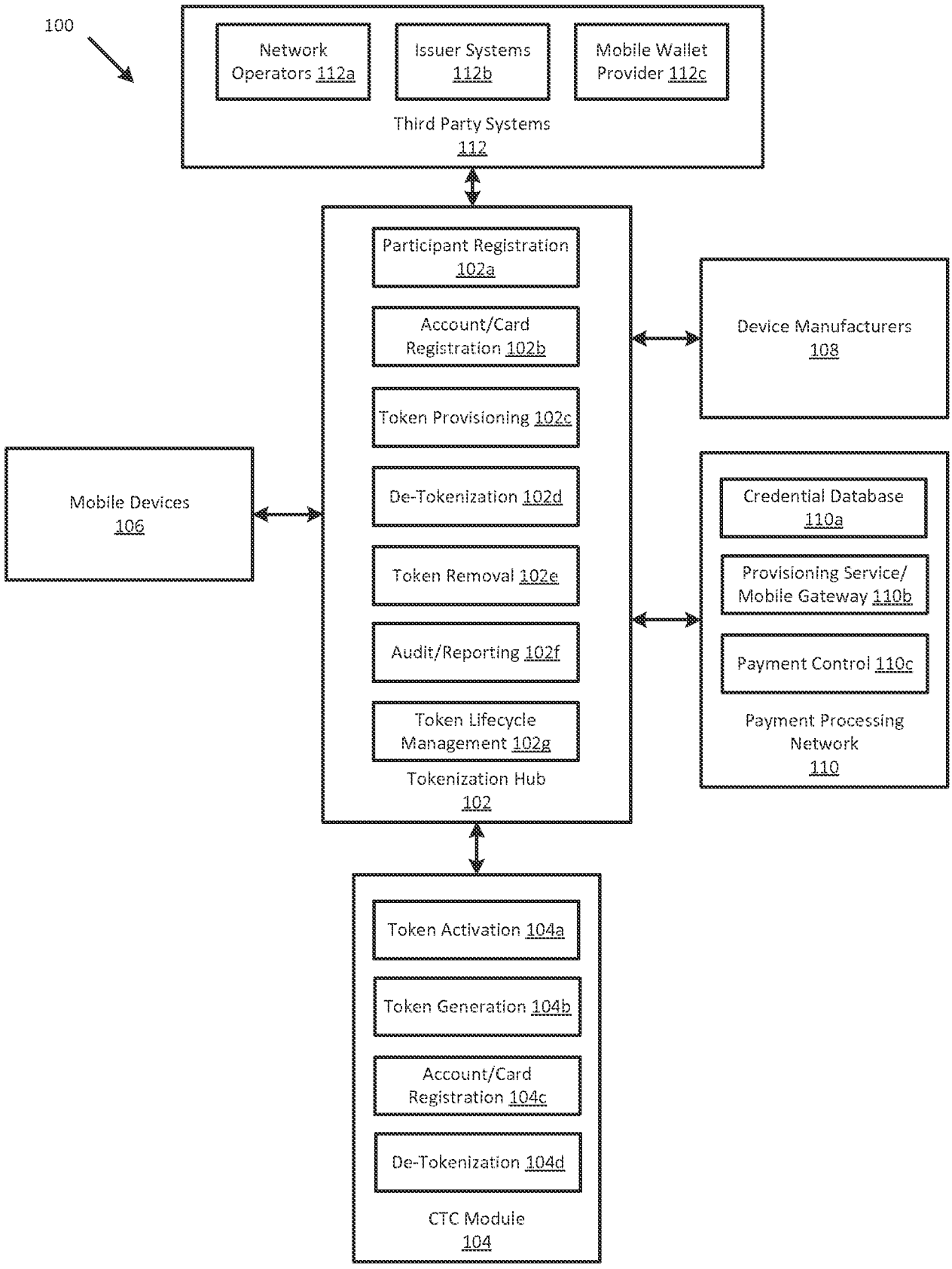

100
Network Operators 112a
Issuer Systems 112b
Mobile Wallet Provider 112c
Third Party Systems 112
Participant Registration 102a
Account/Card Registration 102b
Token Provisioning 102c
De-Tokenization 102d
Token Removal 102e
Audit/Reporting 102f
Token Lifecycle Management 102g
Tokenization Hub 102
Device Manufacturers 108
Mobile Devices 106
Credential Database 110a
Provisioning Service/ Mobile Gateway 110b
Payment Control 110c
Payment Processing Network 110
Token Activation 104a
Token Generation 104b
Account/Card Registration 104c
De-Tokenization 104d
CTC Module 104

FIG. 1

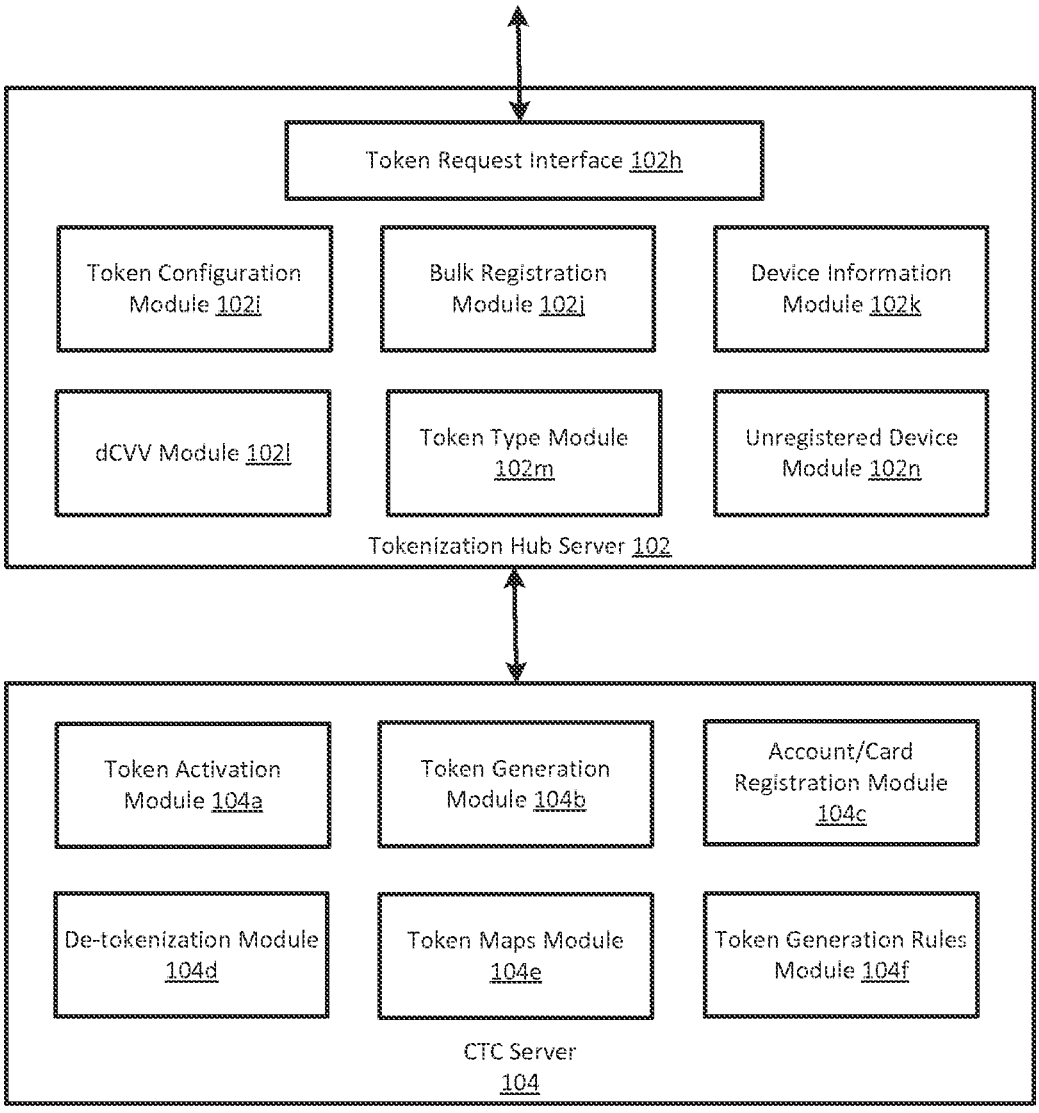

Token Request Interface 102h
Token Configuration Module 102i
Bulk Registration Module 102j
Device Information Module 102k
dCVV Module 102l
Token Type Module 102m
Unregistered Device Module 102n
Tokenization Hub Server 102
Token Activation Module 104a
Token Generation Module 104b
Account/Card Registration Module 104c
De-tokenization Module 104d
Token Maps Module 104e
Token Generation Rules Module 104f
CTC Server 104

FIG. 2

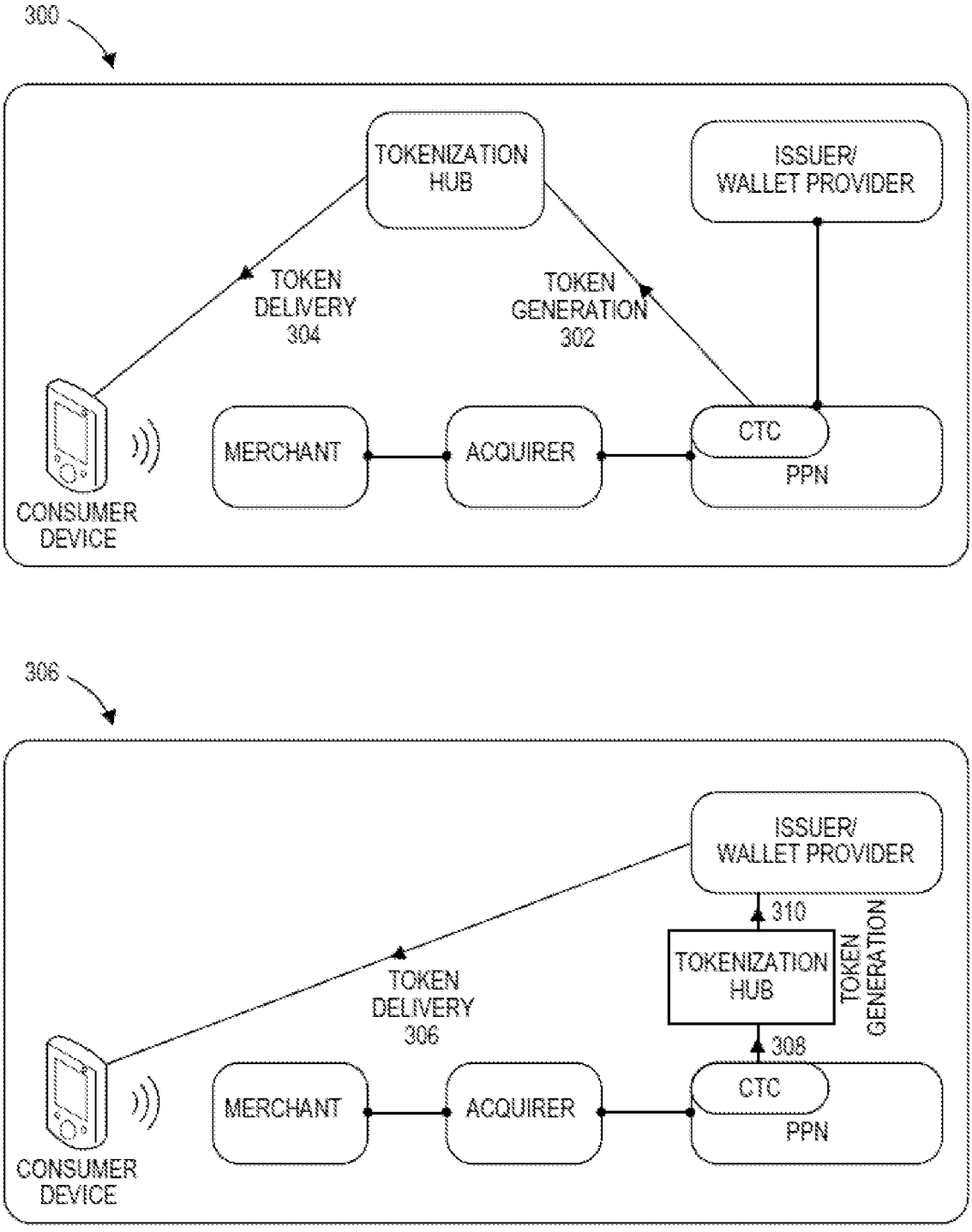

300
TOKENIZATION HUB
ISSUER/ WALLET PROVIDER
TOKEN DELIVERY 304
TOKEN GENERATION 302
CONSUMER DEVICE
MERCHANT
ACQUIRER
CTC
PPN
306
ISSUER/ WALLET PROVIDER
310
TOKENIZATION HUB
TOKEN GENERATION
TOKEN DELIVERY 306
308
CONSUMER DEVICE
MERCHANT
ACQUIRER
CTC
PPN

