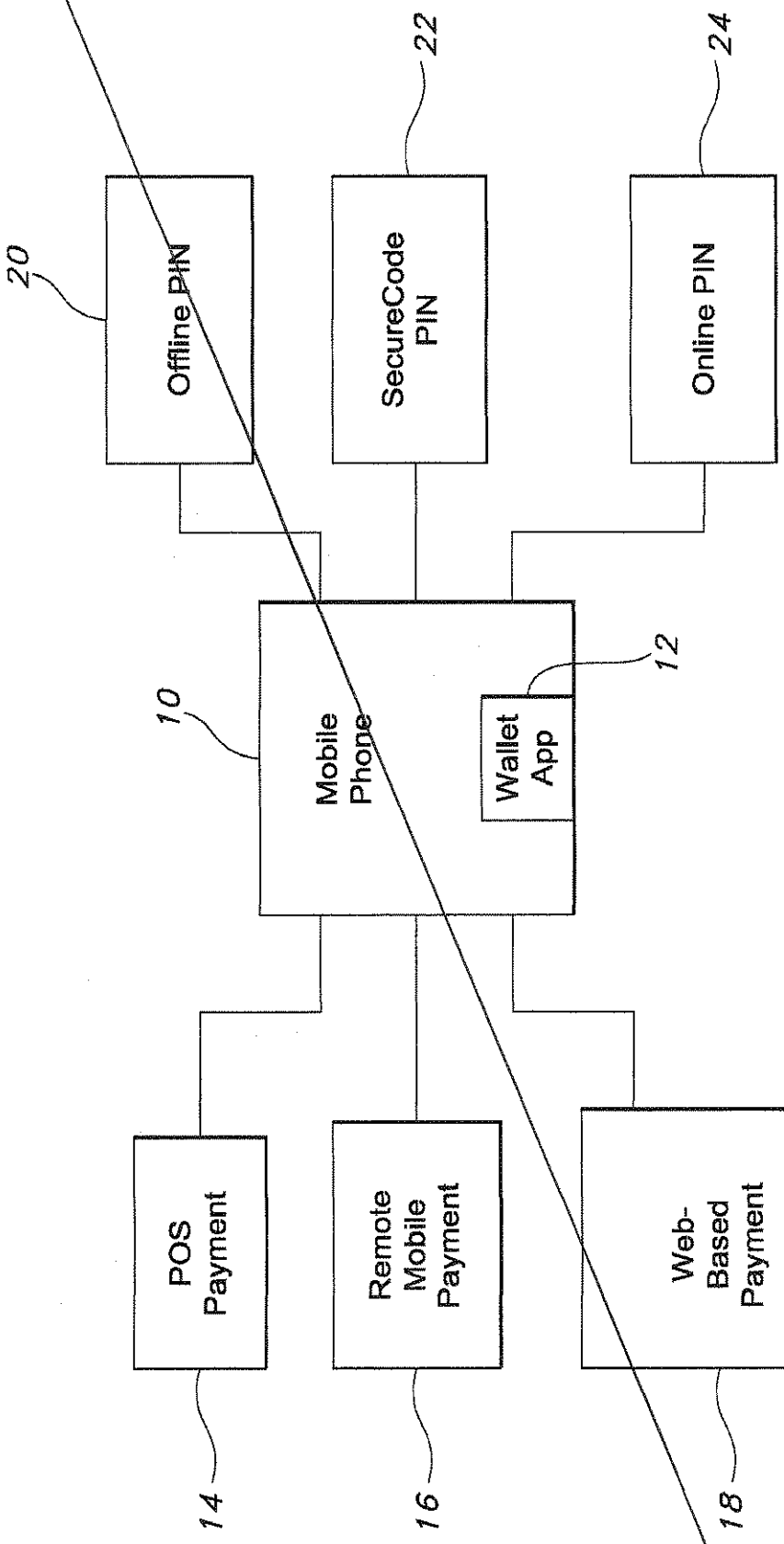

20
Offline PIN
22
SecureCode PIN
24
Online PIN
10
Mobile Phone
12
Wallet App
14
POS Payment
16
Remote Mobile Payment
18
Web-Based Payment

FIG. 1

FIG. 2

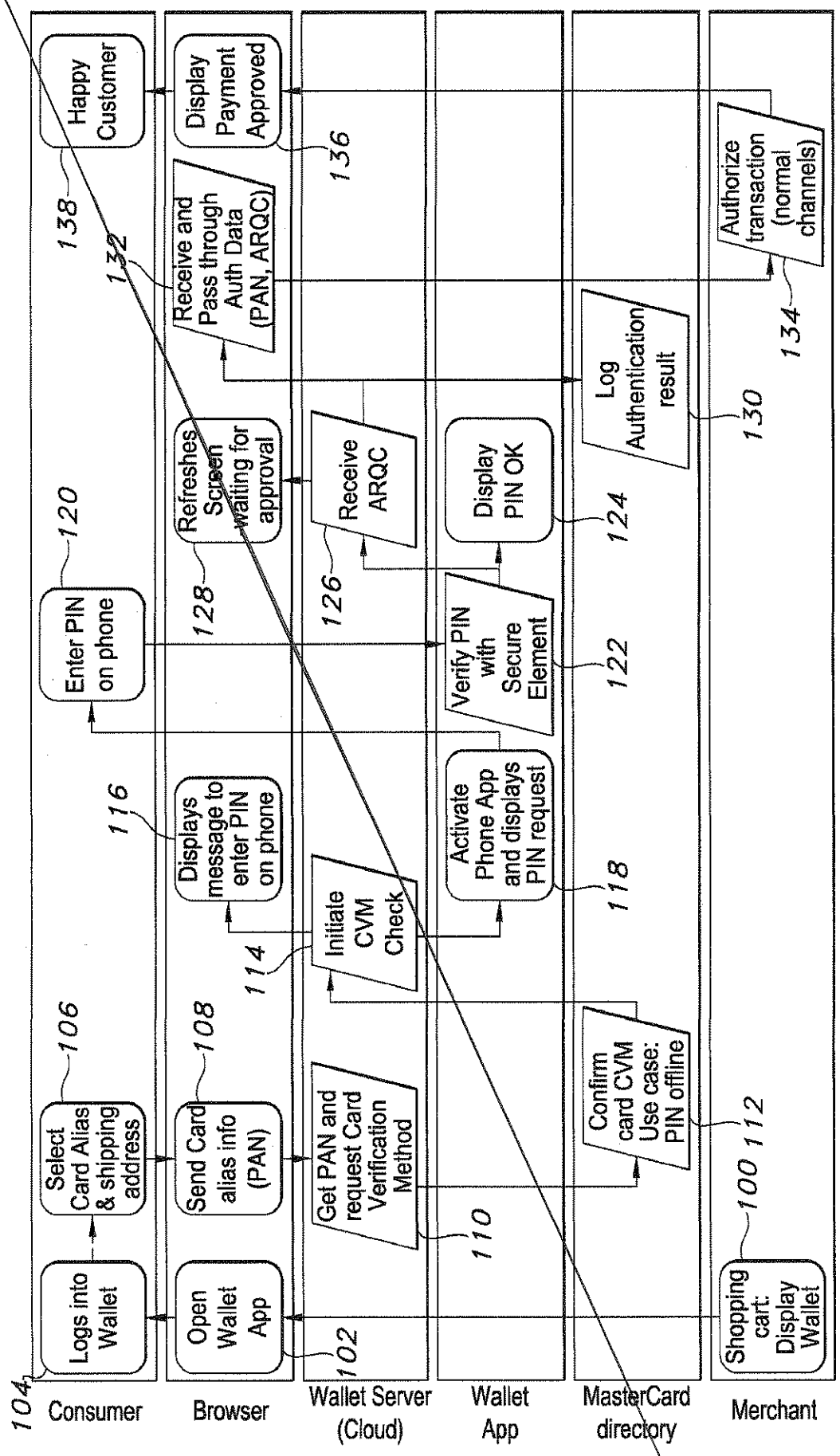
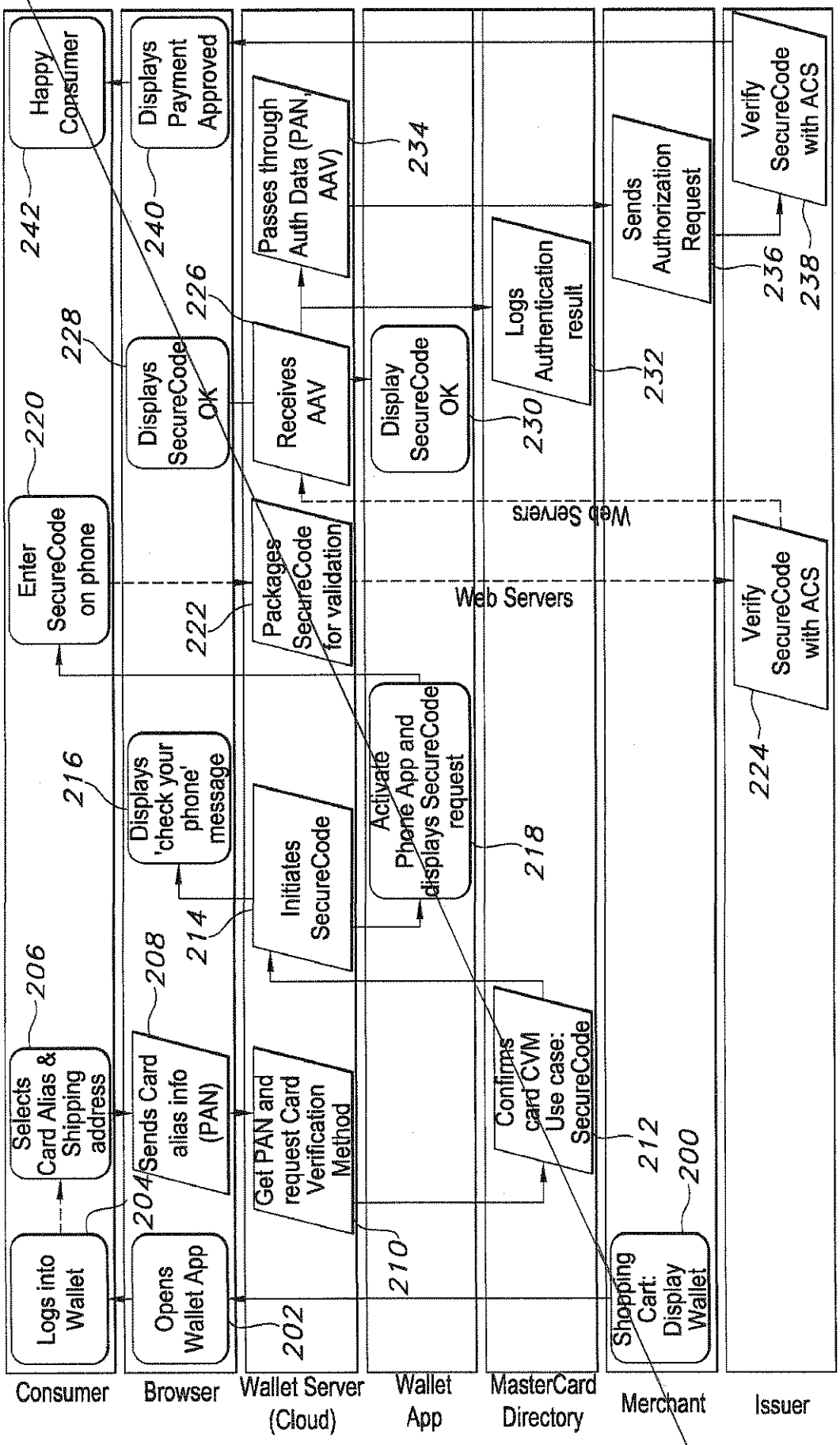

