FIG. 1

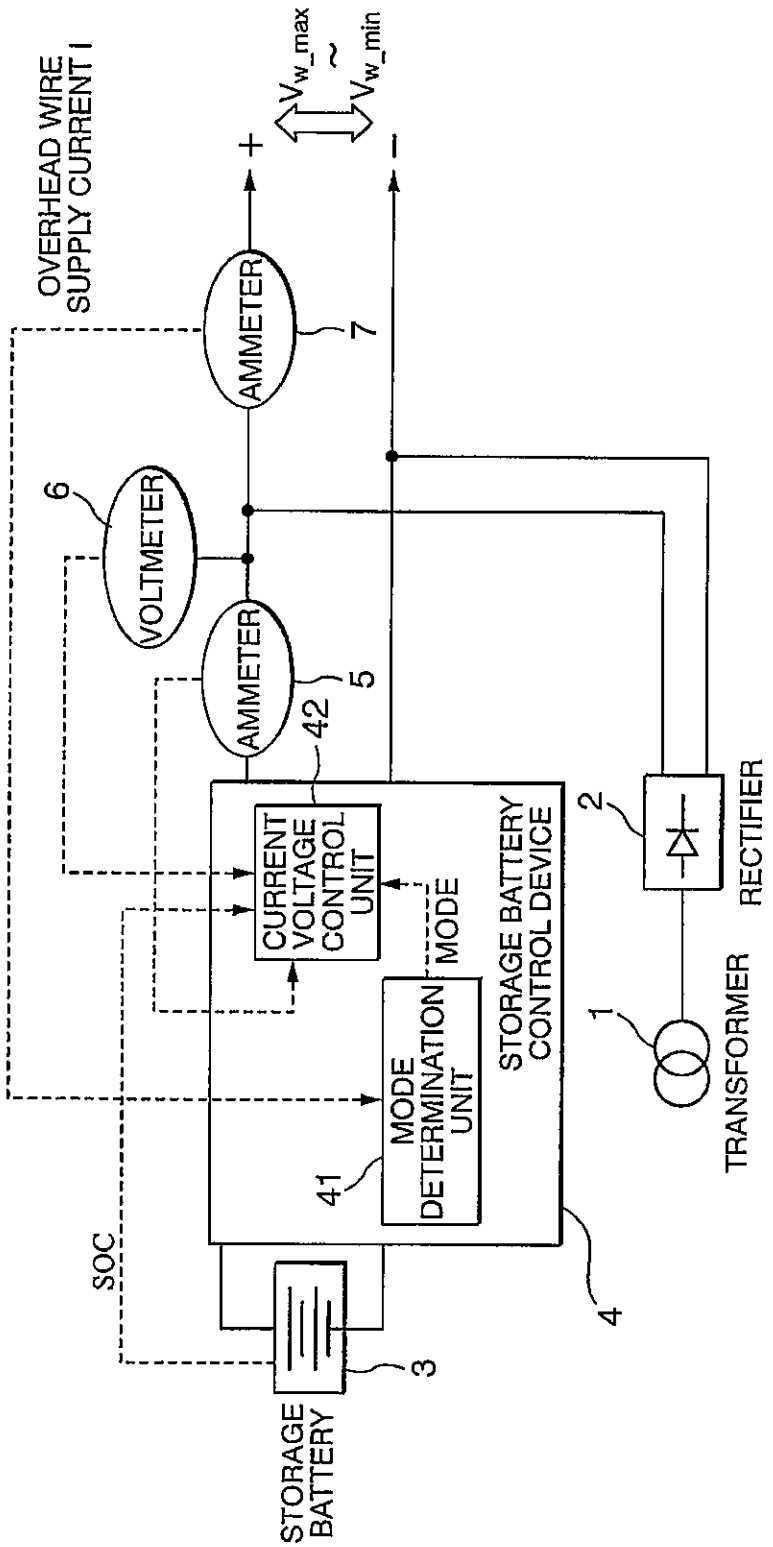

OVERHEAD WIRE SUPPLY CURRENT I
V_{w_max} ~ V_{w_min}
+
−
AMMETER
7
6
VOLTMETER
AMMETER
5
42
CURRENT VOLTAGE CONTROL UNIT
MODE
MODE DETERMINATION UNIT
41
STORAGE BATTERY CONTROL DEVICE
4
2
RECTIFIER
1
TRANSFORMER
SOC
3
STORAGE BATTERY