FIG. 3

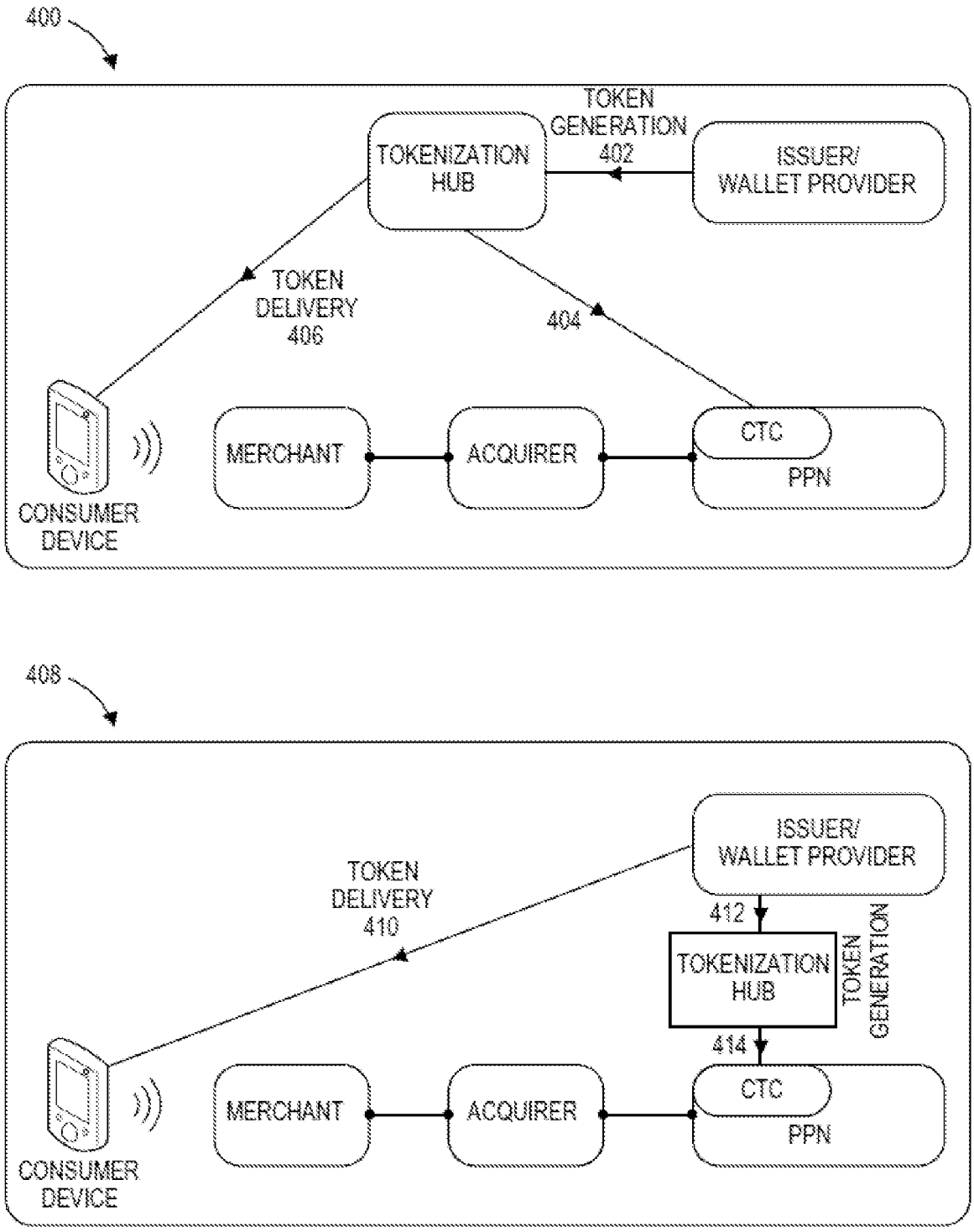

400
TOKEN GENERATION 402
TOKENIZATION HUB
ISSUER/ WALLET PROVIDER
TOKEN DELIVERY 406
404
CONSUMER DEVICE
MERCHANT
ACQUIRER
CTC
PPN
408
ISSUER/ WALLET PROVIDER
TOKEN DELIVERY 410
412
TOKENIZATION HUB
TOKEN GENERATION
414
CONSUMER DEVICE
MERCHANT
ACQUIRER
CTC
PPN

FIG. 4

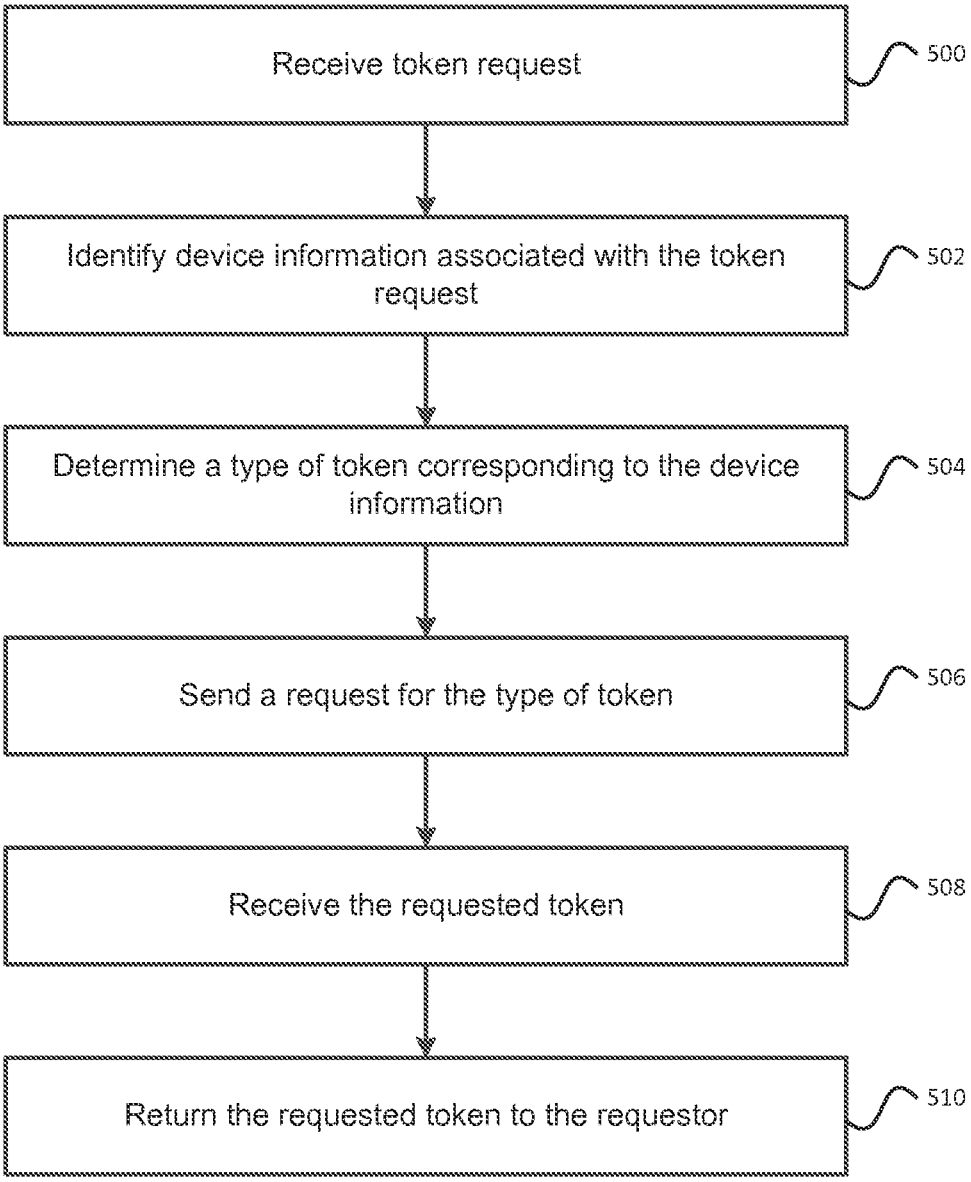

Receive token request
500
Identify device information associated with the token request
502
Determine a type of token corresponding to the device information
504
Send a request for the type of token
506
Receive the requested token
508
Return the requested token to the requestor
510

FIG. 5

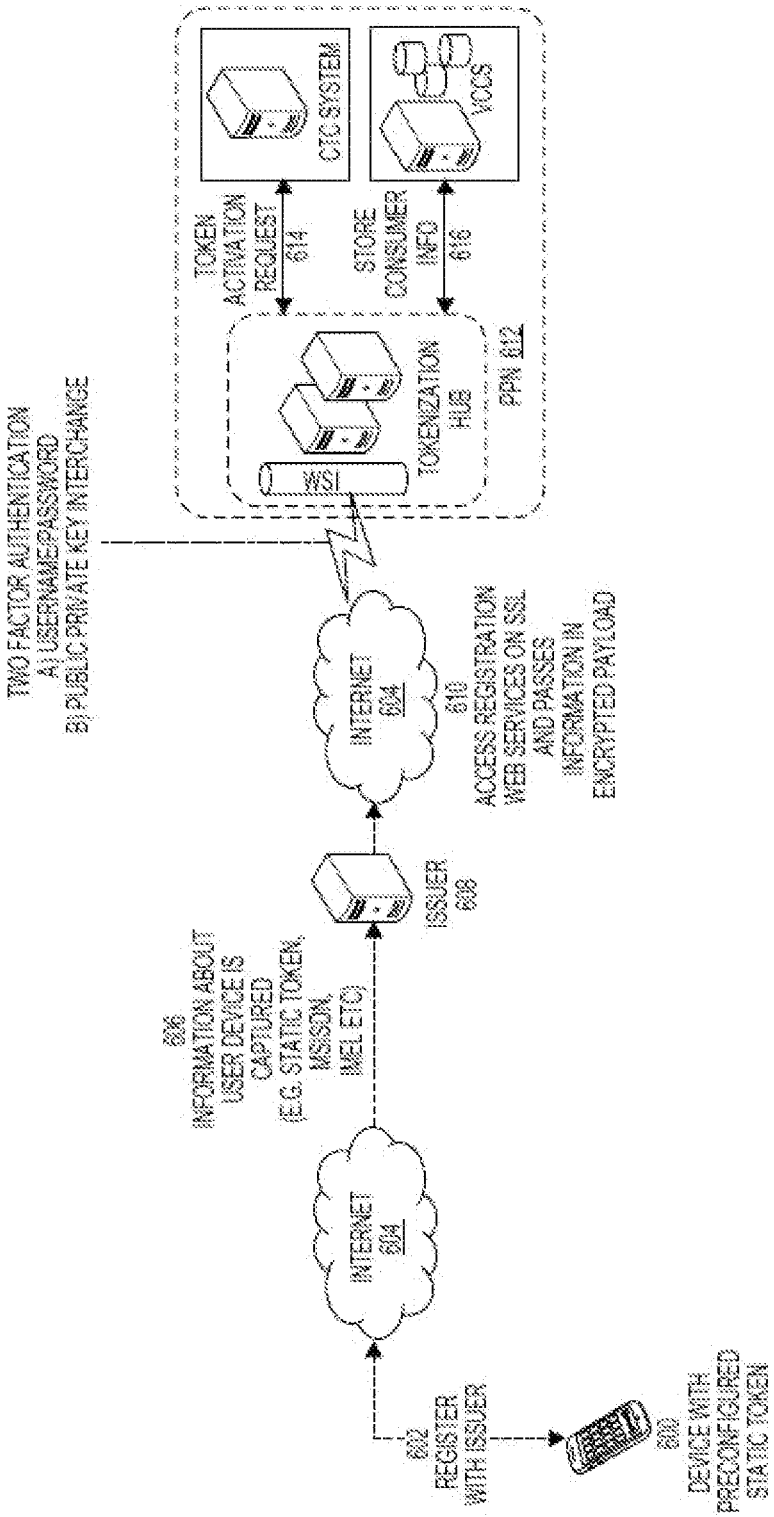

TWO FACTOR AUTHENTICATION
A) USERNAME/PASSWORD
B) PUBLIC PRIVATE KEY INTERCHANGE
TOKEN ACTIVATION REQUEST 614
STORE CONSUMER INFO 616
CTC SYSTEM
VCOS
TOKENIZATION HUB
PPN 612
INTERNET 604
610
ACCESS REGISTRATION WEB SERVICES OK SSL AND PASSES INFORMATION IN ENCRYPTED PAYLOAD
ISSUER 608
606
INFORMATION ABOUT USER DEVICE IS CAPTURED (E.G. STATIC TOKEN, MSISDN, IMEI ETC)
INTERNET 604
602
REGISTER WITH ISSUER
600
DEVICE WITH PRECONFIGURED STATIC TOKEN