Consumer
Browser
Wallet Server (Cloud)
Wallet App
MasterCard directory
Merchant
Logs into Wallet
Open Wallet App
Select Card Alias & shipping address
Send Card alias info (PAN)
Get PAN and request Card Verification Method
Confirm card CVM Use case: PIN offline
Shopping cart: Display Wallet
Displays message to enter PIN on phone
Initiate CVM Check
Activate Phone App and displays PIN request
Verify PIN with Secure Element
Enter PIN on phone
Refreshes Screen waiting for approval
Receive ARQC
Display PIN OK
Log Authentication result
Receive and Pass through Auth Data (PAN, ARQC)
Authorize transaction (normal channels)
Display Payment Approved
Happy Customer
102
104
106
108
110
112
114
116
118
120
122
124
126
128
130
132
134
136
138

FIG. 3


Consumer
Browser
Wallet Server (Cloud)
Wallet App
MasterCard Directory
Merchant
Issuer
Logs into Wallet
Opens Wallet App
Selects Card Alias & Shipping address
Sends Card alias info (PAN)
Get PAN and request Card Verification Method
Confirms card CVM Use case: SecureCode
Shopping Cart: Display Wallet
Displays 'check your phone' message
Initiates SecureCode
Activate Phone App and displays SecureCode request
Enter SecureCode on phone
Packages SecureCode for validation
Displays SecureCode OK
Receives AAV
Display SecureCode OK
Logs Authentication result
Passes through Auth Data (PAN, AAV)
Sends Authorization Request
Verify SecureCode with ACS
Displays Payment Approved
Happy Consumer
Web Servers
Web Servers
202
204
206
208
210
212
214
216
218
220
222
224
226
228
230
232
234
236
238
240
242
200

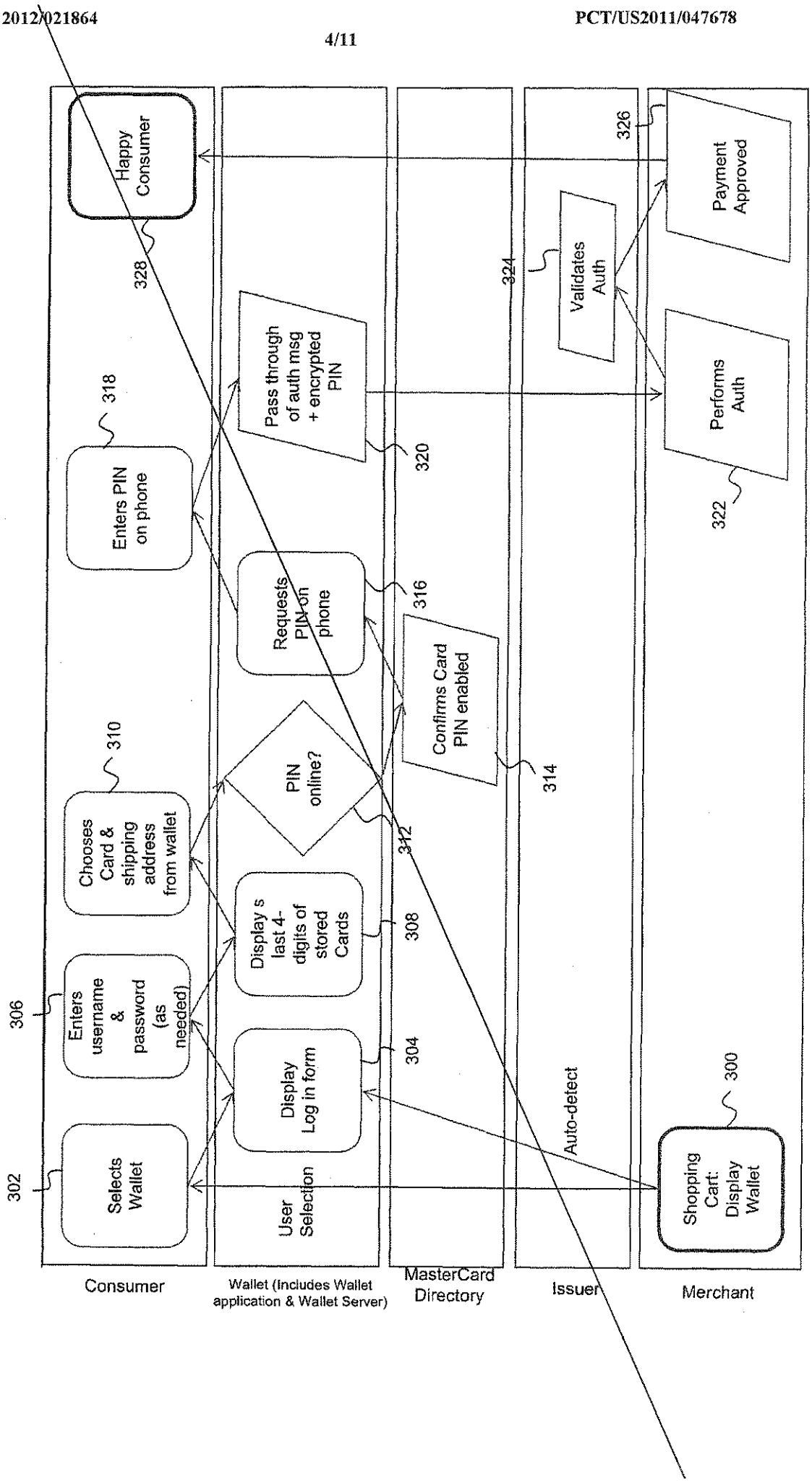
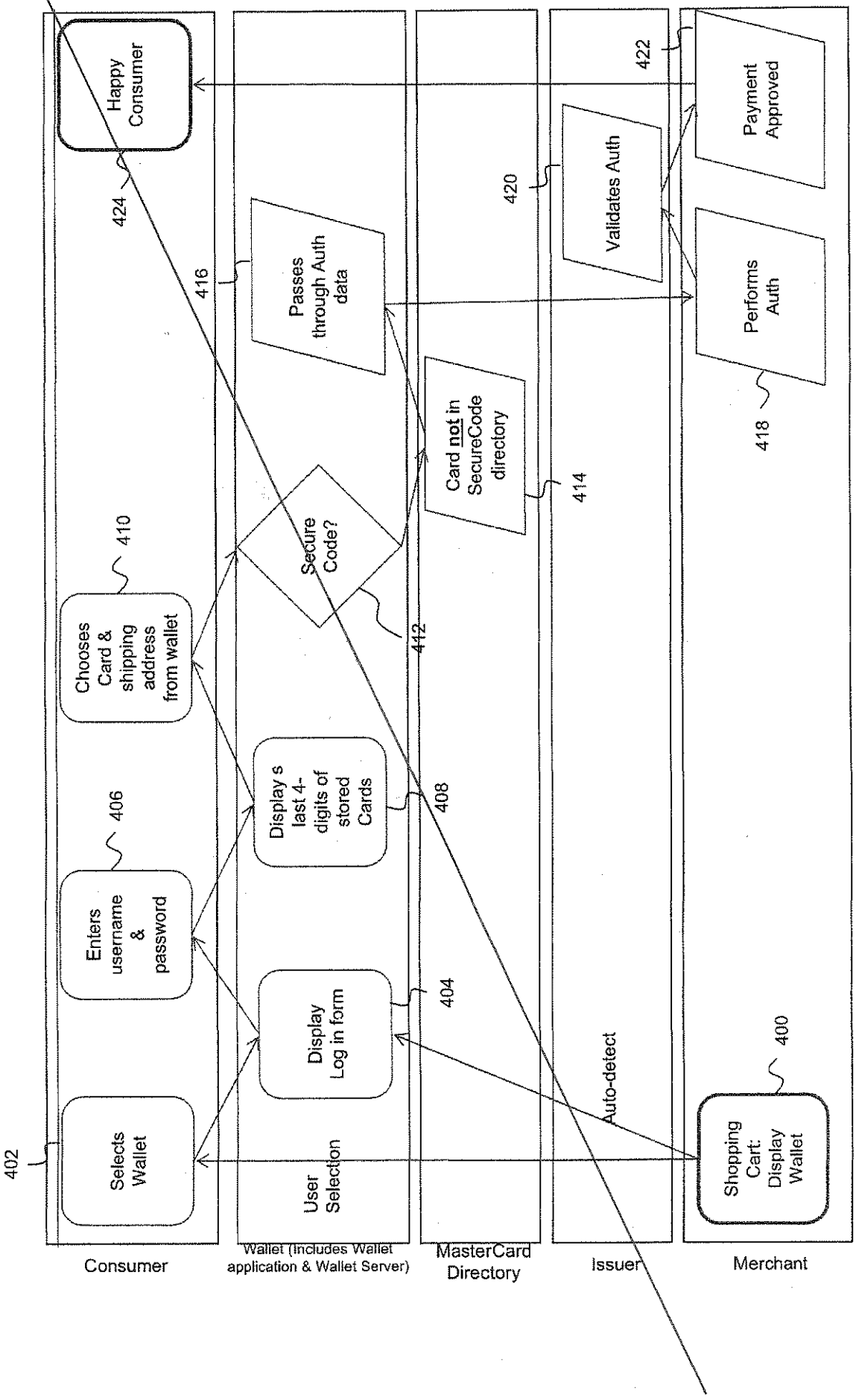
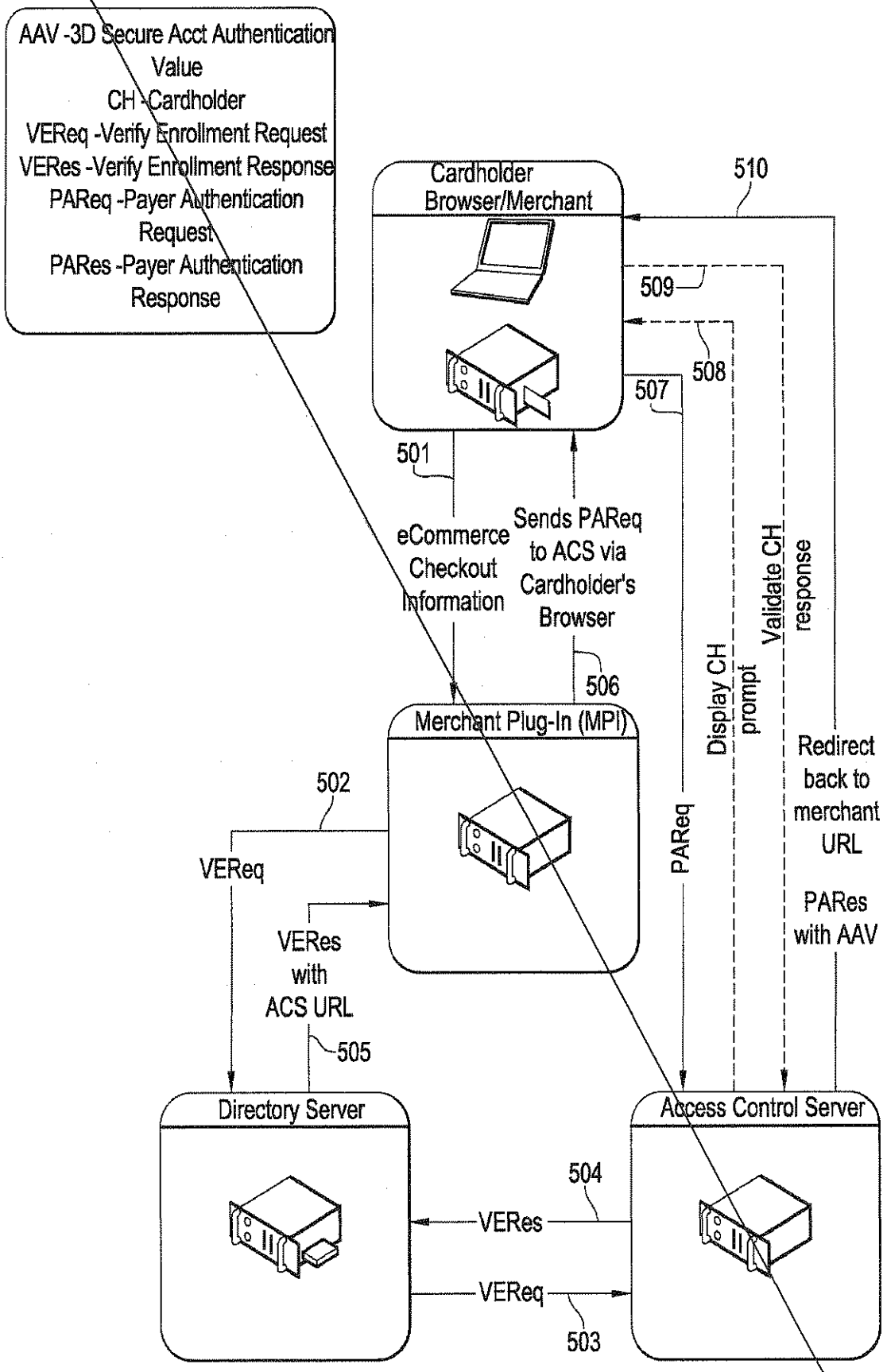