FIG. 2

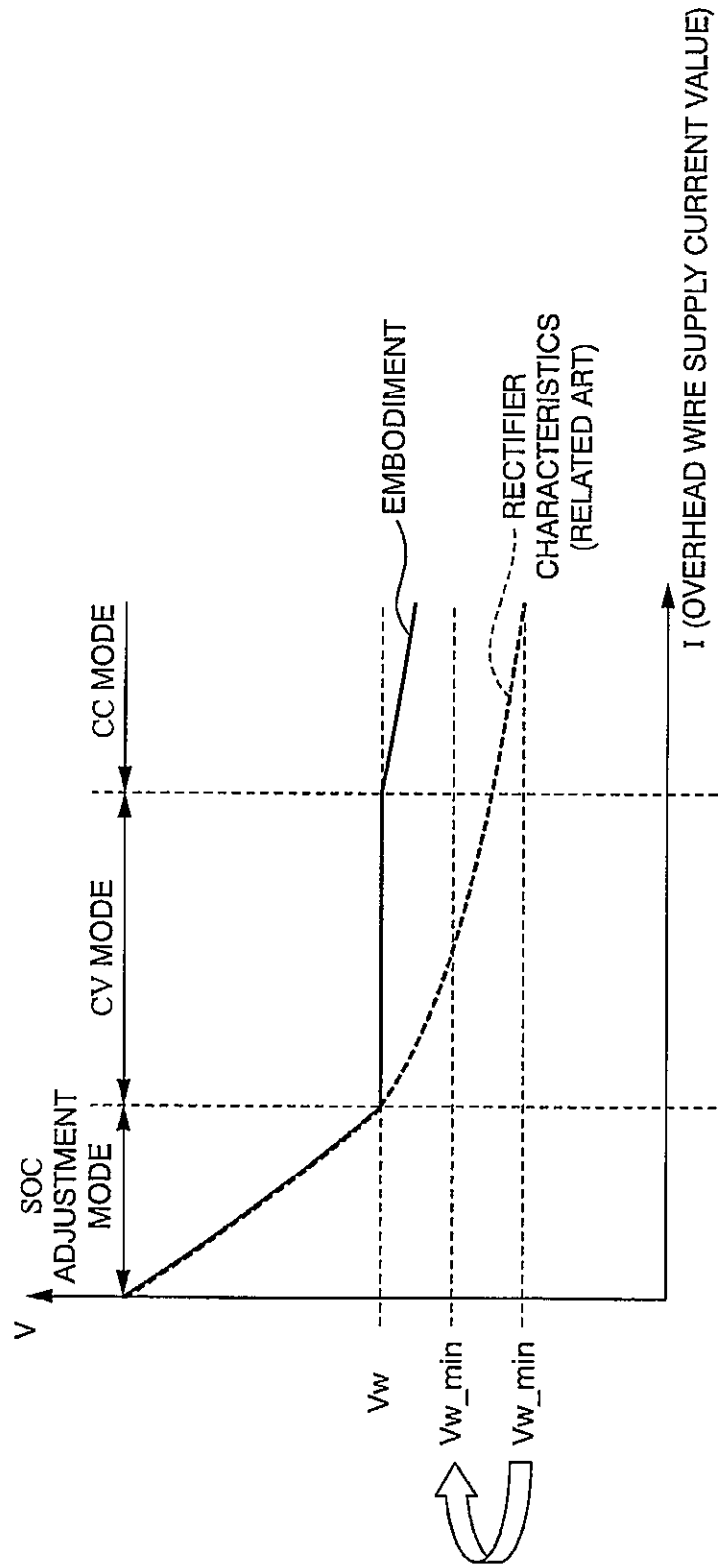

V
SOC ADJUSTMENT MODE
CV MODE
CC MODE
Vw
Vw_min
Vw_min
EMBODIMENT
RECTIFIER CHARACTERISTICS (RELATED ART)
I (OVERHEAD WIRE SUPPLY CURRENT VALUE)
FIRST THRESHOLD
SECOND THRESHOLD