FIG. 6

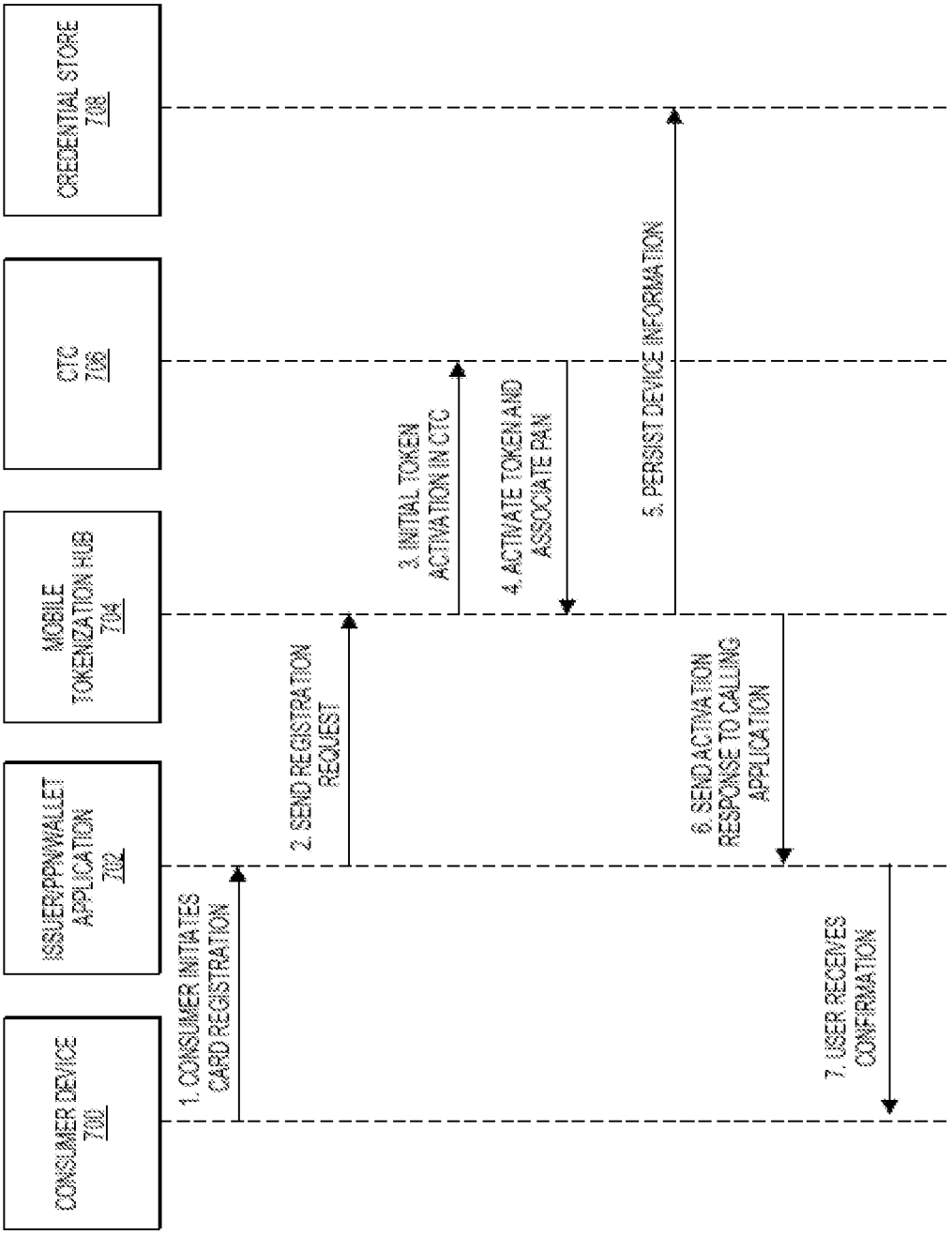

CONSUMER DEVICE 700
ISSUER/PPW/WALLET APPLICATION 702
MOBILE TOKENIZATION HUB 704
CTC 706
CREDENTIAL STORE 708
1. CONSUMER INITIATES CARD REGISTRATION
2. SEND REGISTRATION REQUEST
3. INITIAL TOKEN ACTIVATION IN CTC
4. ACTIVATE TOKEN AND ASSOCIATE PAN
5. PERSIST DEVICE INFORMATION
6. SEND ACTIVATION RESPONSE TO CALLING APPLICATION
7. USER RECEIVES CONFIRMATION

FIG. 7

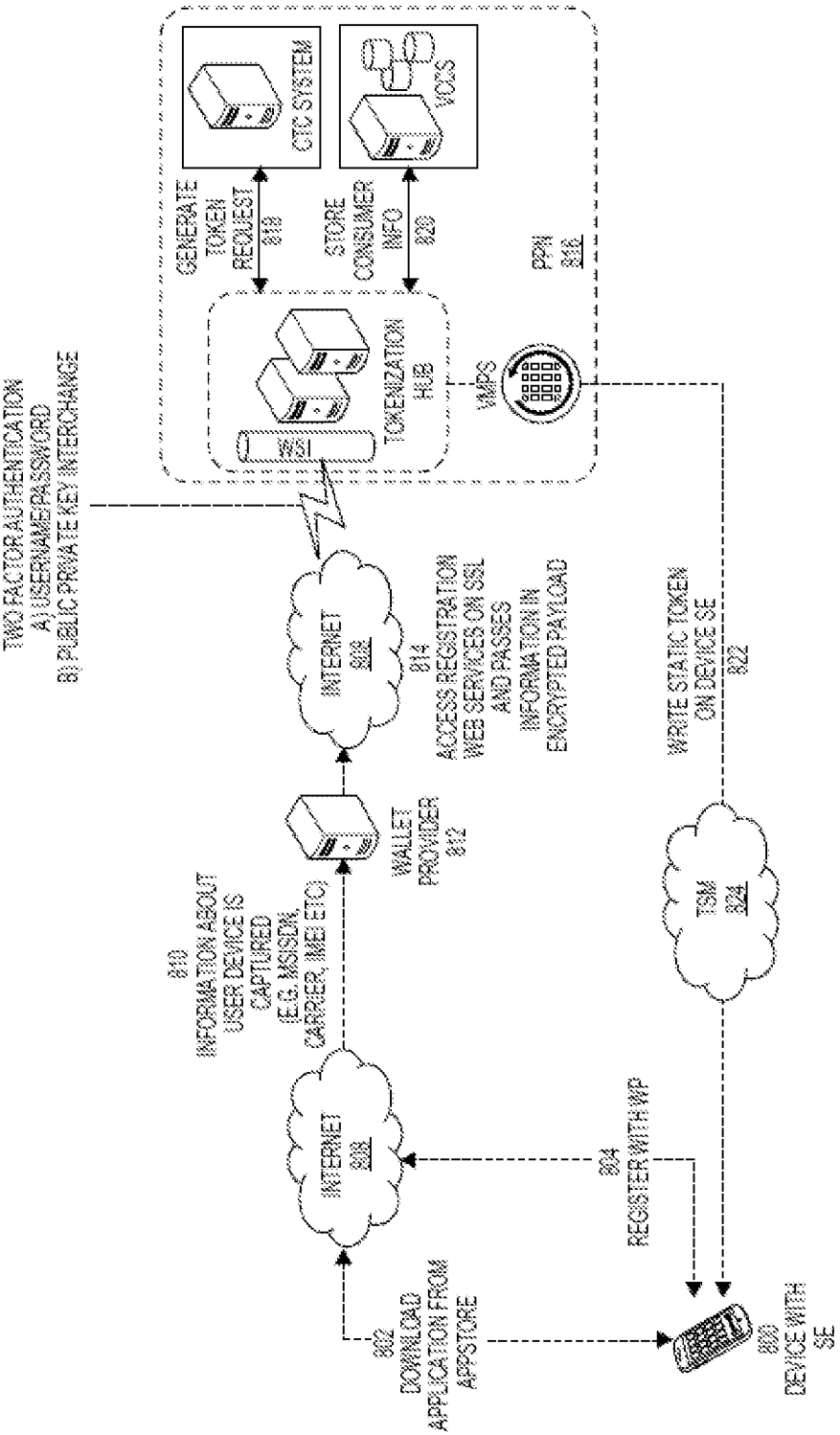

CTC SYSTEM
VCCS
GENERATE TOKEN REQUEST 818
STORE CONSUMER INFO 820
PPH 816
TOKENIZATION HUB
VMPS
TWO FACTOR AUTHENTICATION
A) USERNAMEPASSWORD
B) PUBLIC PRIVATE KEY INTERCHANGE
INTERNET 808
814
ACCESS REGISTRATION WEB SERVICES ON SSL AND PASSES INFORMATION IN ENCRYPTED PAYLOAD
WRITE STATIC TOKEN ON DEVICE SE 822
WALLET PROVIDER 812
810
INFORMATION ABOUT USER DEVICE IS CAPTURED (E.G. MSISDN, CARRIER, IMEI ETC)
TSM 824
INTERNET 808
804
REGISTER WITH WP
802
DOWNLOAD APPLICATION FROM APPSTORE
800
DEVICE WITH SE

