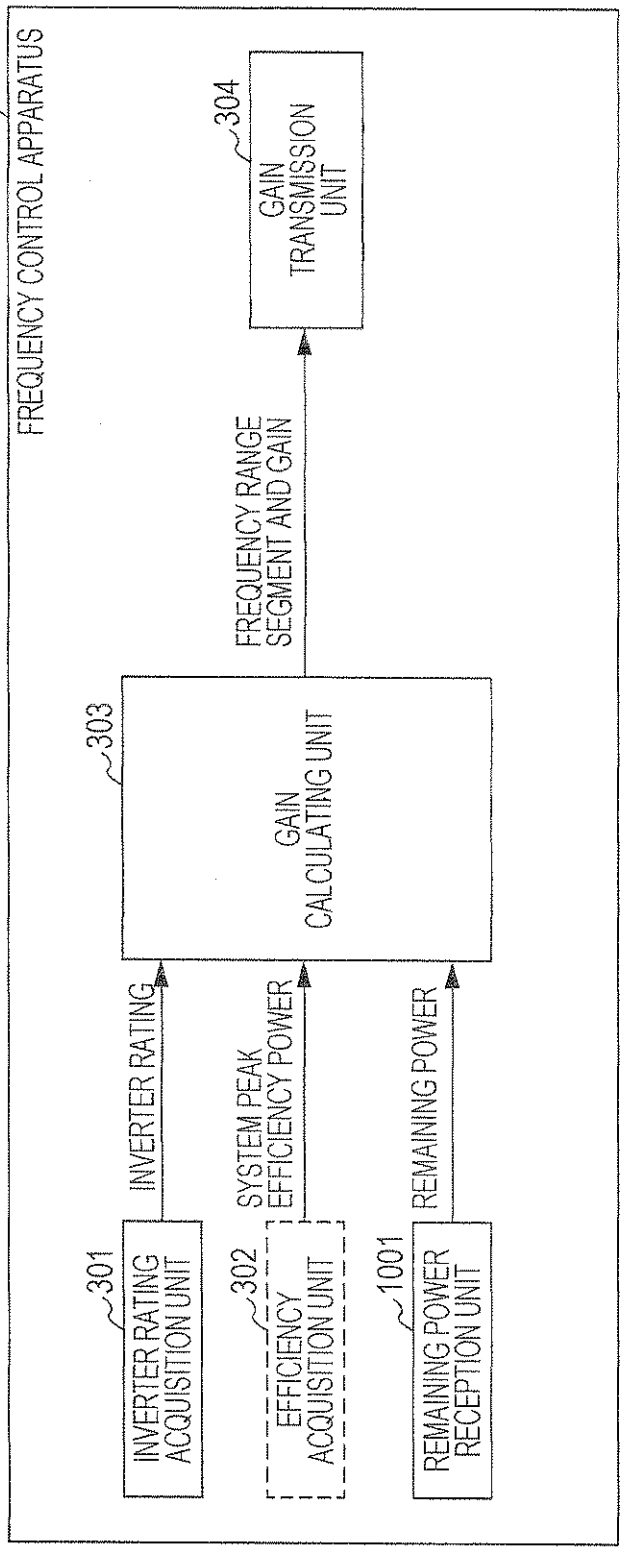

300
FREQUENCY CONTROL APPARATUS
304
GAIN TRANSMISSION UNIT
FREQUENCY RANGE SEGMENT AND GAIN
303
GAIN CALCULATING UNIT
INVERTER RATING
SYSTEM PEAK EFFICIENCY POWER
REMAINING POWER
301
INVERTER RATING ACQUISITION UNIT
302
EFFICIENCY ACQUISITION UNIT
1001
REMAINING POWER RECEPTION UNIT