Consumer
Wallet (Includes Wallet application & Wallet Server)
MasterCard Directory
Issuer
Merchant
Selects Wallet
Enters username & password (as needed)
Chooses Card & shipping address from wallet
Enters PIN on phone
Happy Consumer
User Selection
Display Log in form
Display s last 4-digits of stored Cards
PIN online?
Requests PIN on phone
Pass through of auth msg + encrypted PIN
Confirms Card PIN enabled
Auto-detect
Validates Auth
Performs Auth
Payment Approved
Shopping Cart: Display Wallet
302
306
310
318
328
304
308
312
316
320
314
324
322
326
300

Fig. 4

Fig. 5


Consumer
Wallet (Includes Wallet application & Wallet Server)
MasterCard Directory
Issuer
Merchant
Happy Consumer
Selects Wallet
User Selection
Enters username & password
Chooses Card & shipping address from wallet
Display Log in form
Display s last 4-digits of stored Cards
Secure Code?
Card not in SecureCode directory
Passes through Auth data
Validates Auth
Performs Auth
Payment Approved
Auto-detect
Shopping Cart: Display Wallet
402
404
406
408
410
412
414
416
418
420
422
424
400



Existing 3D Secure Implementation

FIG. 6

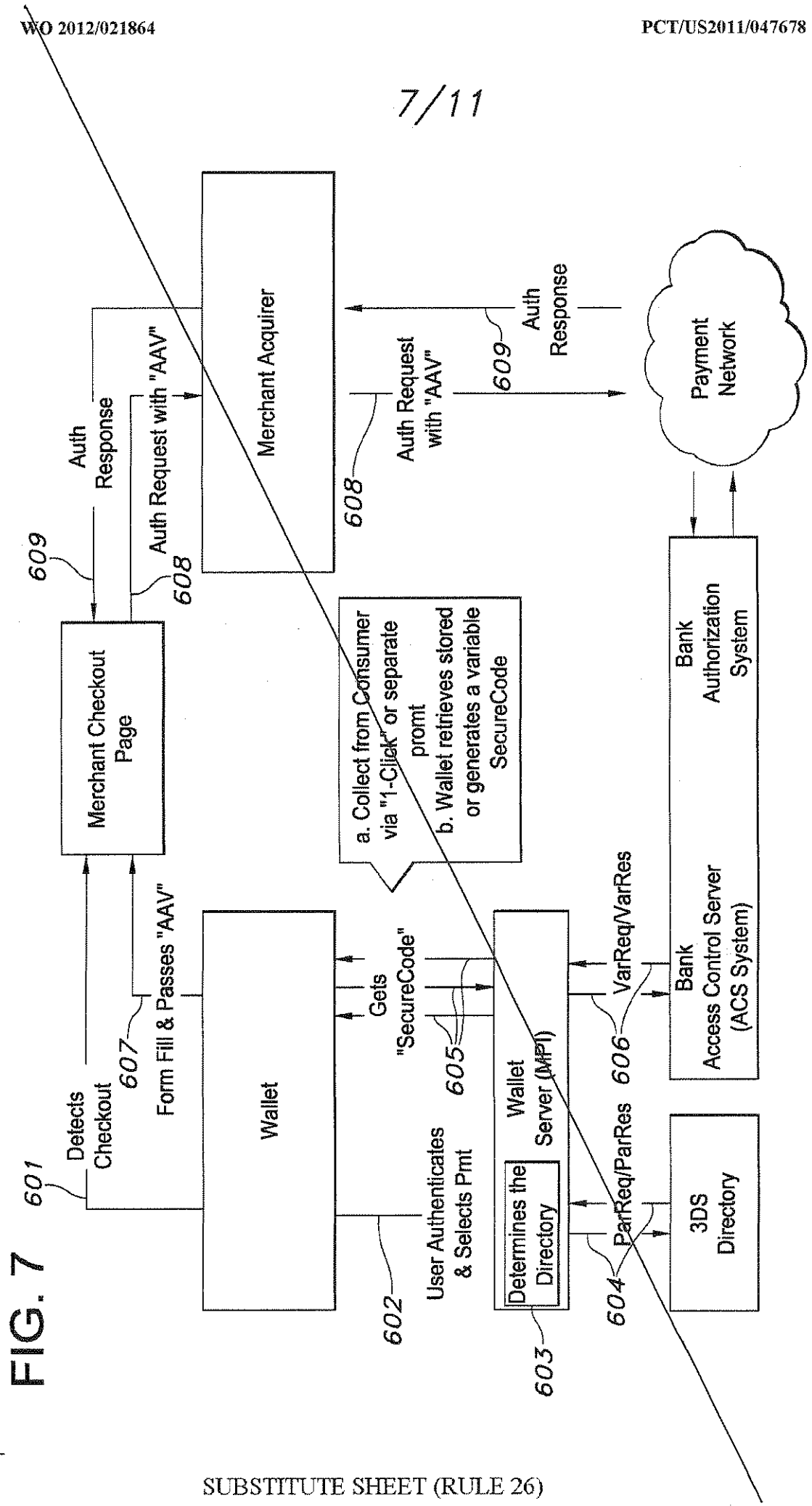
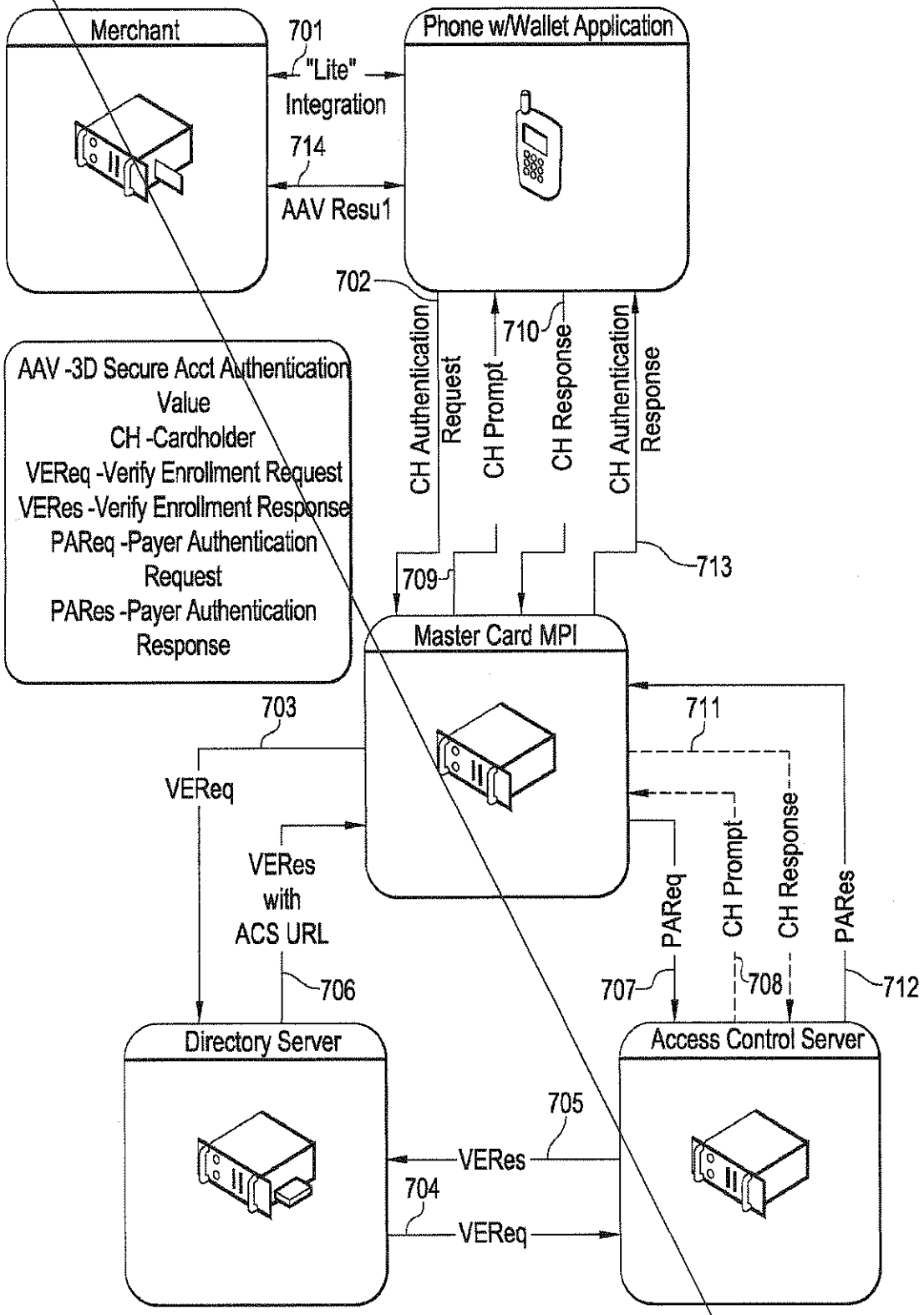

Merchant Acquirer
Payment Network
Merchant Checkout Page
Auth Response
Auth Request with "AAV"
609
608
Auth Request with "AAV"
Auth Response
608
609
a. Collect from Consumer via "1-Click" or separate promt
b. Wallet retrieves stored or generates a variable SecureCode
Bank Authorization System
Bank Access Control Server (ACS System)
Wallet
Wallet Server (MPI)
Determines the Directory
3DS Directory
Detects Checkout
601
Form Fill & Passes "AAV"
607
Gets "SecureCode"
605
VarReq/VarRes
606
User Authenticates & Selects Pmt
602
ParReq/ParRes
604
603