FIG. 8

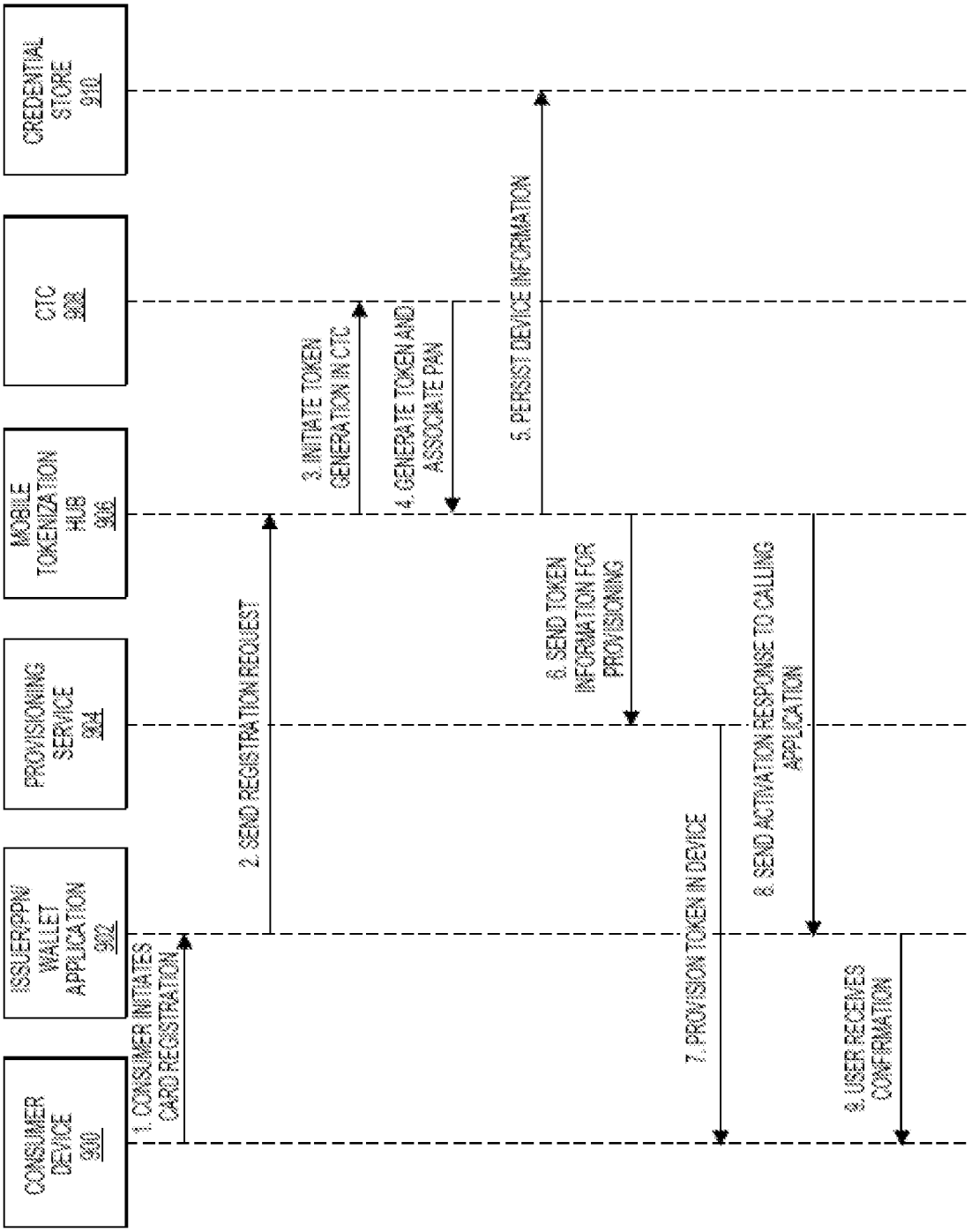

CONSUMER DEVICE 900
ISSUER/PPW WALLET APPLICATION 902
PROVISIONING SERVICE 904
MOBILE TOKENIZATION HUB 906
CTC 908
CREDENTIAL STORE 910
1. CONSUMER INITIATES CARD REGISTRATION
2. SEND REGISTRATION REQUEST
3. INITIATE TOKEN GENERATION IN CTC
4. GENERATE TOKEN AND ASSOCIATE PAN
5. PERSIST DEVICE INFORMATION
6. SEND TOKEN INFORMATION FOR PROVISIONING
7. PROVISION TOKEN IN DEVICE
8. SEND ACTIVATION RESPONSE TO CALLING APPLICATION
9. USER RECEIVES CONFIRMATION

FIG. 9

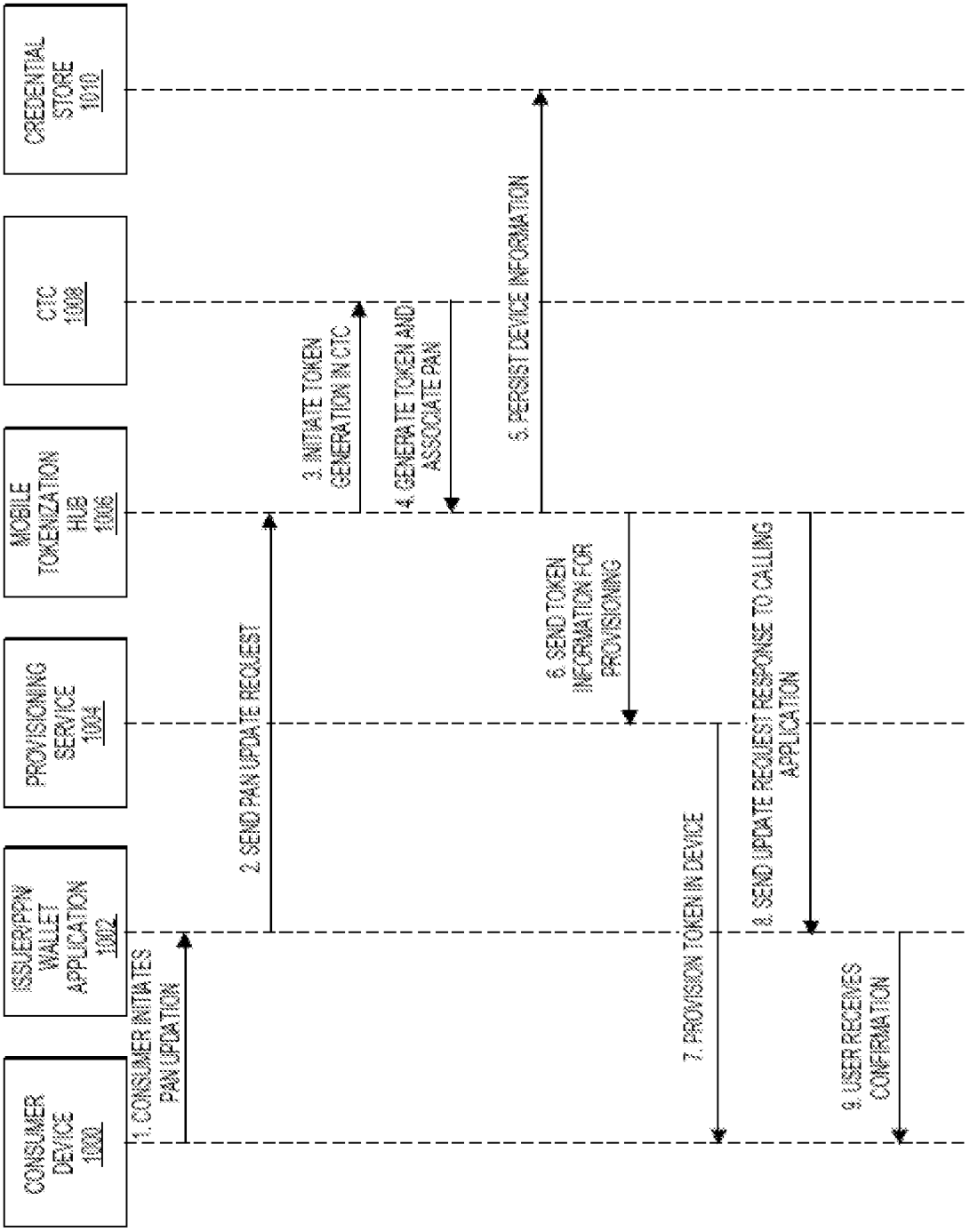

CONSUMER DEVICE 1000
ISSUER/PPAN WALLET APPLICATION 1002
PROVISIONING SERVICE 1004
MOBILE TOKENIZATION HUB 1006
CTC 1008
CREDENTIAL STORE 1010
1. CONSUMER INITIATES PAN UPDATION
2. SEND PAN UPDATE REQUEST
3. INITIATE TOKEN GENERATION IN CTC
4. GENERATE TOKEN AND ASSOCIATE PAN
5. PERSIST DEVICE INFORMATION
6. SEND TOKEN INFORMATION FOR PROVISIONING
7. PROVISION TOKEN IN DEVICE
8. SEND UPDATE REQUEST RESPONSE TO CALLING APPLICATION
9. USER RECEIVES CONFIRMATION

FIG. 10

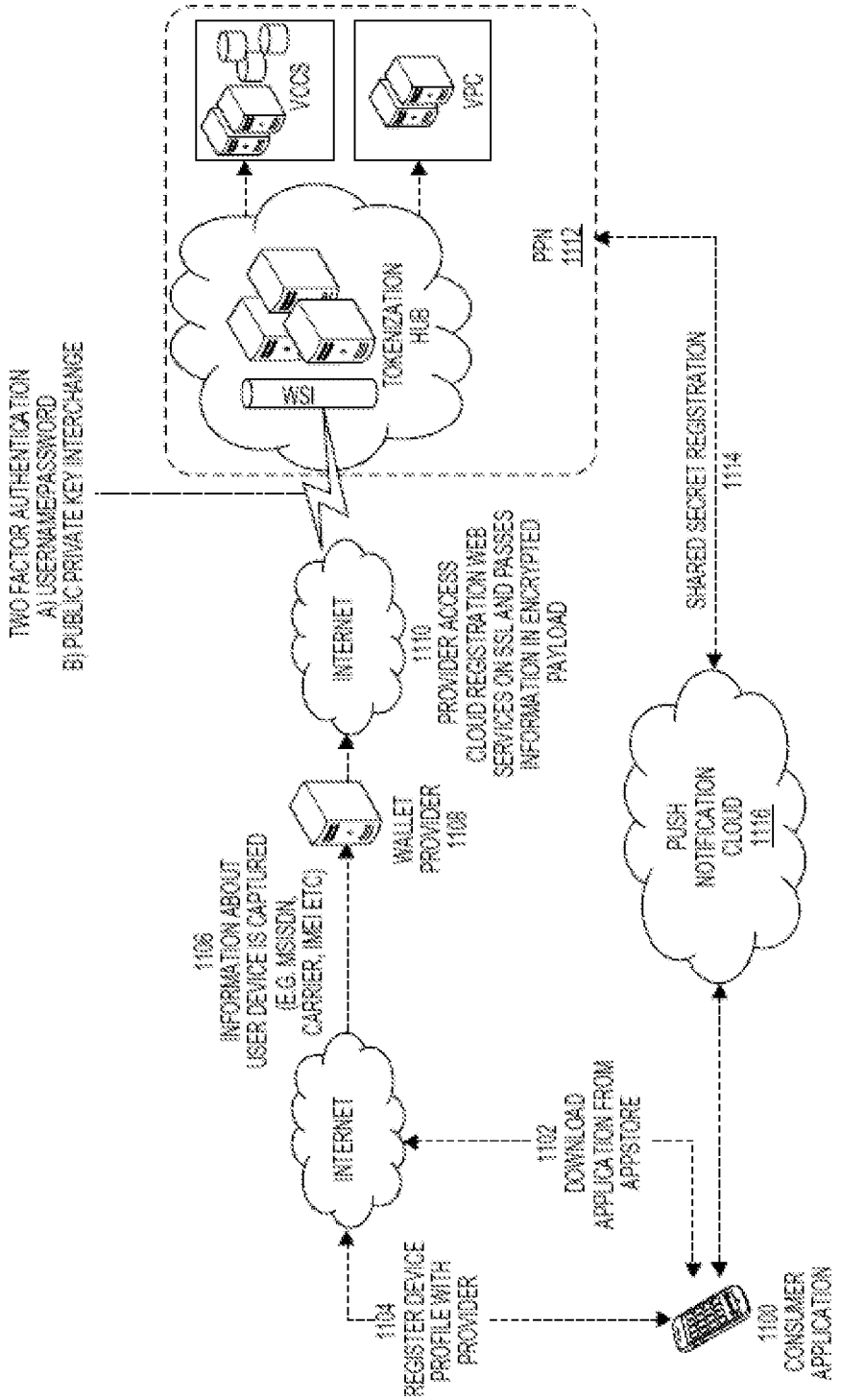

VCS
VPC
TOKENIZATION HUB
HSI
PZN 1112
TWO FACTOR AUTHENTICATION
A) USERNAME/PASSWORD
B) PUBLIC PRIVATE KEY INTERCHANGE
INTERNET 1110
PROVIDER ACCESS
CLOUD REGISTRATION WEB SERVICES ON SSL AND PASSES INFORMATION IN ENCRYPTED PAYLOAD
SHARED SECRET REGISTRATION 1114
WALLET PROVIDER 1108
1106
INFORMATION ABOUT USER DEVICE IS CAPTURED (E.G. MSISDN, CARRIER, IMEI ETC)
PUSH NOTIFICATION CLOUD 1116
INTERNET
1102
DOWNLOAD APPLICATION FROM APPSTORE
1104
REGISTER DEVICE PROFILE WITH PROVIDER
1100
CONSUMER APPLICATION