FIG. 3

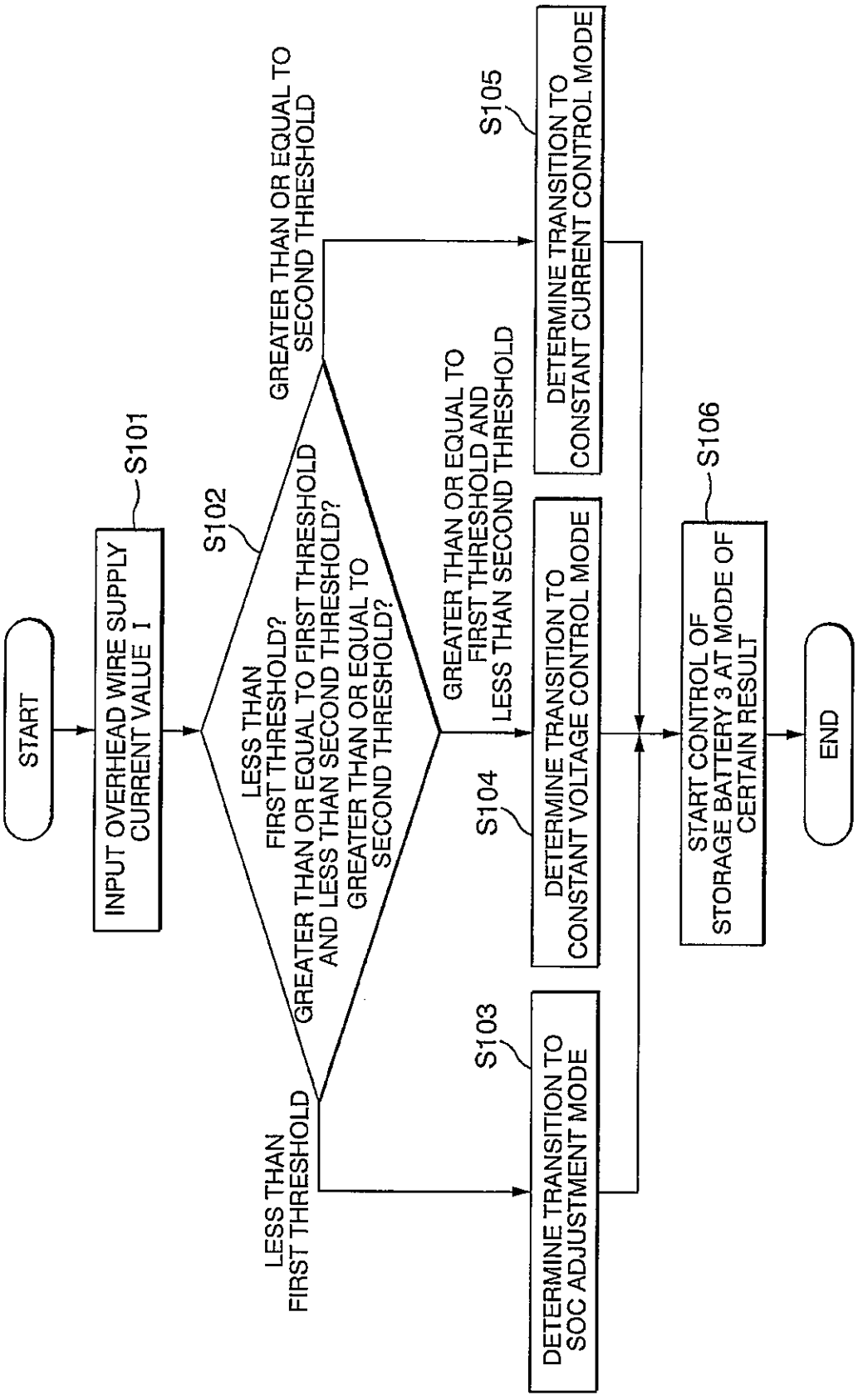

START
INPUT OVERHEAD WIRE SUPPLY CURRENT VALUE I
S101
S102
LESS THAN FIRST THRESHOLD? GREATER THAN OR EQUAL TO FIRST THRESHOLD AND LESS THAN SECOND THRESHOLD? GREATER THAN OR EQUAL TO SECOND THRESHOLD?
LESS THAN FIRST THRESHOLD
GREATER THAN OR EQUAL TO FIRST THRESHOLD AND LESS THAN SECOND THRESHOLD
GREATER THAN OR EQUAL TO SECOND THRESHOLD
S103
DETERMINE TRANSITION TO SOC ADJUSTMENT MODE
S104
DETERMINE TRANSITION TO CONSTANT VOLTAGE CONTROL MODE
S105
DETERMINE TRANSITION TO CONSTANT CURRENT CONTROL MODE
S106
START CONTROL OF STORAGE BATTERY 3 AT MODE OF CERTAIN RESULT
END