FIG. 7



MasterCard MPI Concept

FIG. 8

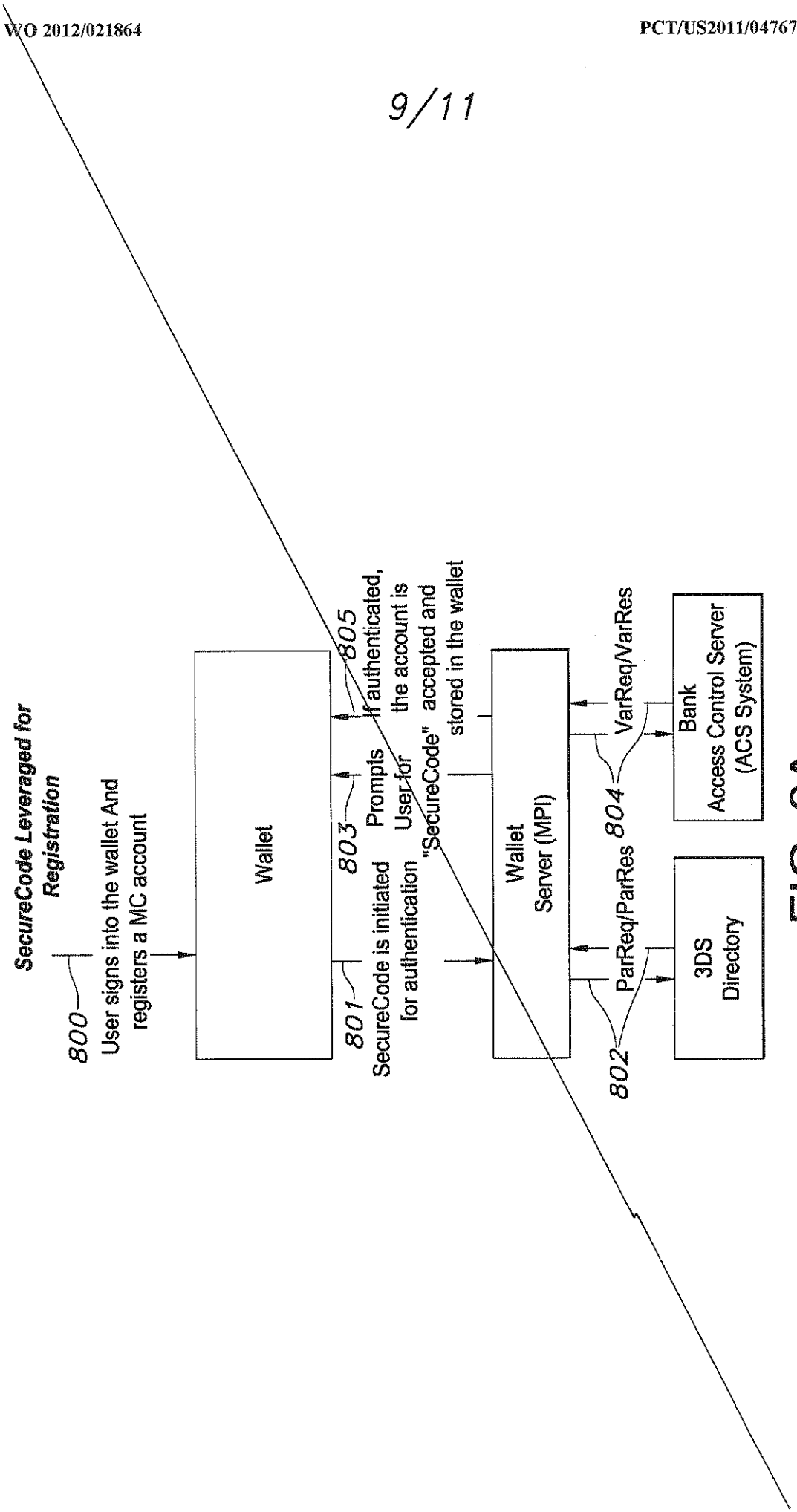

SecureCode Leveraged for Registration
800
User signs into the wallet And registers a MC account
Wallet
801
SecureCode is initiated for authentication
803
Prompts User for "SecureCode"
805
If authenticated, the account is accepted and stored in the wallet
Wallet Server (MPI)
802
ParReq/ParRes
804
VarReq/VarRes
3DS Directory
Bank Access Control Server (ACS System)

FIG. 9A

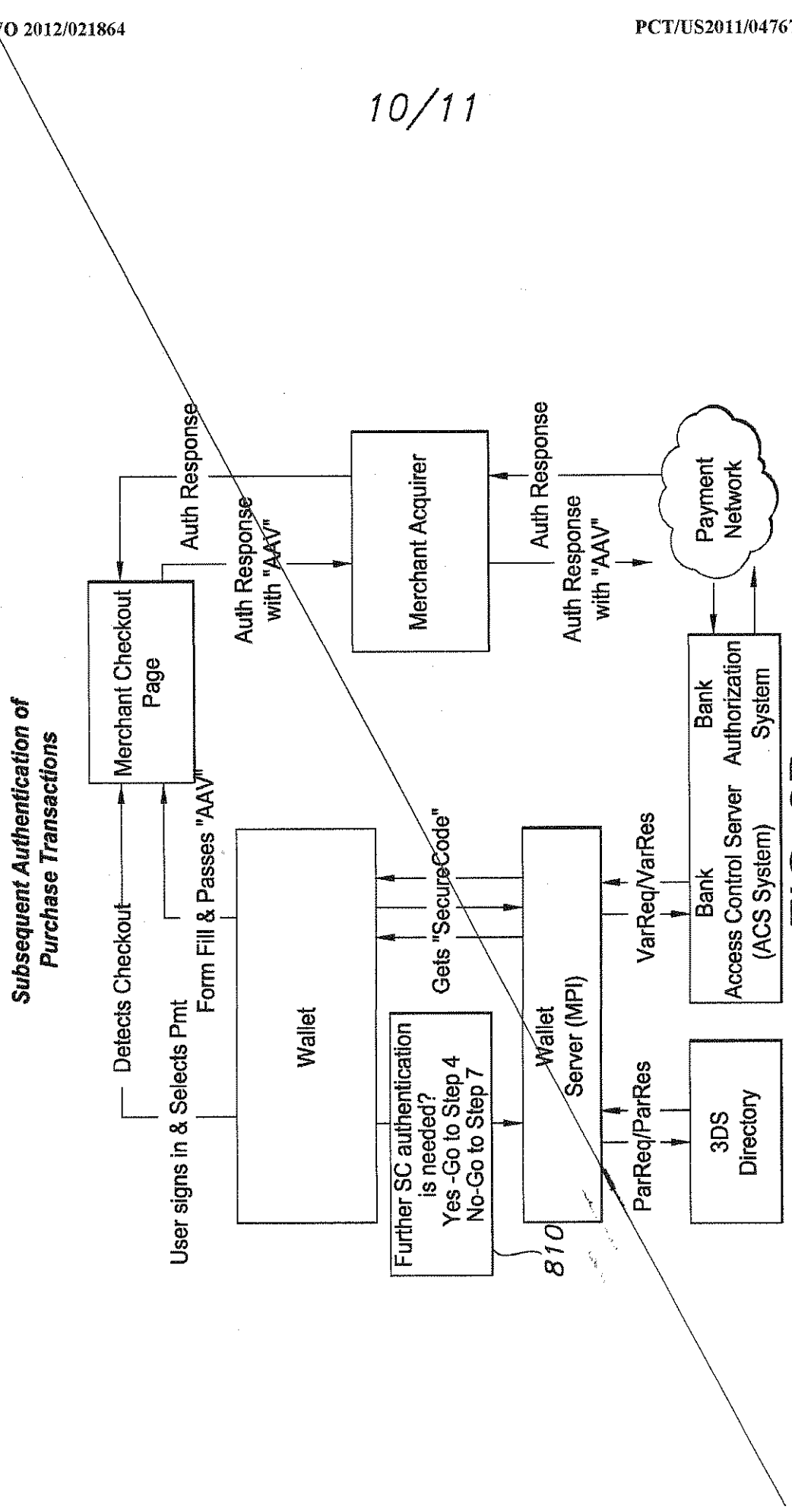

Subsequent Authentication of Purchase Transactions
Merchant Checkout Page
Auth Response
Auth Response with "AAV"
Merchant Acquirer
Auth Response
Auth Response with "AAV"
Payment Network
Bank Authorization System
Bank Access Control Server (ACS System)
Detects Checkout
User signs in & Selects Pmt
Form Fill & Passes "AAV"
Wallet
Gets "SecureCode"
Further SC authentication is needed? Yes -Go to Step 4 No-Go to Step 7
Wallet Server (MPI)
VarReq/VarRes
ParReq/ParRes
3DS Directory
810

FIG. 9B

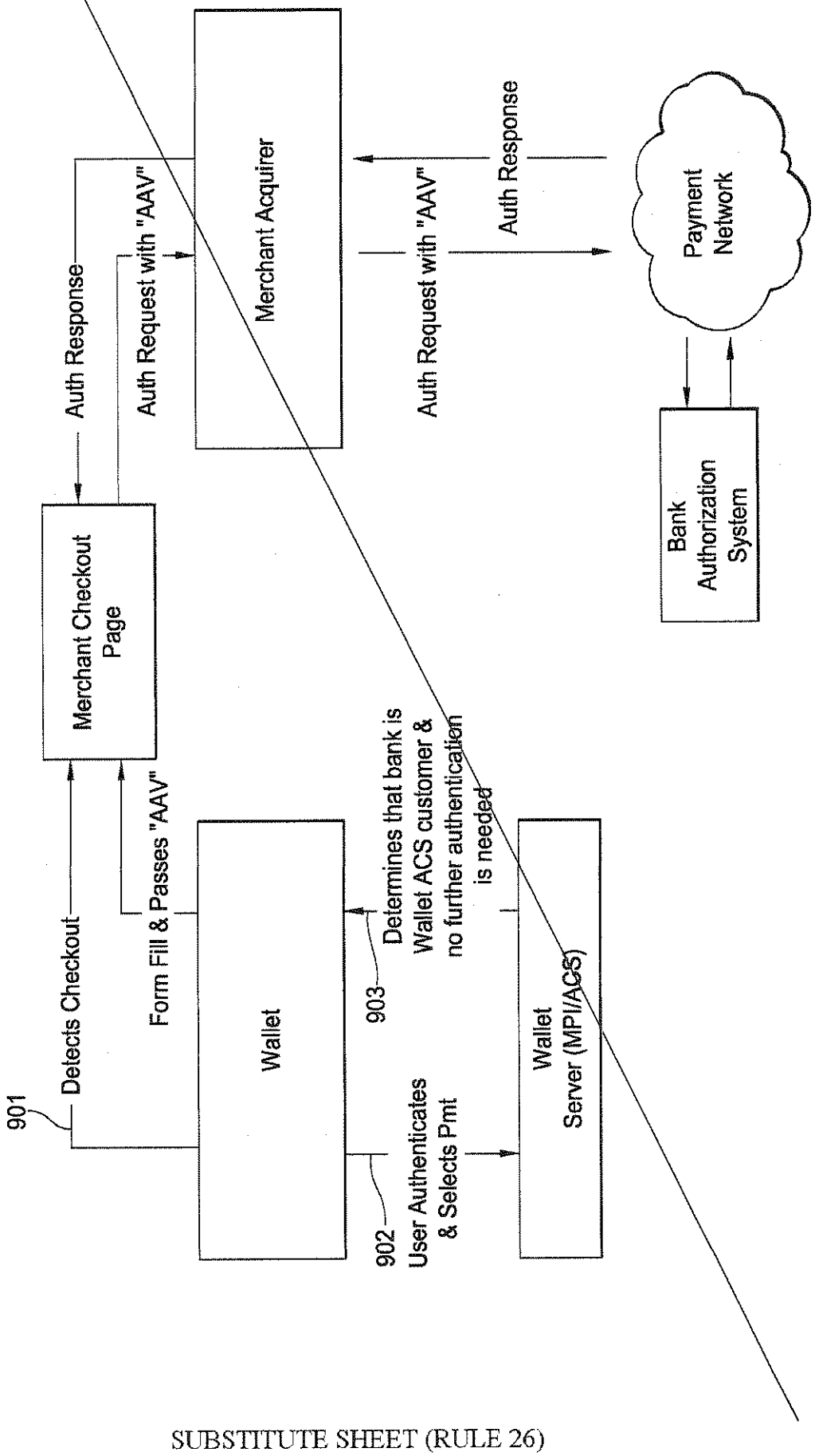

Merchant Acquirer
Auth Response
Auth Request with "AAV"
Auth Request with "AAV"
Auth Response
Payment Network
Bank Authorization System
Merchant Checkout Page
Detects Checkout
Form Fill & Passes "AAV"
Wallet
Wallet Server (MPI/ACS)
901
902
User Authenticates & Selects Pmt
903
Determines that bank is Wallet ACS customer & no further authentication is needed