FIG. 11

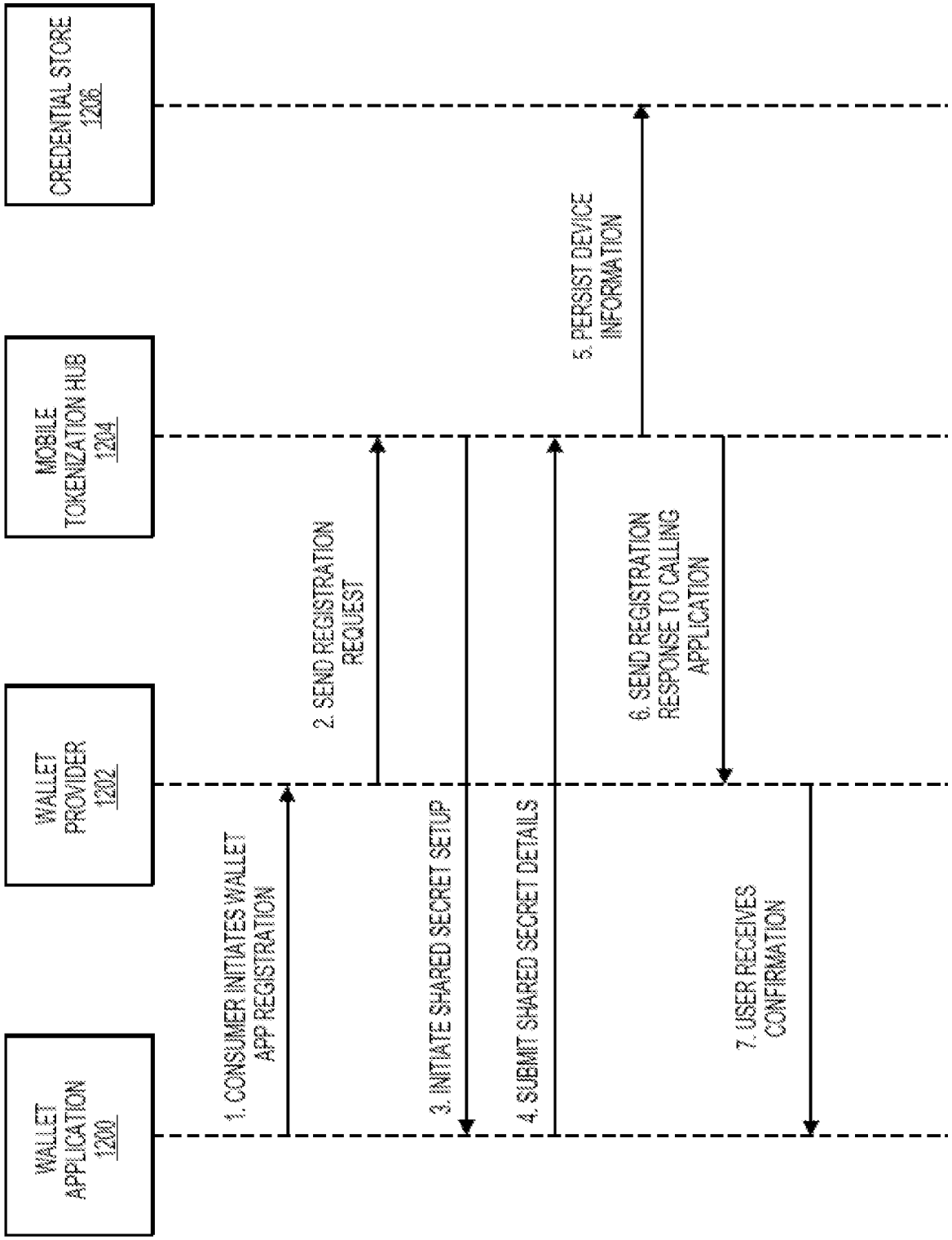

WALLET APPLICATION 1200
WALLET PROVIDER 1202
MOBILE TOKENIZATION HUB 1204
CREDENTIAL STORE 1206
1. CONSUMER INITIATES WALLET APP REGISTRATION
2. SEND REGISTRATION REQUEST
3. INITIATE SHARED SECRET SETUP
4. SUBMIT SHARED SECRET DETAILS
5. PERSIST DEVICE INFORMATION
6. SEND REGISTRATION RESPONSE TO CALLING APPLICATION
7. USER RECEIVES CONFIRMATION

FIG. 12

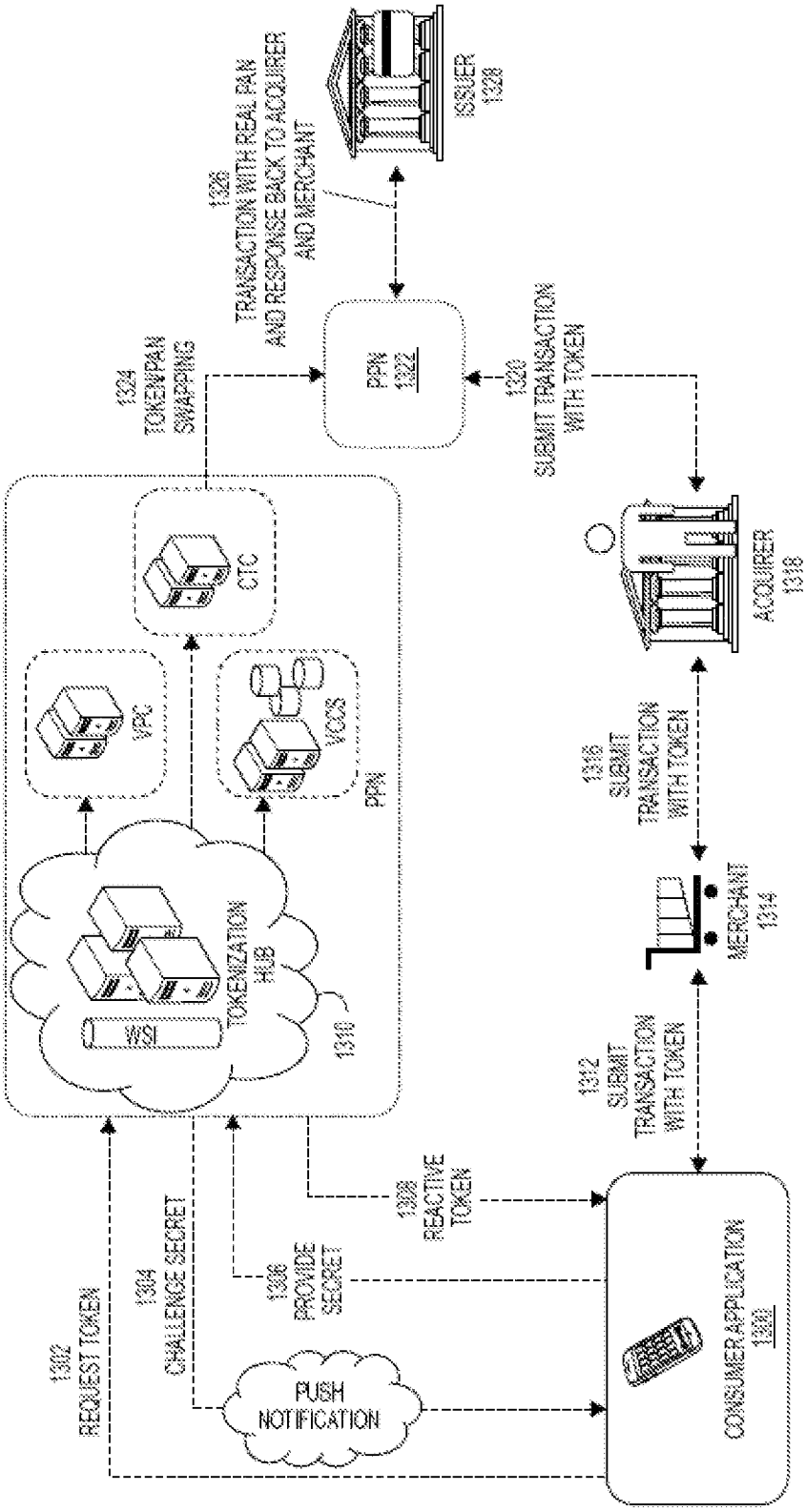

1302
REQUEST TOKEN
1304
CHALLENGE SECRET
1306
PROVIDE SECRET
1308
REACTIVE TOKEN
1310
TOKENIZATION HUB
VSI
VPC
VCAS
CTC
PPN
1312
SUBMIT TRANSACTION WITH TOKEN
1314
MERCHANT
1316
SUBMIT TRANSACTION WITH TOKEN
ACQUIRER
1318
1320
SUBMIT TRANSACTION WITH TOKEN
PPN
1322
1324
TOKEN/PAN SWAPPING
1326
TRANSACTION WITH REAL PAN AND RESPONSE BACK TO ACQUIRER AND MERCHANT
ISSUER
1328
PUSH NOTIFICATION
CONSUMER APPLICATION
1300

FIG. 13

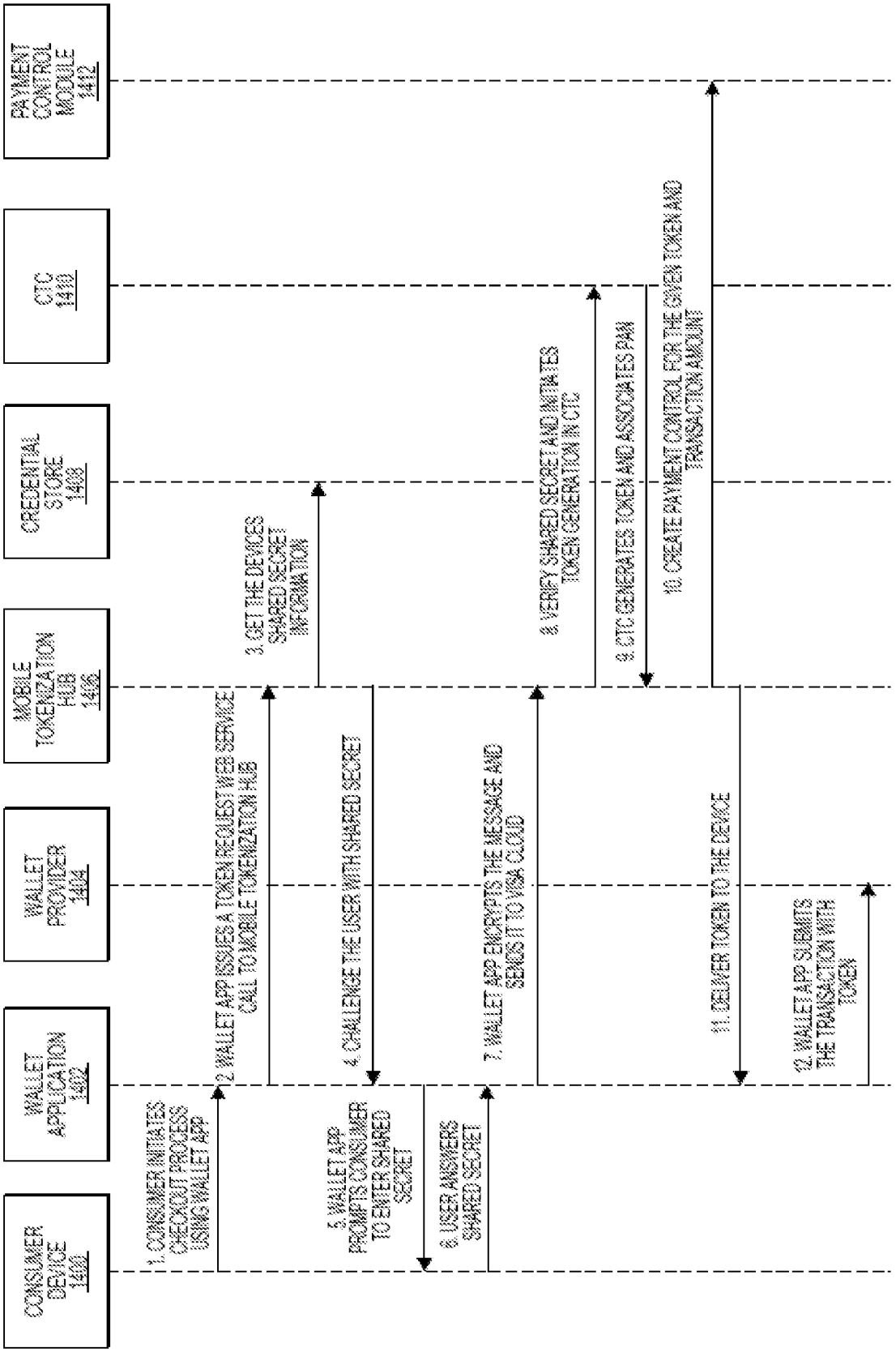

CONSUMER DEVICE 1400
WALLET APPLICATION 1402
WALLET PROVIDER 1404
MOBILE TOKENIZATION HUB 1406
CREDENTIAL STORE 1408
CTC 1410
PAYMENT CONTROL MODULE 1412
1. CONSUMER INITIATES CHECKOUT PROCESS USING WALLET APP
2. WALLET APP ISSUES A TOKEN REQUEST WEB SERVICE CALL TO MOBILE TOKENIZATION HUB
3. GET THE DEVICES SHARED SECRET INFORMATION
4. CHALLENGE THE USER WITH SHARED SECRET
5. WALLET APP PROMPTS CONSUMER TO ENTER SHARED SECRET
6. USER ANSWERS SHARED SECRET
7. WALLET APP ENCRYPTS THE MESSAGE AND SENDS IT TO VISA CLOUD
8. VERIFY SHARED SECRET AND INITIATES TOKEN GENERATION IN CTC
9. CTC GENERATES TOKEN AND ASSOCIATES PAN
10. CREATE PAYMENT CONTROL FOR THE GIVEN TOKEN AND TRANSACTION AMOUNT
11. DELIVER TOKEN TO THE DEVICE
12. WALLET APP SUBMITS THE TRANSACTION WITH TOKEN