FIG. 4

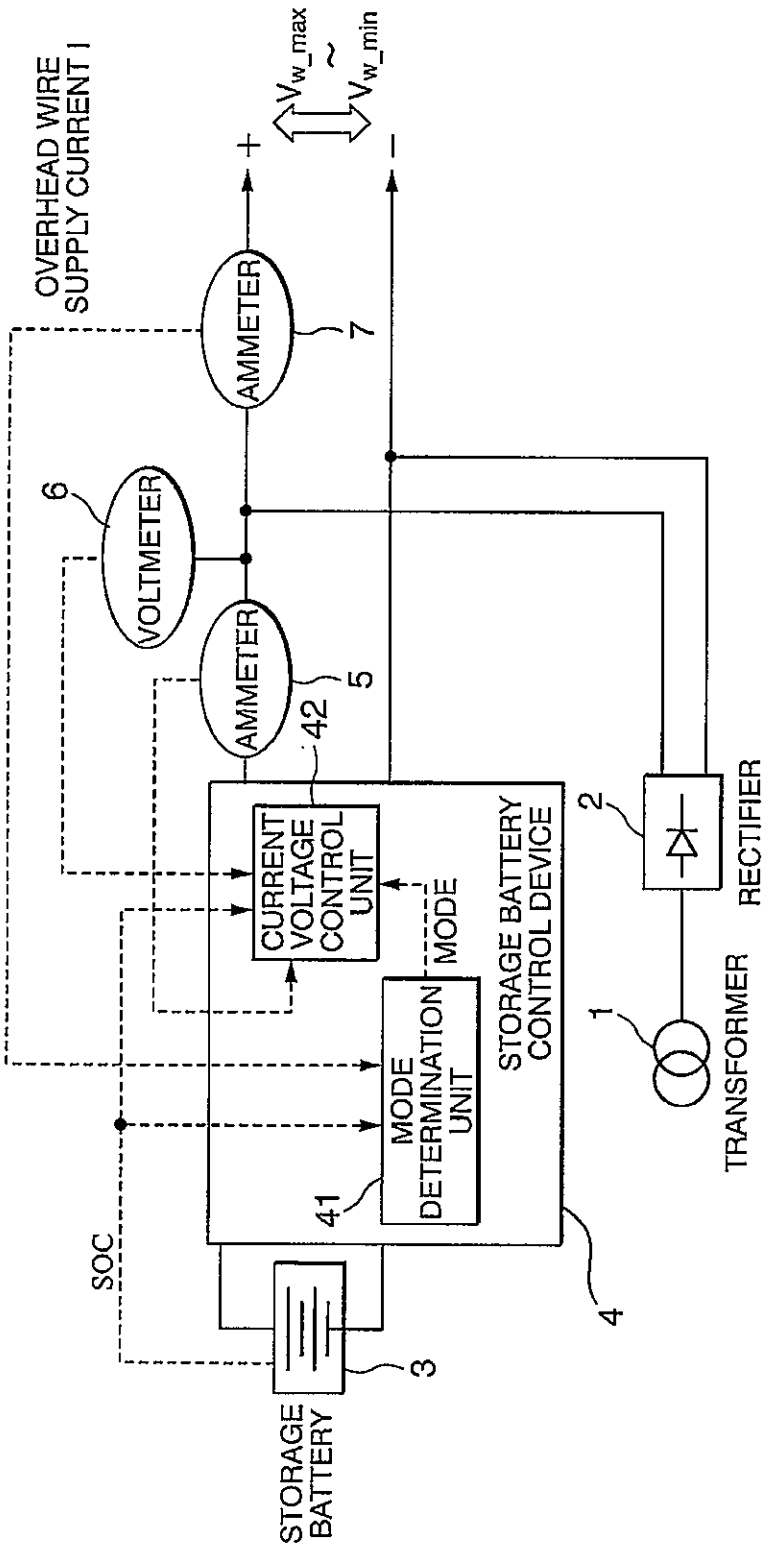