FIG. 10

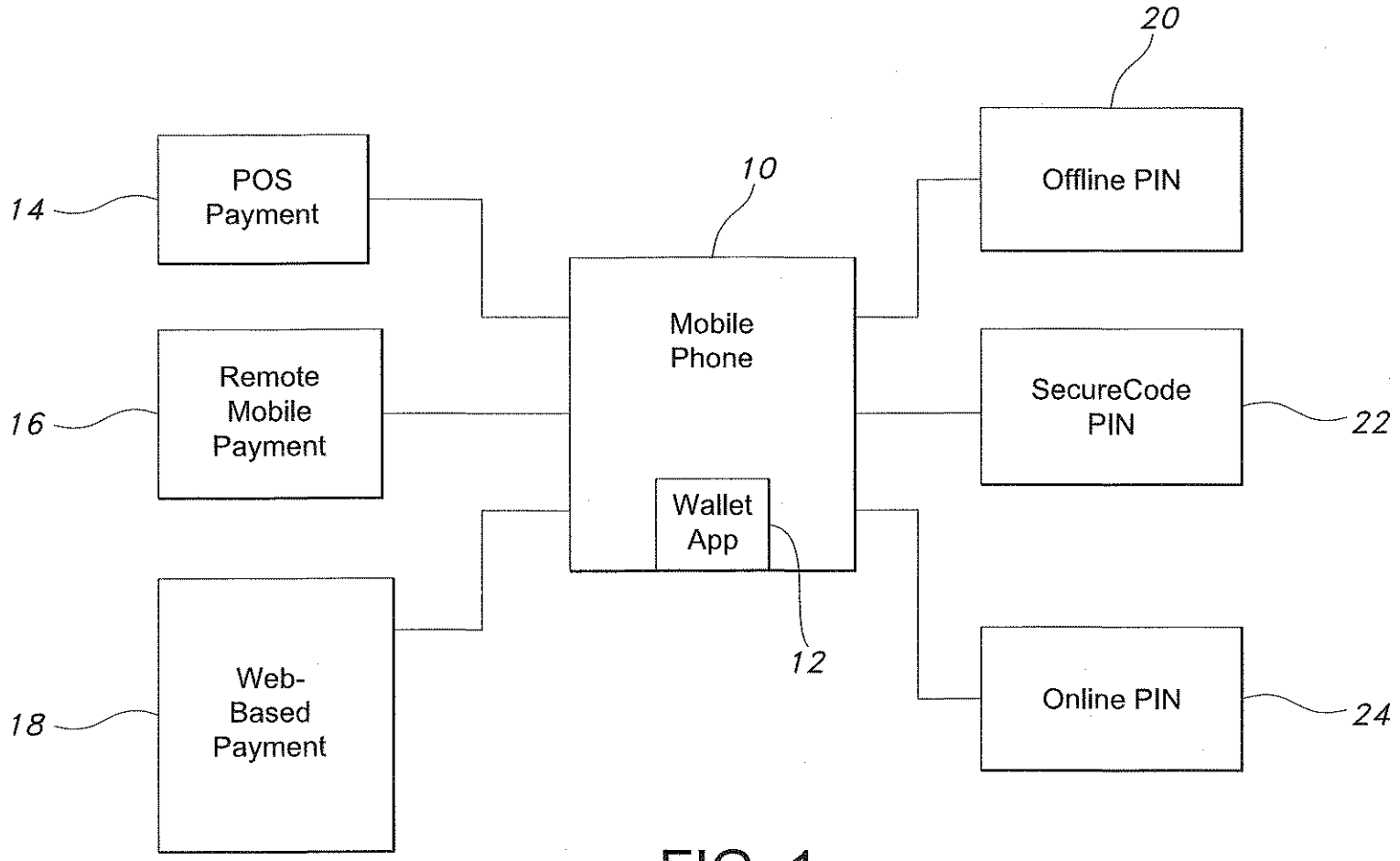

20
POS Payment
14
10
Offline PIN
Mobile Phone
Remote Mobile Payment
16
SecureCode PIN
22
Wallet App
12
Web-Based Payment
18
Online PIN
24

FIG. 1

FIG. 2

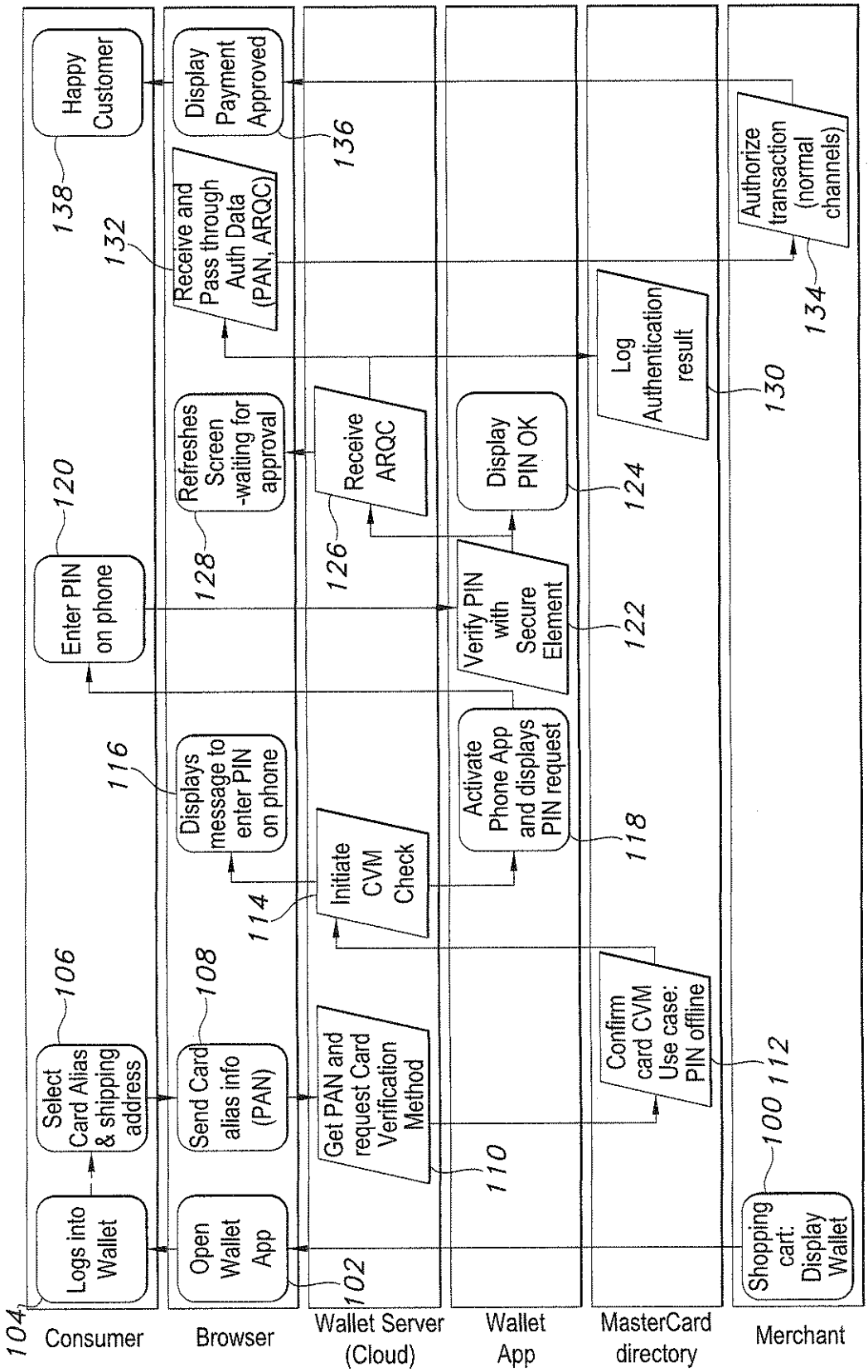

Consumer
Browser
Wallet Server (Cloud)
Wallet App
MasterCard directory
Merchant
104
Logs into Wallet
Open Wallet App
102
Select Card Alias & shipping address
106
Send Card alias info (PAN)
108
Get PAN and request Card Verification Method
110
Initiate CVM Check
114
Displays message to enter PIN on phone
116
Enter PIN on phone
120
Activate Phone App and displays PIN request
118
Verify PIN with Secure Element
122
Confirm card CVM Use case: PIN offline
112
Receive ARQC
126
Refreshes Screen -waiting for approval
128
Display PIN OK
124
Log Authentication result
130
Receive and Pass through Auth Data (PAN, ARQC)
132
Authorize transaction (normal channels)
134
Display Payment Approved
136
Happy Customer
138
Shopping cart: Display Wallet
100