FIG. 14

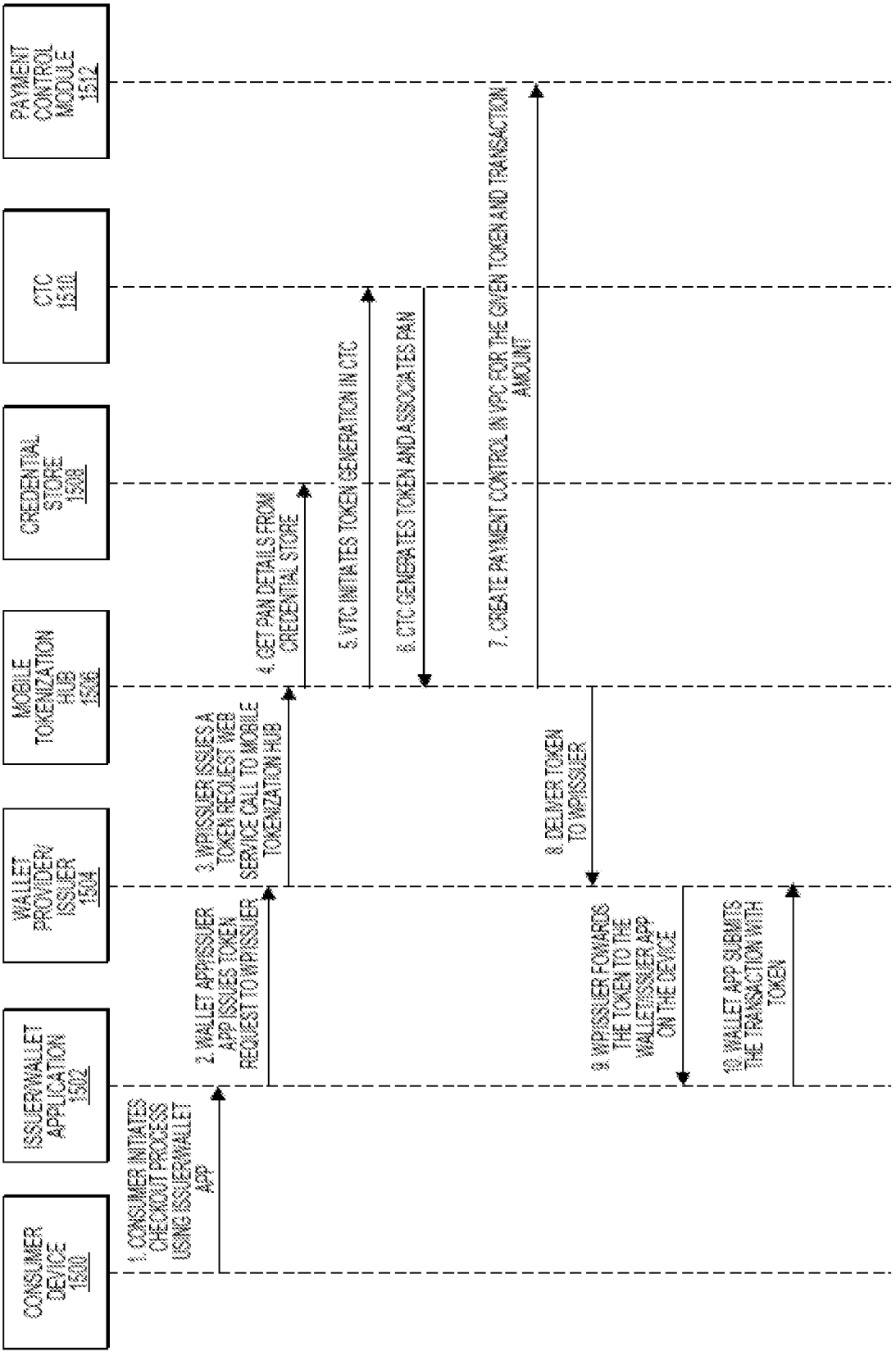

CONSUMER DEVICE 1520
ISSUER/WALLET APPLICATION 1502
WALLET PROVIDER/ ISSUER 1504
MOBILE TOKENIZATION HUB 1506
CREDENTIAL STORE 1508
CTIC 1510
PAYMENT CONTROL MODULE 1512
1. CONSUMER INITIATES CHECKOUT PROCESS USING ISSUER/WALLET APP
2. WALLET APP/ISSUER APP ISSUES TOKEN REQUEST TO WPISSUER
3. WPISSUER ISSUES A TOKEN REQUEST WEB SERVICE CALL TO MOBILE TOKENIZATION HUB
4. GET PAN DETAILS FROM CREDENTIAL STORE
5. VTIC INITIATES TOKEN GENERATION IN CTIC
6. CTIC GENERATES TOKEN AND ASSOCIATES PAN
7. CREATE PAYMENT CONTROL IN VPC FOR THE GIVEN TOKEN AND TRANSACTION AMOUNT
8. DELIVER TOKEN TO WPISSUER
9. WPISSUER FORWARDS THE TOKEN TO THE WALLET/ISSUER APP ON THE DEVICE
10. WALLET APP SUBMITS THE TRANSACTION WITH TOKEN

FIG. 15

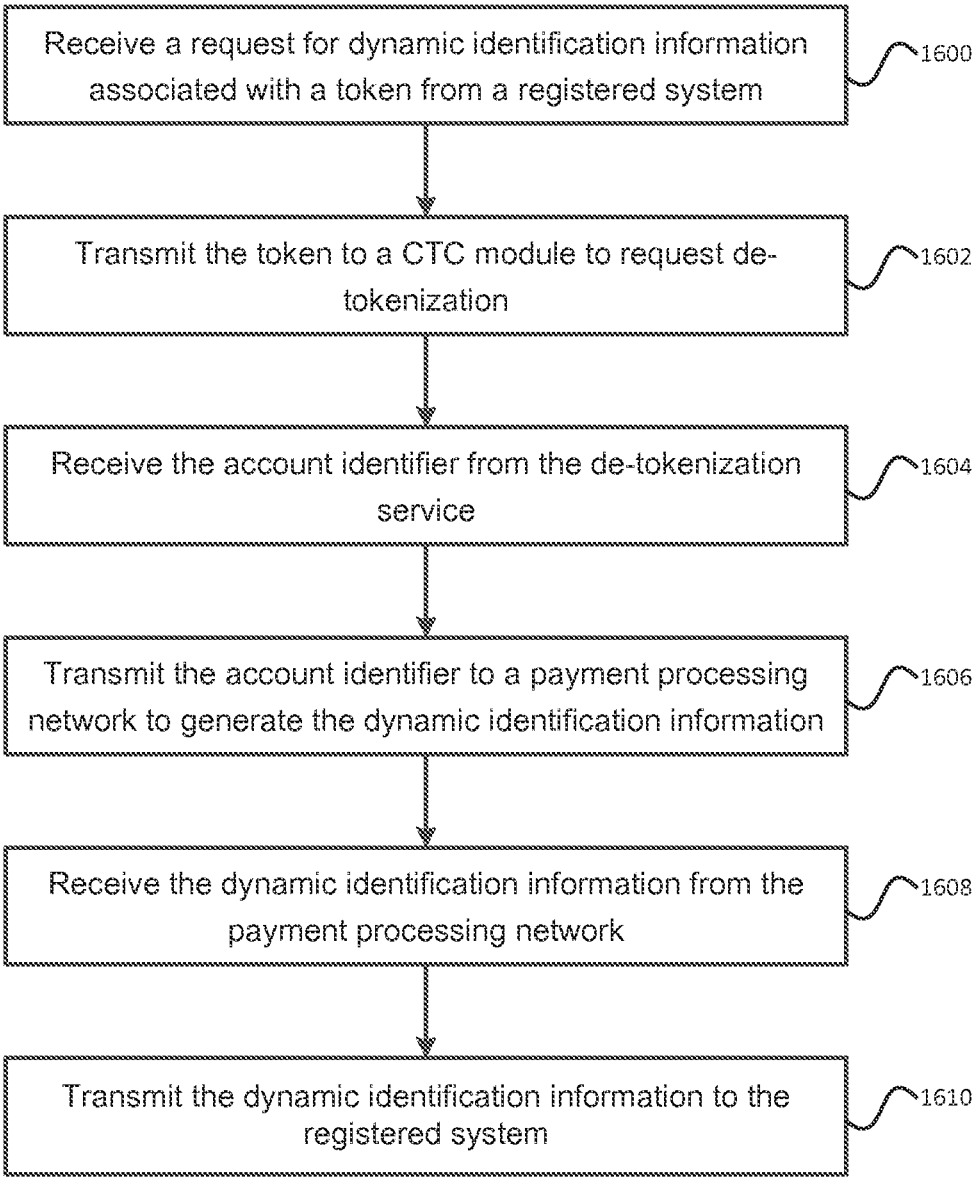

Receive a request for dynamic identification information associated with a token from a registered system
1600
Transmit the token to a CTC module to request de-tokenization
1602
Receive the account identifier from the de-tokenization service
1604
Transmit the account identifier to a payment processing network to generate the dynamic identification information
1606
Receive the dynamic identification information from the payment processing network
1608
Transmit the dynamic identification information to the registered system
1610