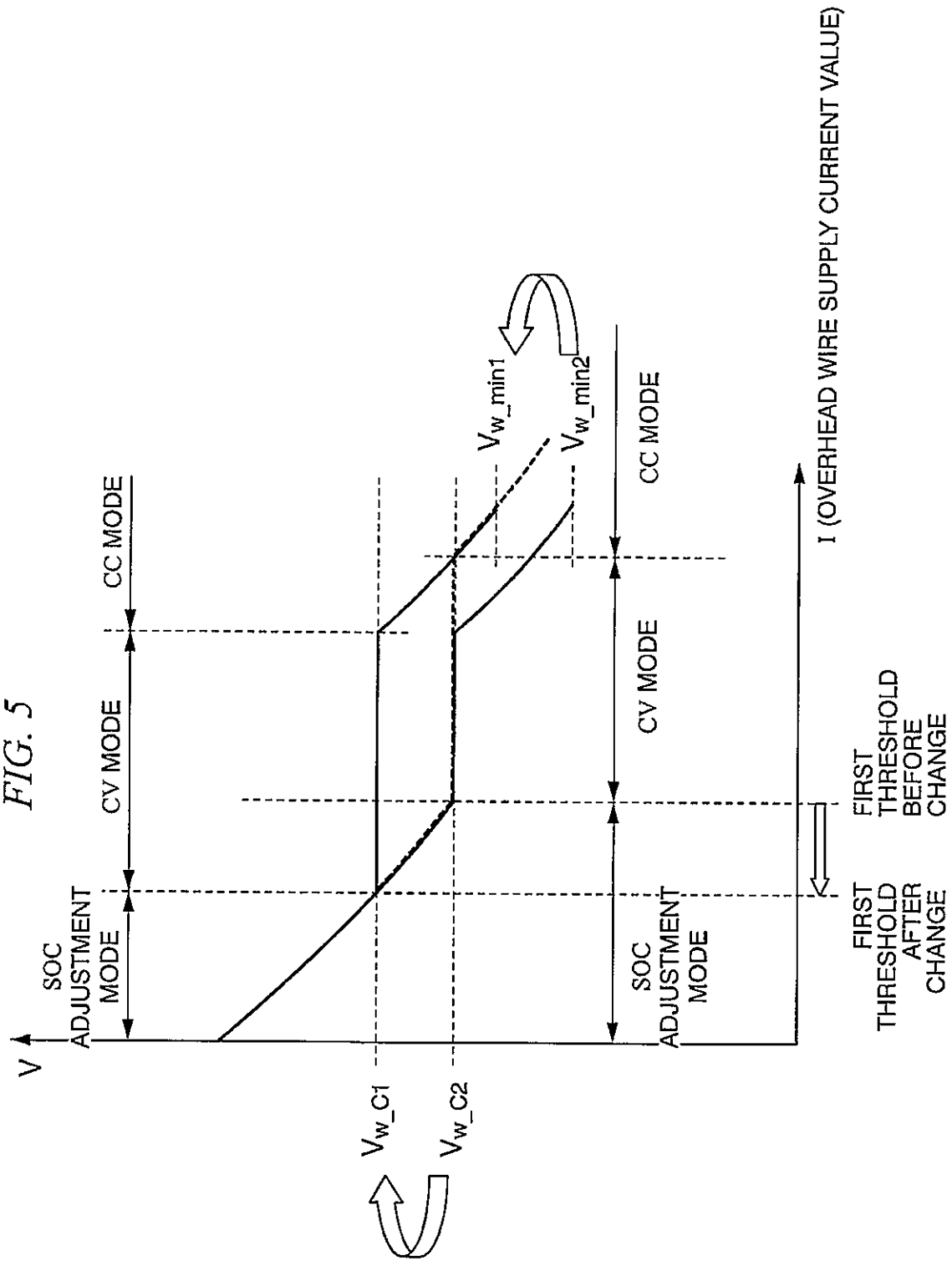