FIG. 3

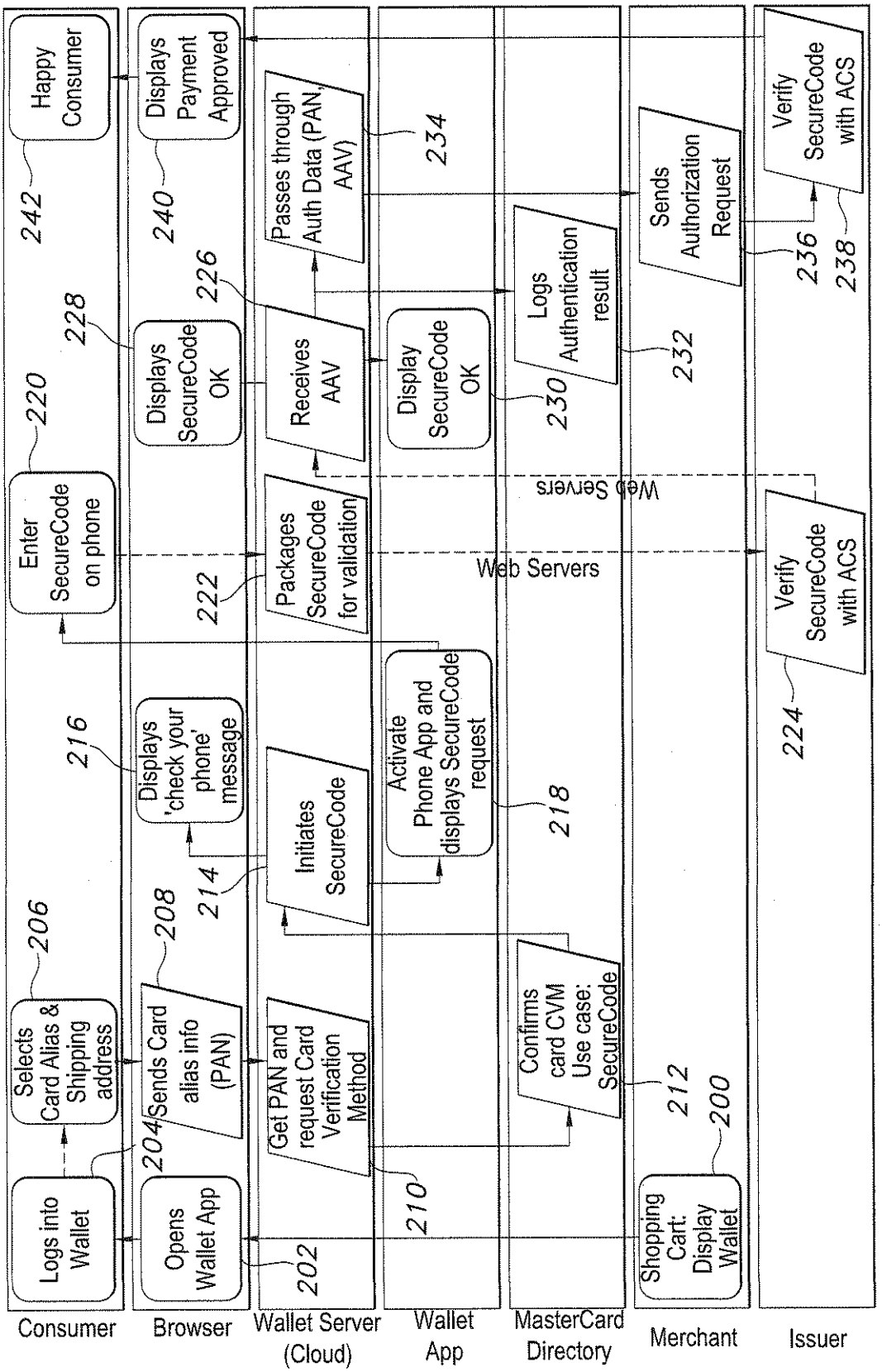

Consumer
Browser
Wallet Server (Cloud)
Wallet App
MasterCard Directory
Merchant
Issuer
Shopping Cart: Display Wallet
Logs into Wallet
Opens Wallet App
Selects Card Alias & Shipping address
Sends Card alias info (PAN)
Get PAN and request Card Verification Method
Displays 'check your phone' message
Initiates SecureCode
Activate Phone App and displays SecureCode request
Confirms card CVM Use case: SecureCode
Enter SecureCode on phone
Packages SecureCode for validation
Verify SecureCode with ACS
Web Servers
Display SecureCode OK
Receives AAV
Passes through Auth Data (PAN, AAV)
Logs Authentication result
Sends Authorization Request
Verify SecureCode with ACS
Displays SecureCode OK
Displays Payment Approved
Happy Consumer
200
202
204
206
208
210
212
214
216
218
220
222
224
226
228
230
232
234
236
238
240
242

FIG. 4

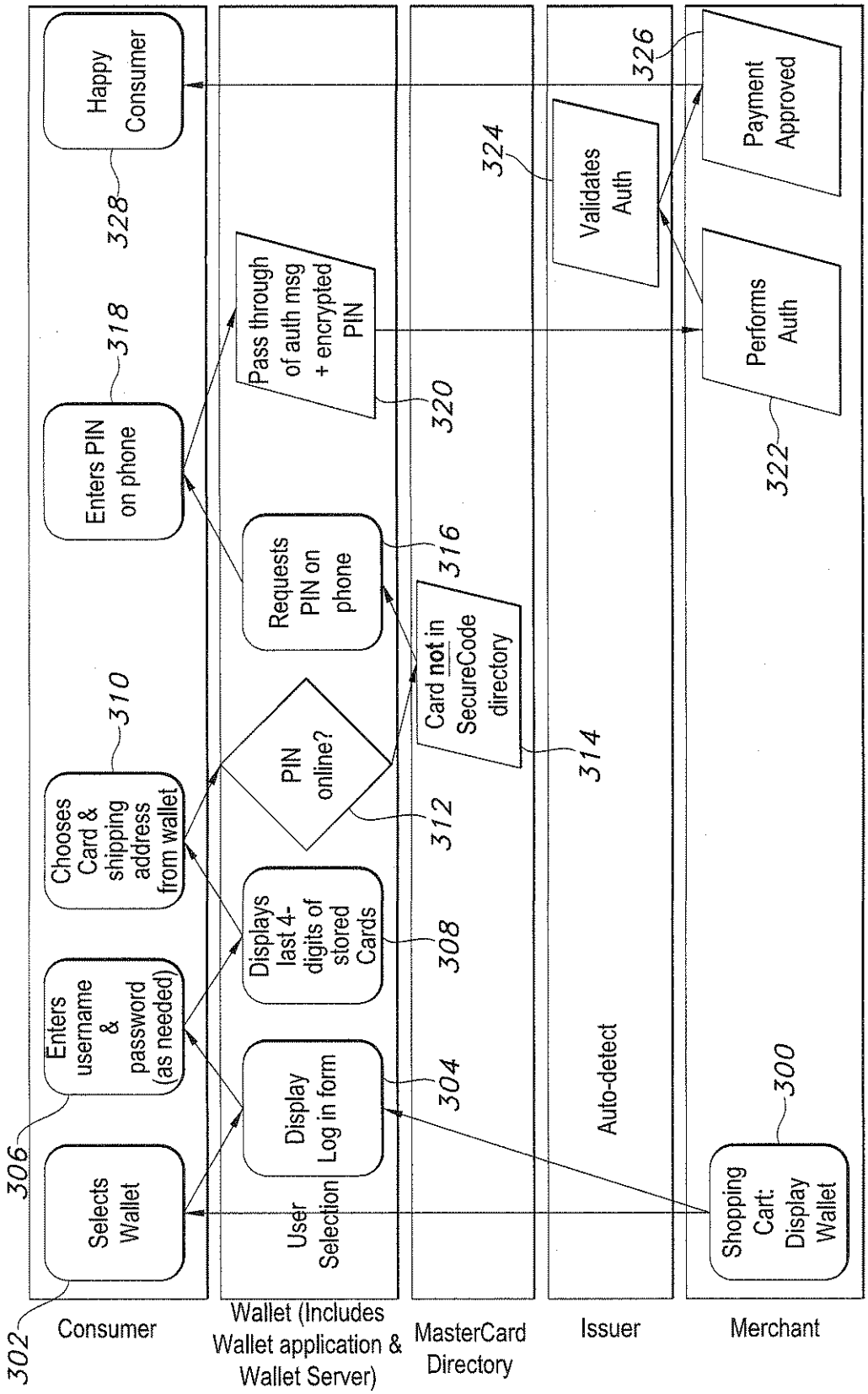
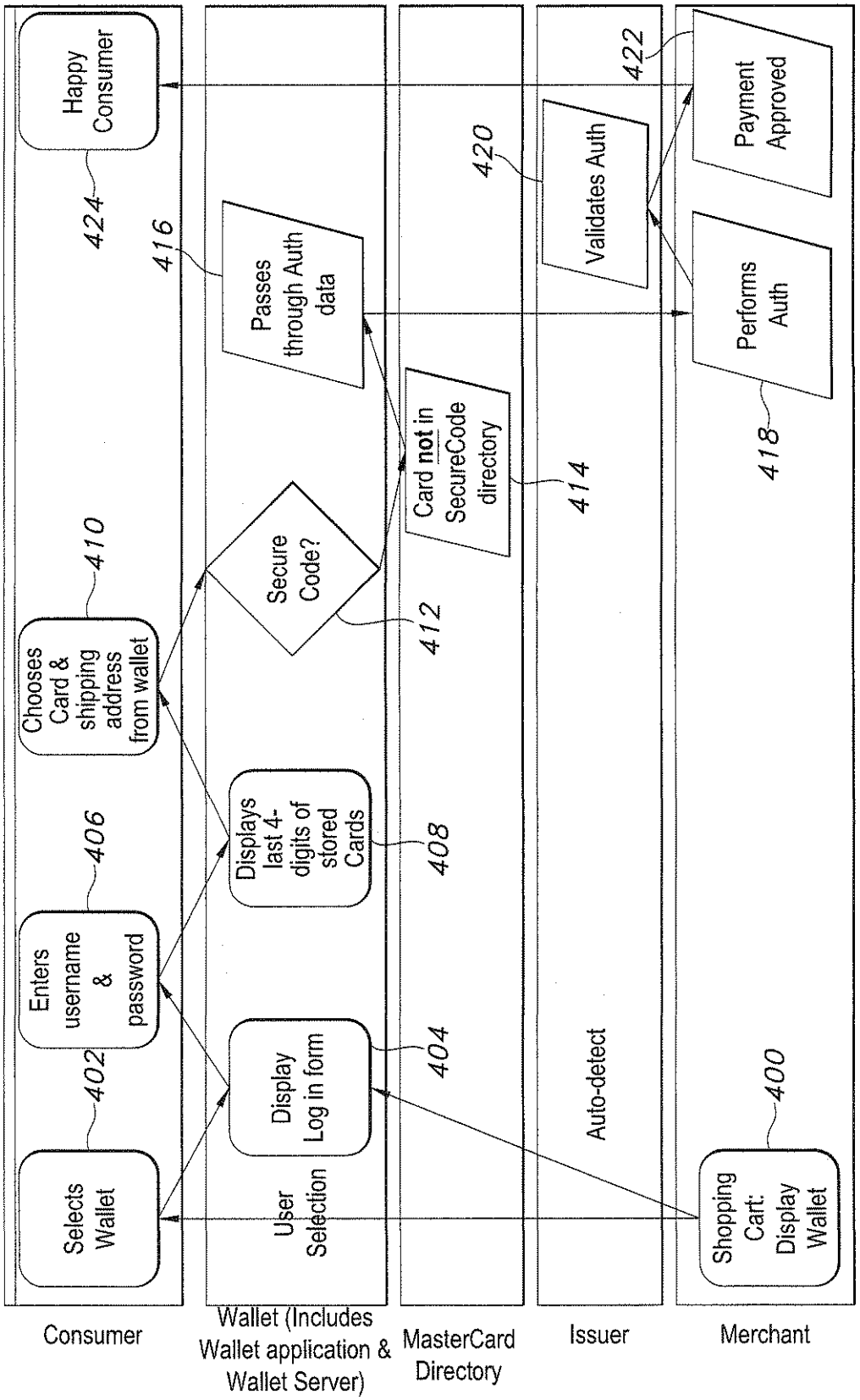
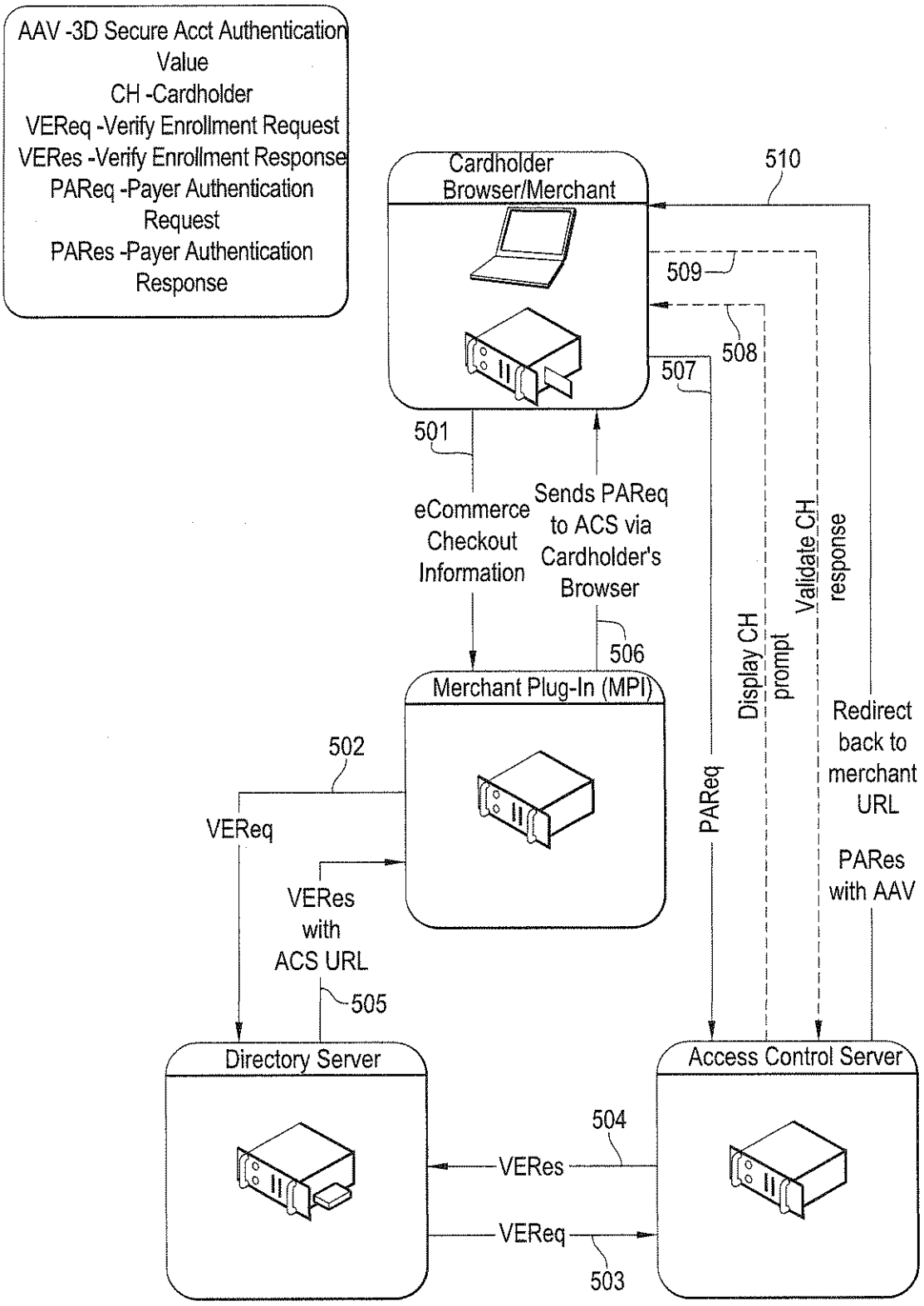