FIG. 16

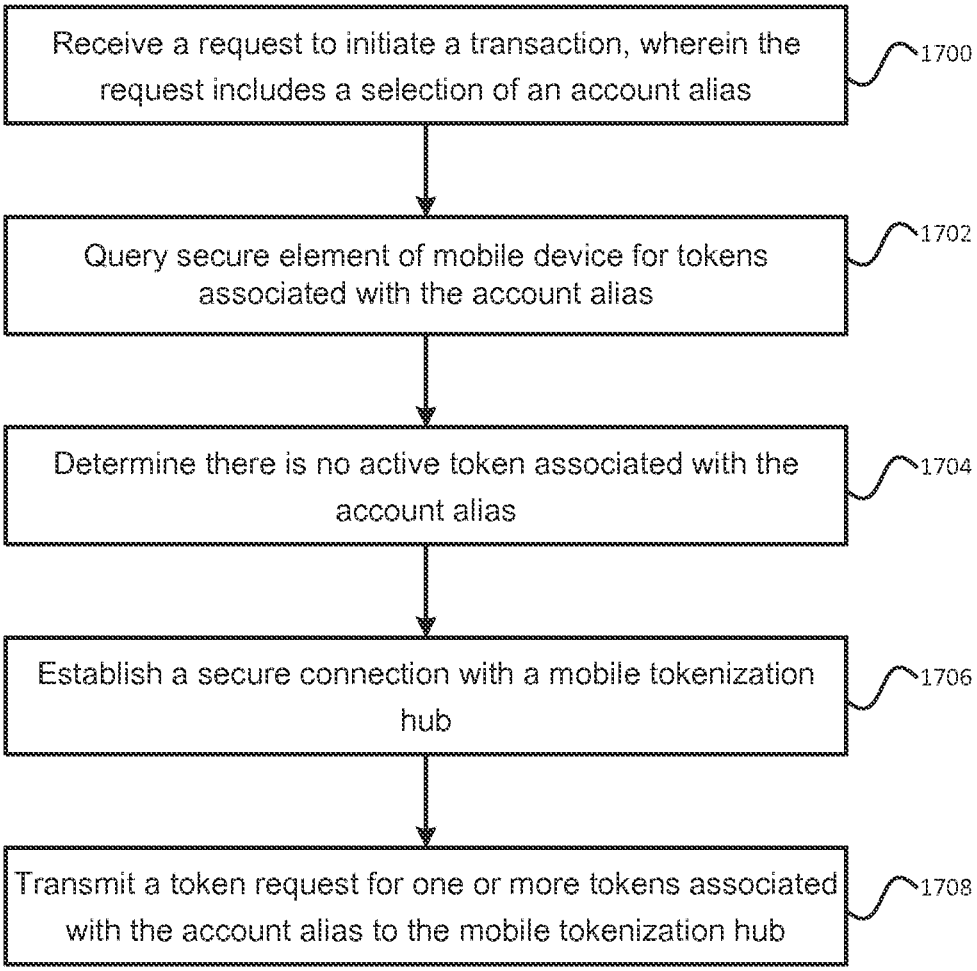

Receive a request to initiate a transaction, wherein the request includes a selection of an account alias
1700
Query secure element of mobile device for tokens associated with the account alias
1702
Determine there is no active token associated with the account alias
1704
Establish a secure connection with a mobile tokenization hub
1706
Transmit a token request for one or more tokens associated with the account alias to the mobile tokenization hub
1708

FIG. 17

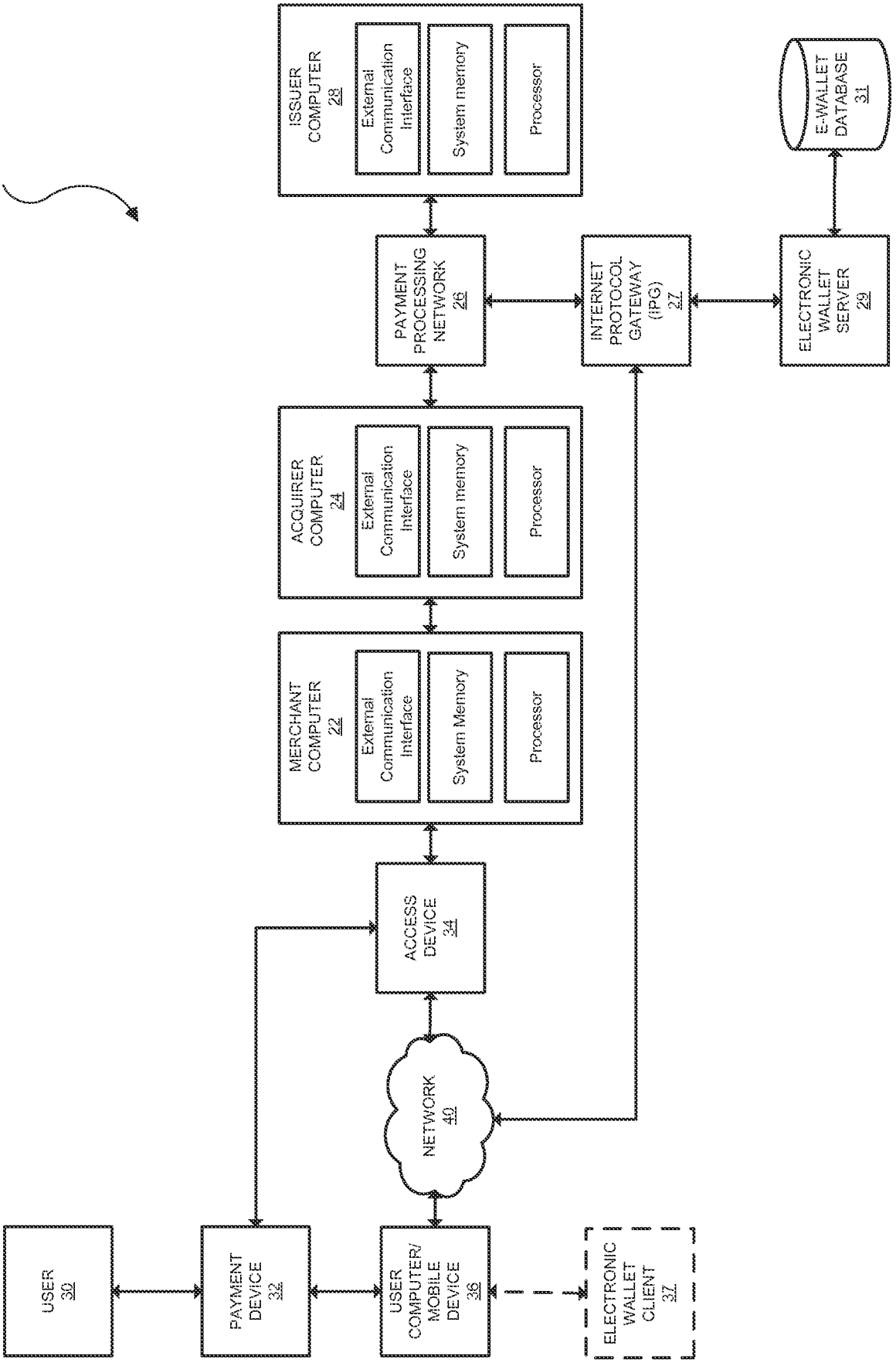

20
ISSUER COMPUTER 28
External Communication Interface
System memory
Processor
E-WALLET DATABASE 31
PAYMENT PROCESSING NETWORK 26
INTERNET PROTOCOL GATEWAY (IPG) 27
ELECTRONIC WALLET SERVER 29
ACQUIRER COMPUTER 24
External Communication Interface
System memory
Processor
MERCHANT COMPUTER 22
External Communication Interface
System Memory
Processor
ACCESS DEVICE 34
NETWORK 40
USER 30
PAYMENT DEVICE 32
USER COMPUTER/ MOBILE DEVICE 36
ELECTRONIC WALLET CLIENT 37

FIG. 18

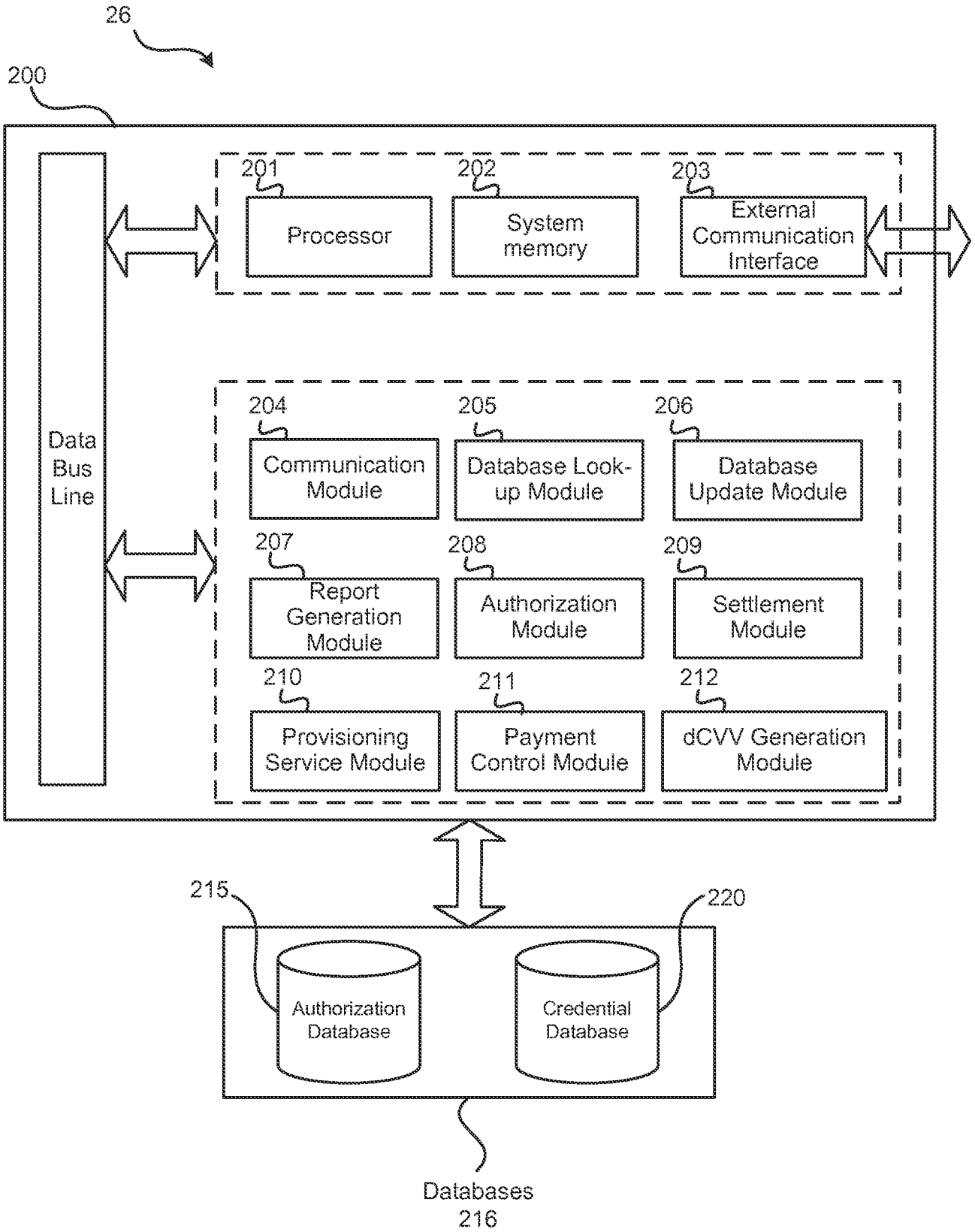

26
200
Data Bus Line
201
Processor
202
System memory
203
External Communication Interface
204
Communication Module
205
Database Look-up Module
206
Database Update Module
207
Report Generation Module
208
Authorization Module
209
Settlement Module
210
Provisioning Service Module
211
Payment Control Module
212
dCVV Generation Module
215
220
Authorization Database
Credential Database
Databases
216