FIG. 11A

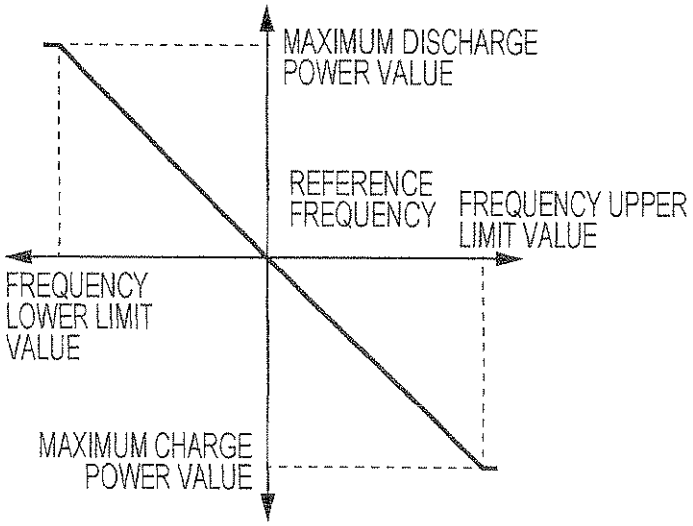


FIG. 11B

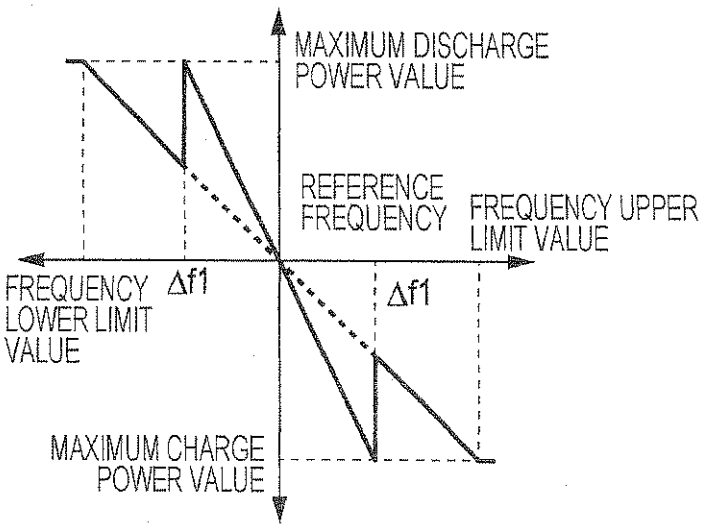


FIG. 11C

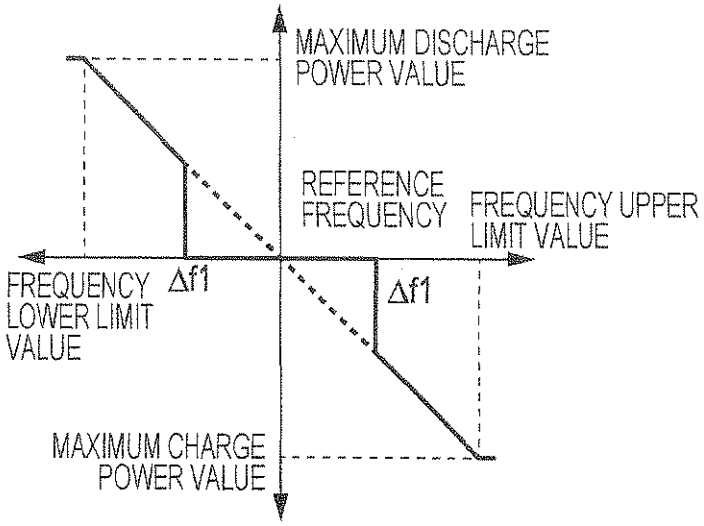


FIG. 11D

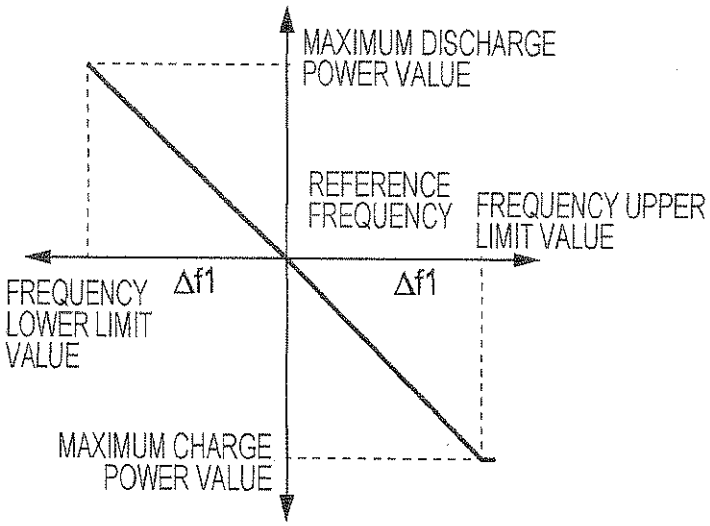


FIG. 11E

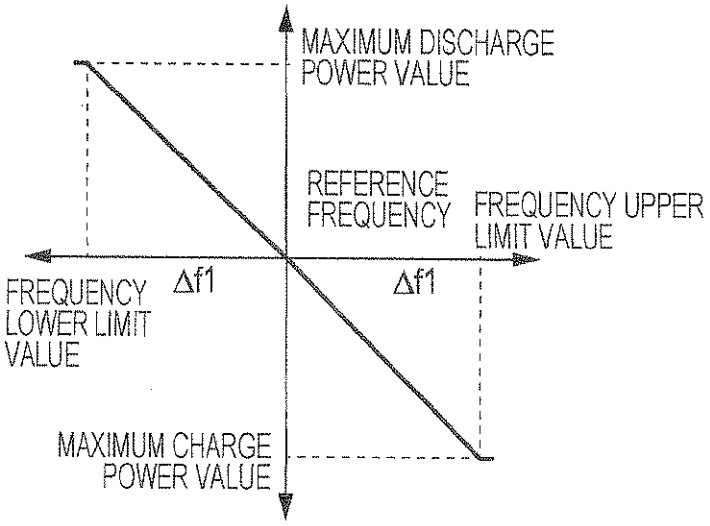


FIG. 11F

COMMAND TO CORRECT FIRST BATTERY SYSTEM
IF $\|\Delta f\| \leq \Delta f1$, THEN SET GAIN TO 2 IF NOT, THEN SET GAIN TO 1
COMMAND TO CORRECT SECOND BATTERY SYSTEM
IF $\|\Delta f\| \leq \Delta f1$, THEN SET GAIN TO 0 IF NOT, THEN SET GAIN TO 1

FIG. 11G

COMMAND TO CORRECT FIRST BATTERY SYSTEM
IF $\|\Delta f\| \leq \Delta f1$, THEN SET GAIN TO 1 IF NOT, THEN SET GAIN TO 1
COMMAND TO CORRECT SECOND BATTERY SYSTEM
IF $\|\Delta f\| \leq \Delta f1$, THEN SET GAIN TO 1 IF NOT, THEN SET GAIN TO 1