Consumer
Wallet (Includes Wallet application & Wallet Server)
MasterCard Directory
Issuer
Merchant
302
306
Selects Wallet
Enters username & password (as needed)
Chooses Card & shipping address from wallet
310
Enters PIN on phone
318
328
Happy Consumer
User Selection
Display Log in form
304
Displays last 4-digits of stored Cards
308
PIN online?
312
Requests PIN on phone
316
Pass through of auth msg + encrypted PIN
320
Card not in SecureCode directory
314
Auto-detect
324
Validates Auth
326
Payment Approved
322
Performs Auth
Shopping Cart: Display Wallet
300

FIG. 5

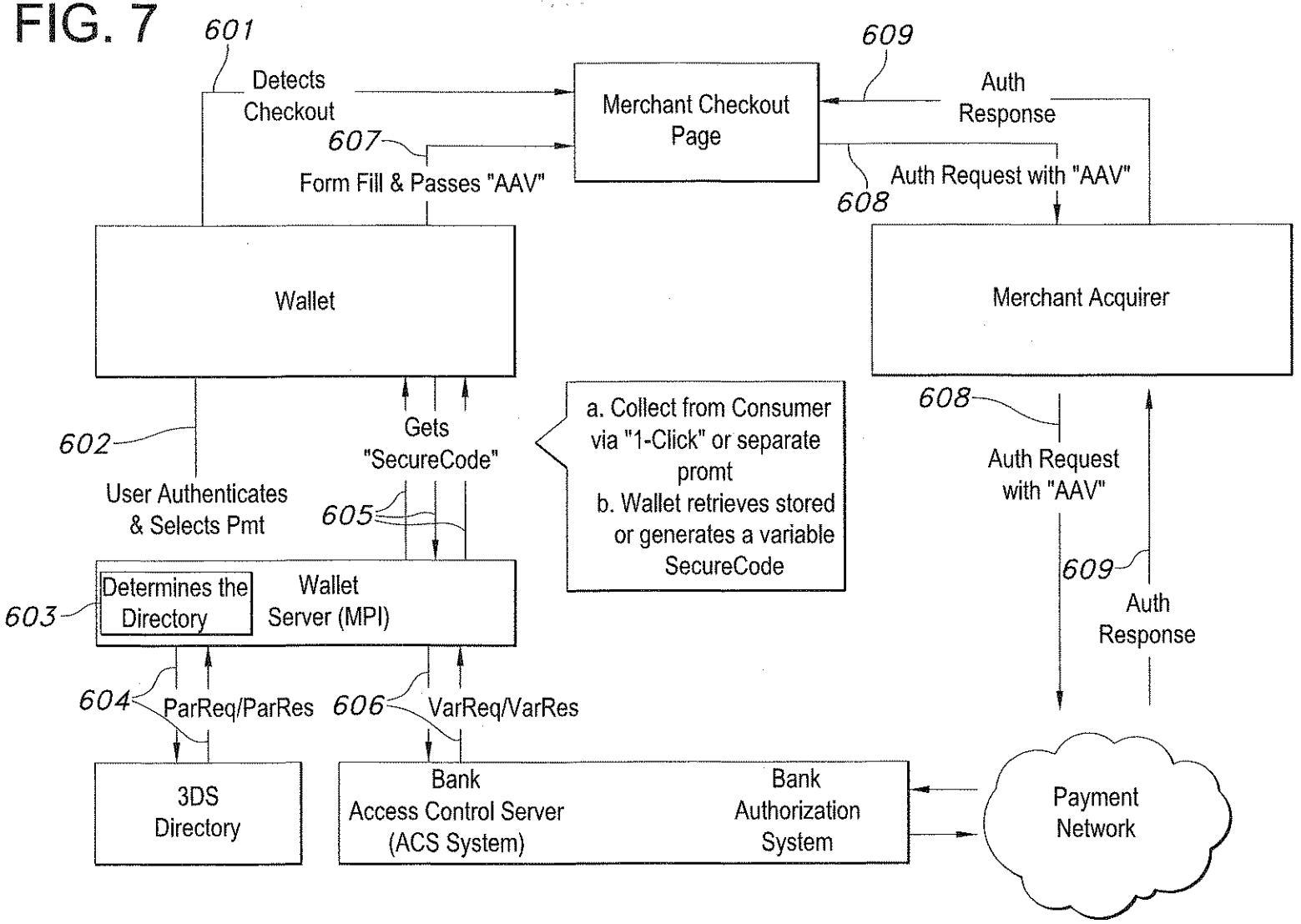

Consumer
Wallet (Includes Wallet application & Wallet Server)
MasterCard Directory
Issuer
Merchant
Selects Wallet
402
Enters username & password
406
Chooses Card & shipping address from wallet
410
Happy Consumer
424
User Selection
Display Log in form
404
Displays last 4-digits of stored Cards
408
Secure Code?
412
Passes through Auth data
416
Card not in SecureCode directory
414
Auto-detect
420
Validates Auth
422
Payment Approved
Performs Auth
418
Shopping Cart: Display Wallet
400

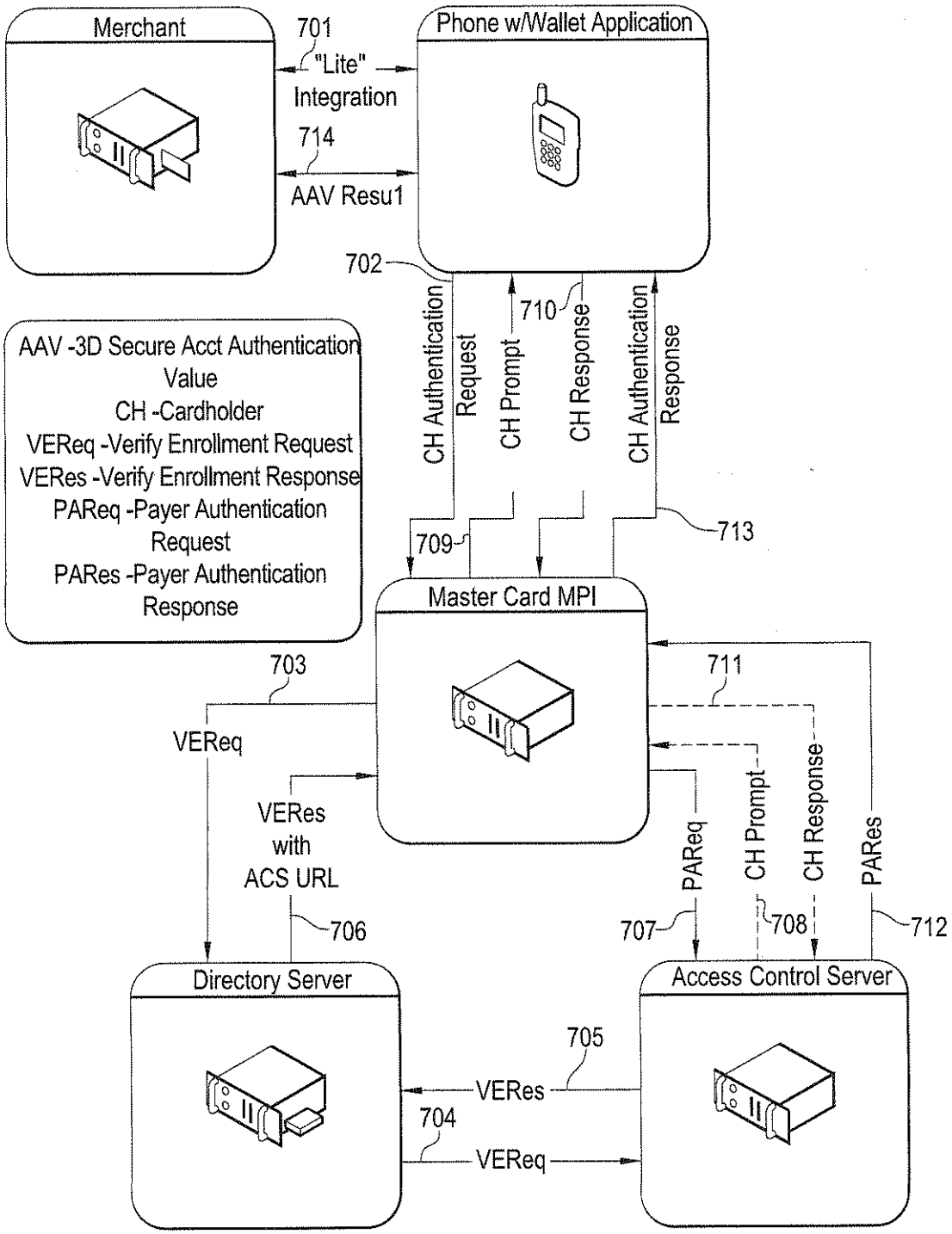


Existing 3D Secure Implementation

FIG. 6

FIG. 7


601
Detects Checkout
609
Auth Response
Merchant Checkout Page
607
Form Fill & Passes "AAV"
Auth Request with "AAV"
608
Wallet
Merchant Acquirer
602
Gets "SecureCode"
a. Collect from Consumer via "1-Click" or separate promt
b. Wallet retrieves stored or generates a variable SecureCode
608
Auth Request with "AAV"
User Authenticates & Selects Pmt
605
603
Determines the Directory
Wallet Server (MPI)
609
Auth Response
604
ParReq/ParRes
606
VarReq/VarRes
3DS Directory
Bank Access Control Server (ACS System)
Bank Authorization System
Payment Network