FIG. 19

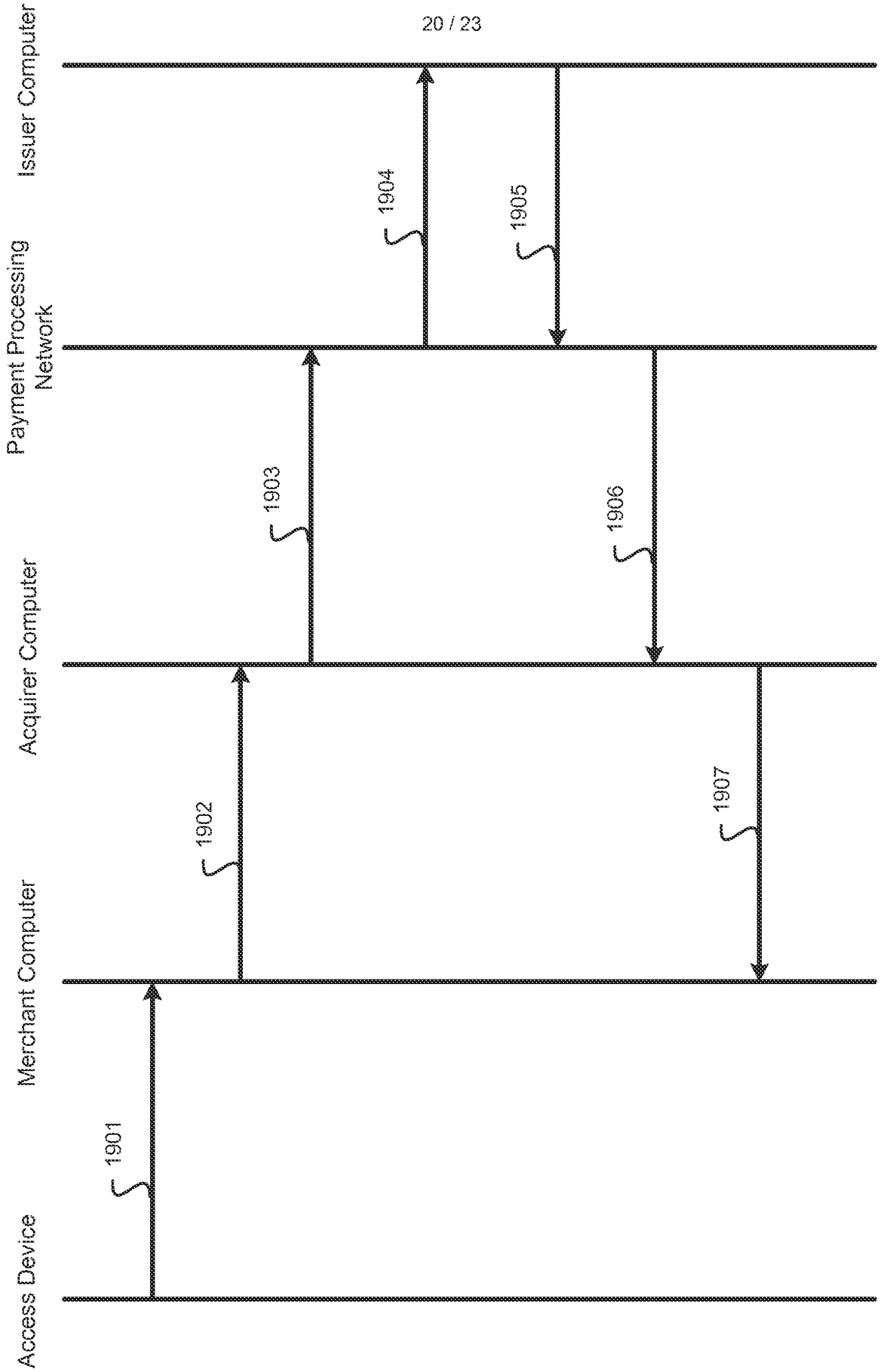

Access Device
Merchant Computer
Acquirer Computer
Payment Processing Network
Issuer Computer
1901
1902
1903
1904
1905
1906
1907

FIG. 20

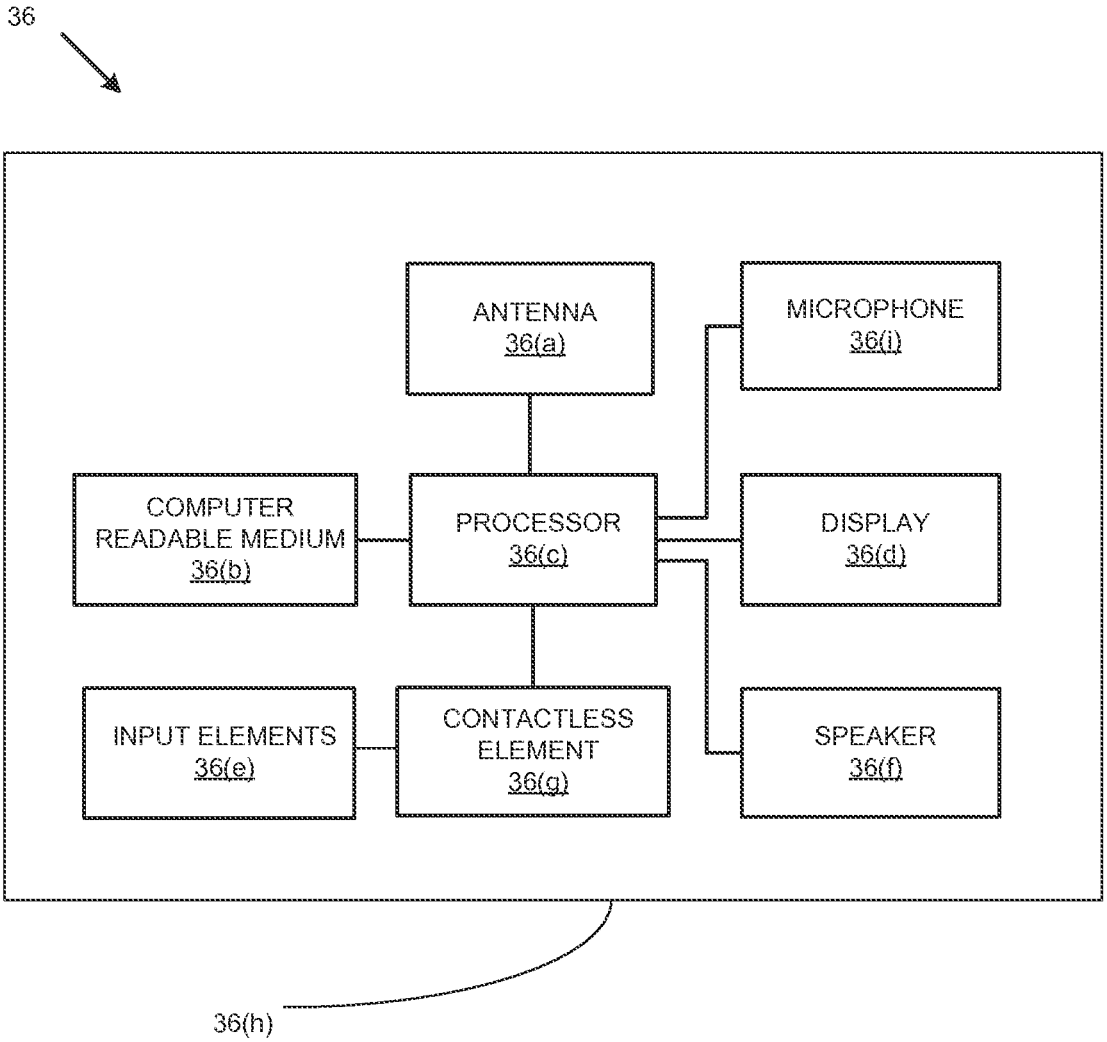

36
ANTENNA
36(a)
MICROPHONE
36(i)
COMPUTER
READABLE MEDIUM
36(b)
PROCESSOR
36(c)
DISPLAY
36(d)
INPUT ELEMENTS
36(e)
CONTACTLESS
ELEMENT
36(g)
SPEAKER
36(f)
36(h)

FIG. 21

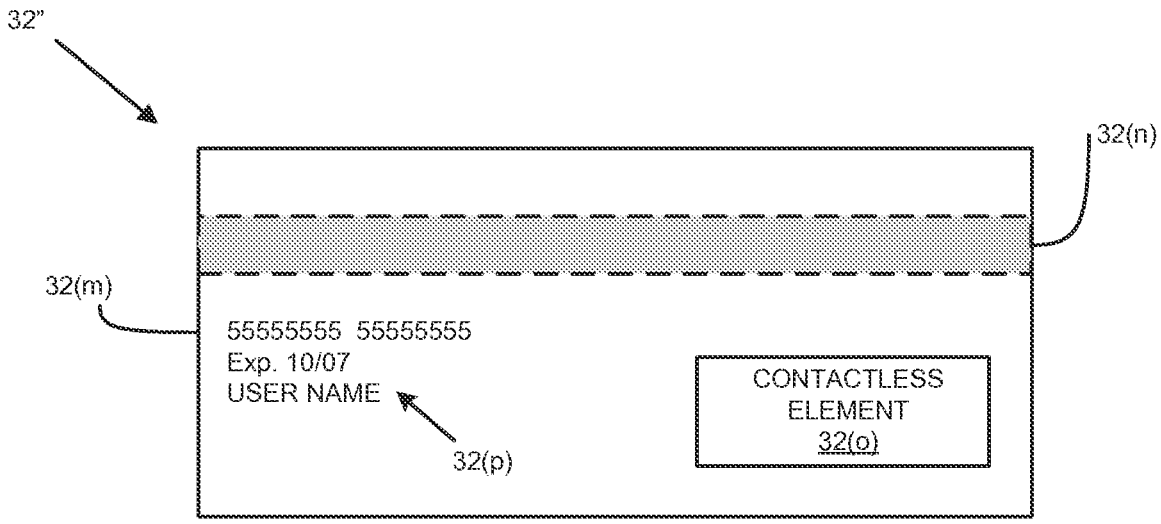

32"
32(n)
32(m)
55555555 55555555
Exp. 10/07
USER NAME
32(p)
CONTACTLESS
ELEMENT
32(o)

FIG. 22

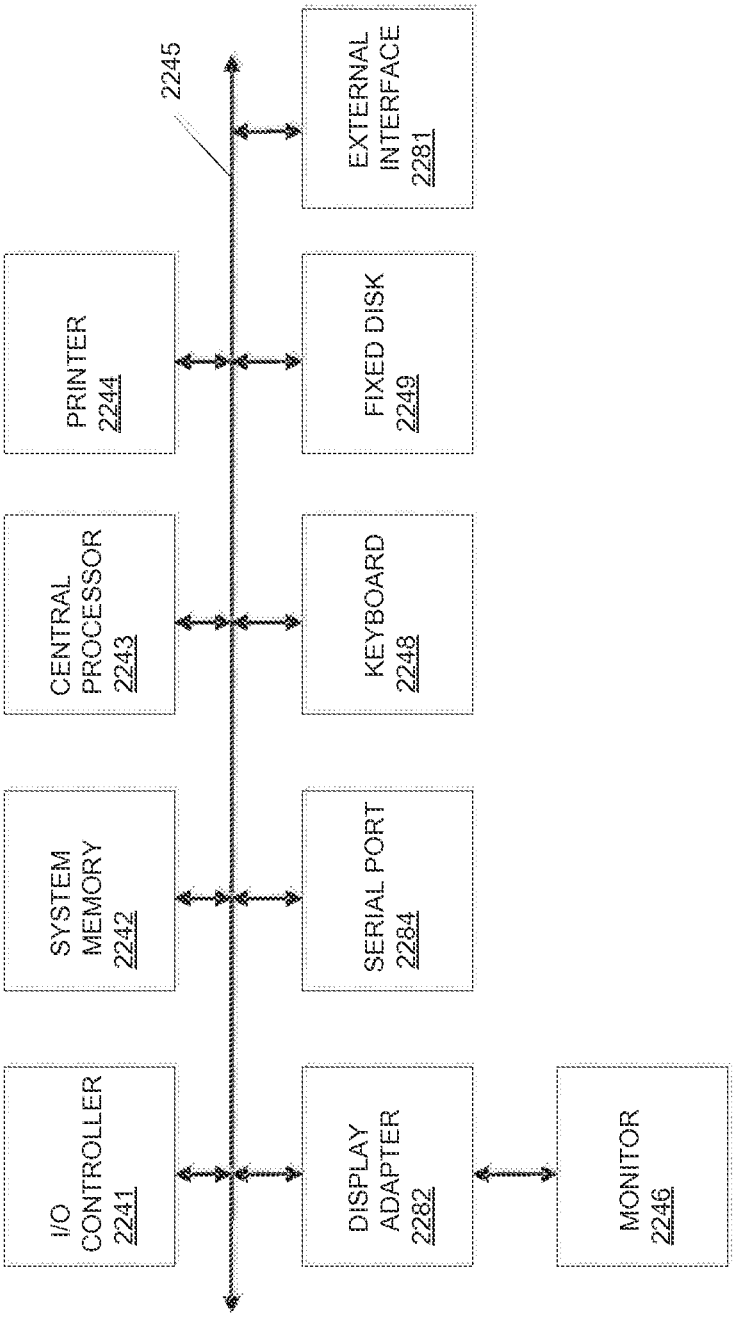

2245
I/O CONTROLLER 2241
SYSTEM MEMORY 2242
CENTRAL PROCESSOR 2243
PRINTER 2244
DISPLAY ADAPTER 2282
SERIAL PORT 2284
KEYBOARD 2248
FIXED DISK 2249
MONITOR 2246
EXTERNAL INTERFACE 2281

FIG. 23