FIG. 12

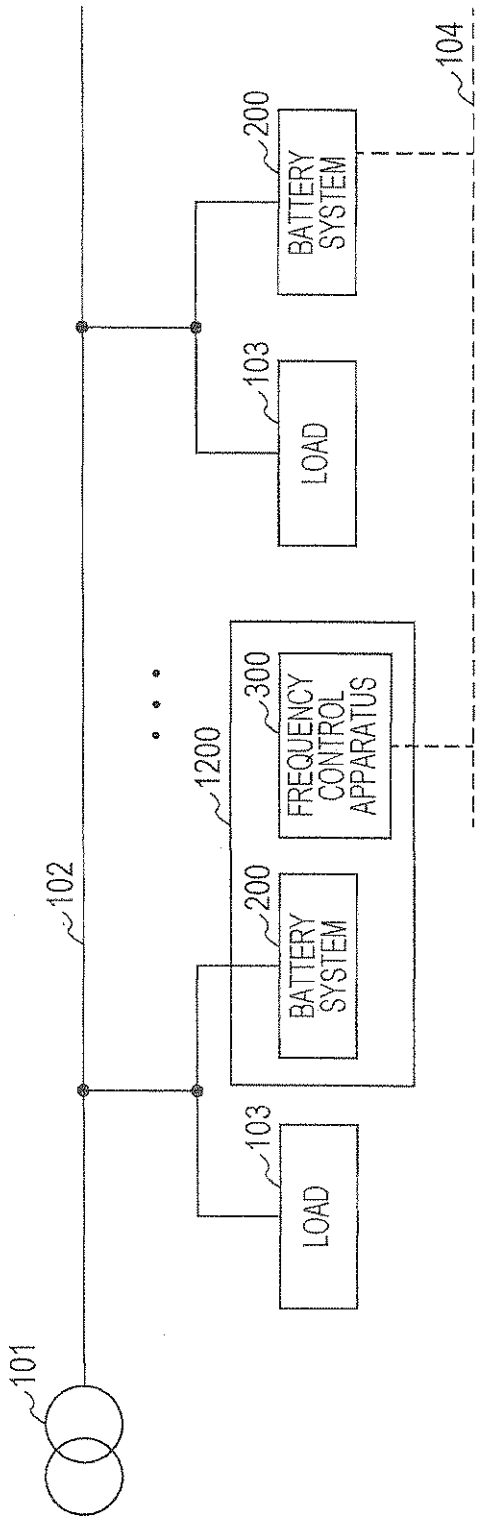

101
102
103
LOAD
200
BATTERY SYSTEM
1200
300
FREQUENCY CONTROL APPARATUS
104

FIG. 13

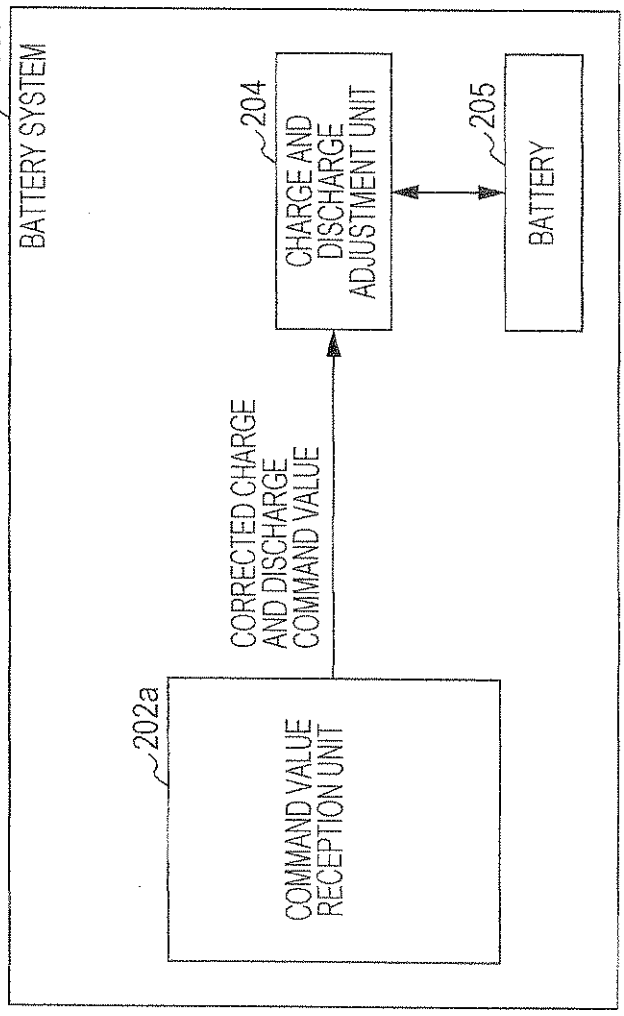
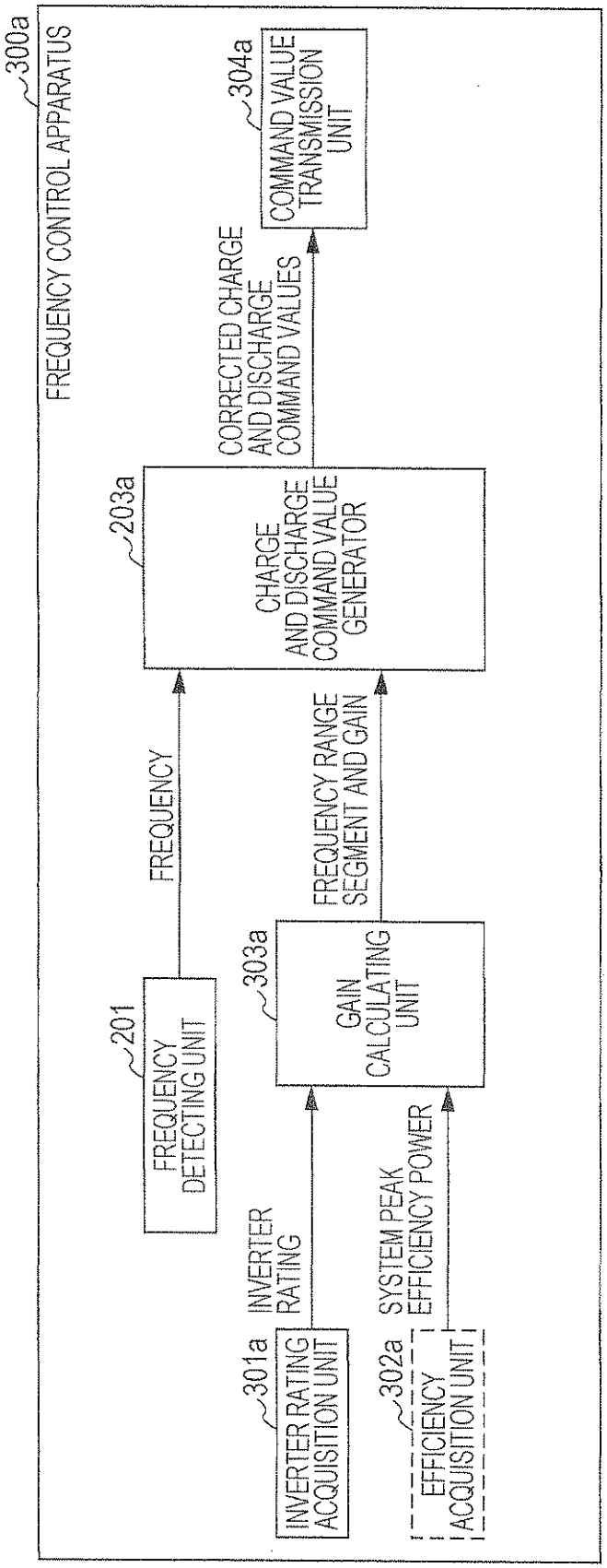

200a
BATTERY SYSTEM
204
CHARGE AND DISCHARGE ADJUSTMENT UNIT
205
BATTERY
CORRECTED CHARGE AND DISCHARGE COMMAND VALUE
202a
COMMAND VALUE RECEPTION UNIT

FIG. 14


300a
FREQUENCY CONTROL APPARATUS
304a
COMMAND VALUE TRANSMISSION UNIT
CORRECTED CHARGE AND DISCHARGE COMMAND VALUES
203a
CHARGE AND DISCHARGE COMMAND VALUE GENERATOR
FREQUENCY
FREQUENCY RANGE SEGMENT AND GAIN
201
FREQUENCY DETECTING UNIT
303a
GAIN CALCULATING UNIT
INVERTER RATING
SYSTEM PEAK EFFICIENCY POWER
301a
INVERTER RATING ACQUISITION UNIT
302a
EFFICIENCY ACQUISITION UNIT