MasterCard MPI Concept

FIG. 8

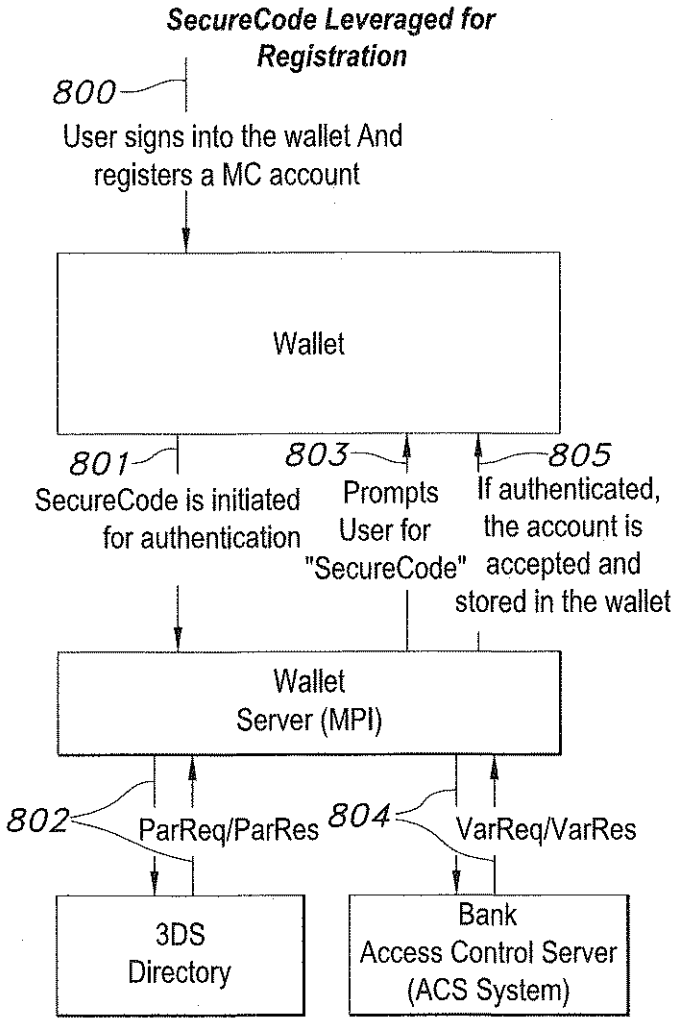

SecureCode Leveraged for Registration
800
User signs into the wallet And registers a MC account
Wallet
801
SecureCode is initiated for authentication
803
Prompts User for "SecureCode"
805
If authenticated, the account is accepted and stored in the wallet
Wallet Server (MPI)
802
ParReq/ParRes
804
VarReq/VarRes
3DS Directory
Bank Access Control Server (ACS System)

FIG. 9A

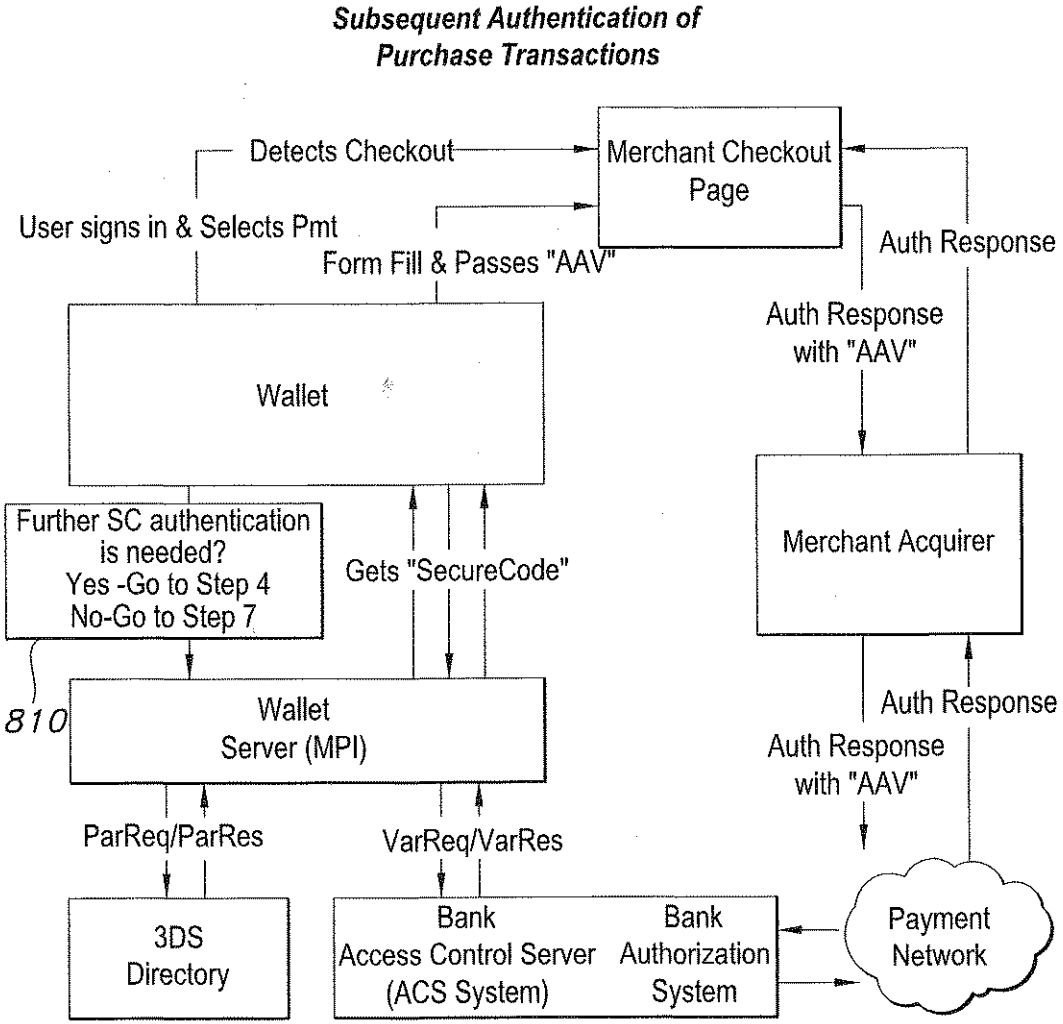

Subsequent Authentication of Purchase Transactions
Detects Checkout
Merchant Checkout Page
User signs in & Selects Pmt
Form Fill & Passes "AAV"
Auth Response
Auth Response with "AAV"
Wallet
Further SC authentication is needed?
Yes -Go to Step 4
No-Go to Step 7
Gets "SecureCode"
Merchant Acquirer
810
Wallet Server (MPI)
Auth Response
Auth Response with "AAV"
ParReq/ParRes
VarReq/VarRes
3DS Directory
Bank Access Control Server (ACS System)
Bank Authorization System
Payment Network

FIG. 9B

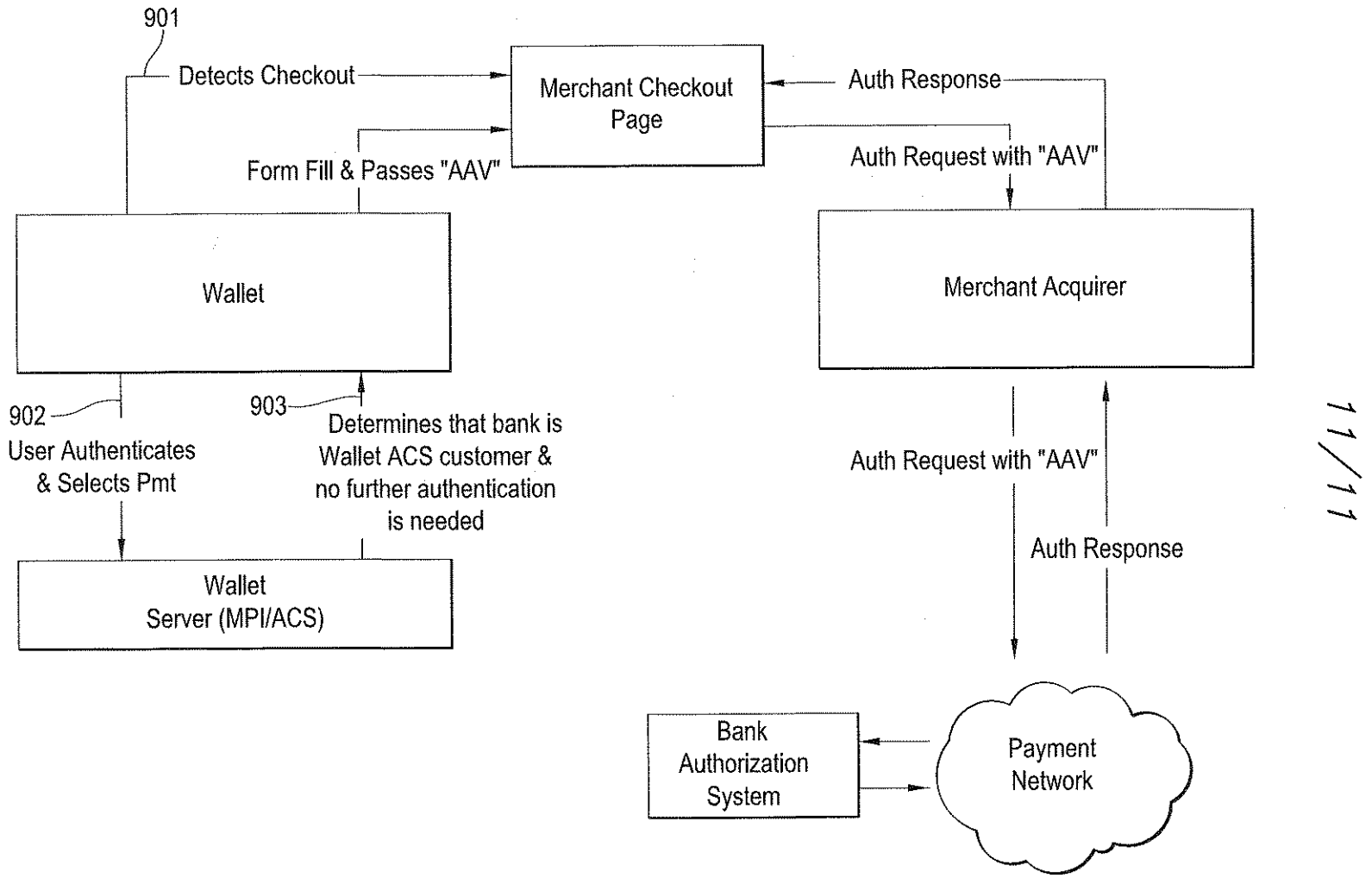

901
Detects Checkout
Merchant Checkout Page
Auth Response
Form Fill & Passes "AAV"
Auth Request with "AAV"
Wallet
Merchant Acquirer
902
User Authenticates & Selects Pmt
903
Determines that bank is Wallet ACS customer & no further authentication is needed
Auth Request with "AAV"
Auth Response
Wallet Server (MPI/ACS)
Bank Authorization System
Payment Network

FIG. 10