OVERHEAD WIRE
SUPPLY CURRENT I
V_{w_max}
~
V_{w_min}
+
−
AMMETER
7
6
VOLTMETER
AMMETER
5
42
CURRENT VOLTAGE CONTROL UNIT
MODE
MODE DETERMINATION UNIT
41
STORAGE BATTERY CONTROL DEVICE
4
2
RECTIFIER
1
TRANSFORMER
SOC
3
STORAGE BATTERY

FIG. 5


V
SOC ADJUSTMENT MODE
CV MODE
CC MODE
V_{w_C1}
V_{w_C2}
V_{w_min1}
V_{w_min2}
CC MODE
CV MODE
SOC ADJUSTMENT MODE
I (OVERHEAD WIRE SUPPLY CURRENT VALUE)
FIRST THRESHOLD AFTER CHANGE
FIRST THRESHOLD BEFORE CHANGE

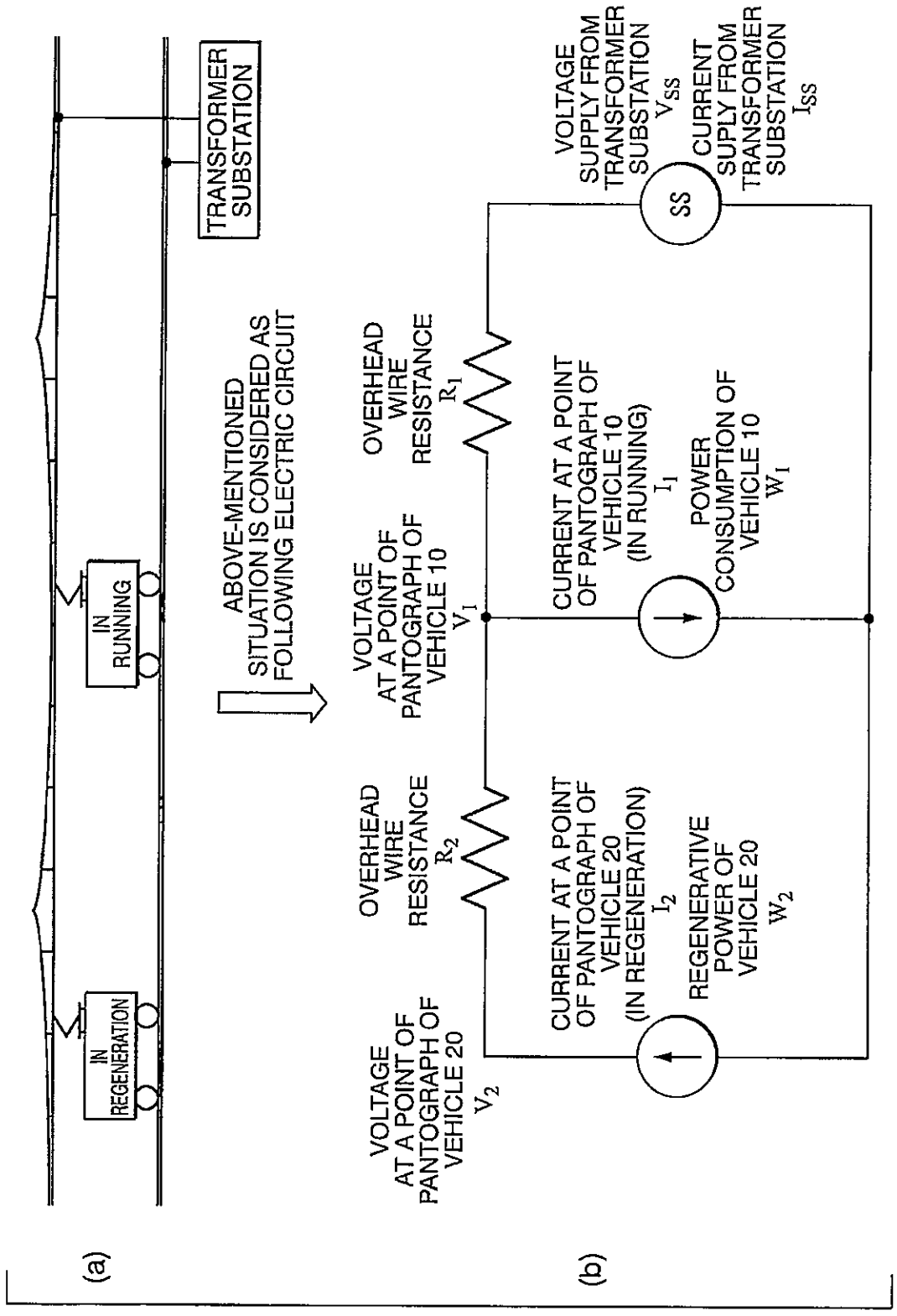

(a)
IN REGENERATION
IN RUNNING
TRANSFORMER SUBSTATION
ABOVE-MENTIONED SITUATION IS CONSIDERED AS FOLLOWING ELECTRIC CIRCUIT
(b)
VOLTAGE AT A POINT OF PANTOGRAPH OF VEHICLE 20
V_2
OVERHEAD WIRE RESISTANCE
R_2
VOLTAGE AT A POINT OF PANTOGRAPH OF VEHICLE 10
V_1
OVERHEAD WIRE RESISTANCE
R_1
CURRENT AT A POINT OF PANTOGRAPH OF VEHICLE 20 (IN REGENERATION)
I_2
REGENERATIVE POWER OF VEHICLE 20
W_2
CURRENT AT A POINT OF PANTOGRAPH OF VEHICLE 10 (IN RUNNING)
I_1
POWER CONSUMPTION OF VEHICLE 10
W_1
SS
VOLTAGE SUPPLY FROM TRANSFORMER SUBSTATION
V_{SS}
CURRENT SUPLY FROM TRANSFORMER SUBSTATION
I_{SS}

FIG. 6