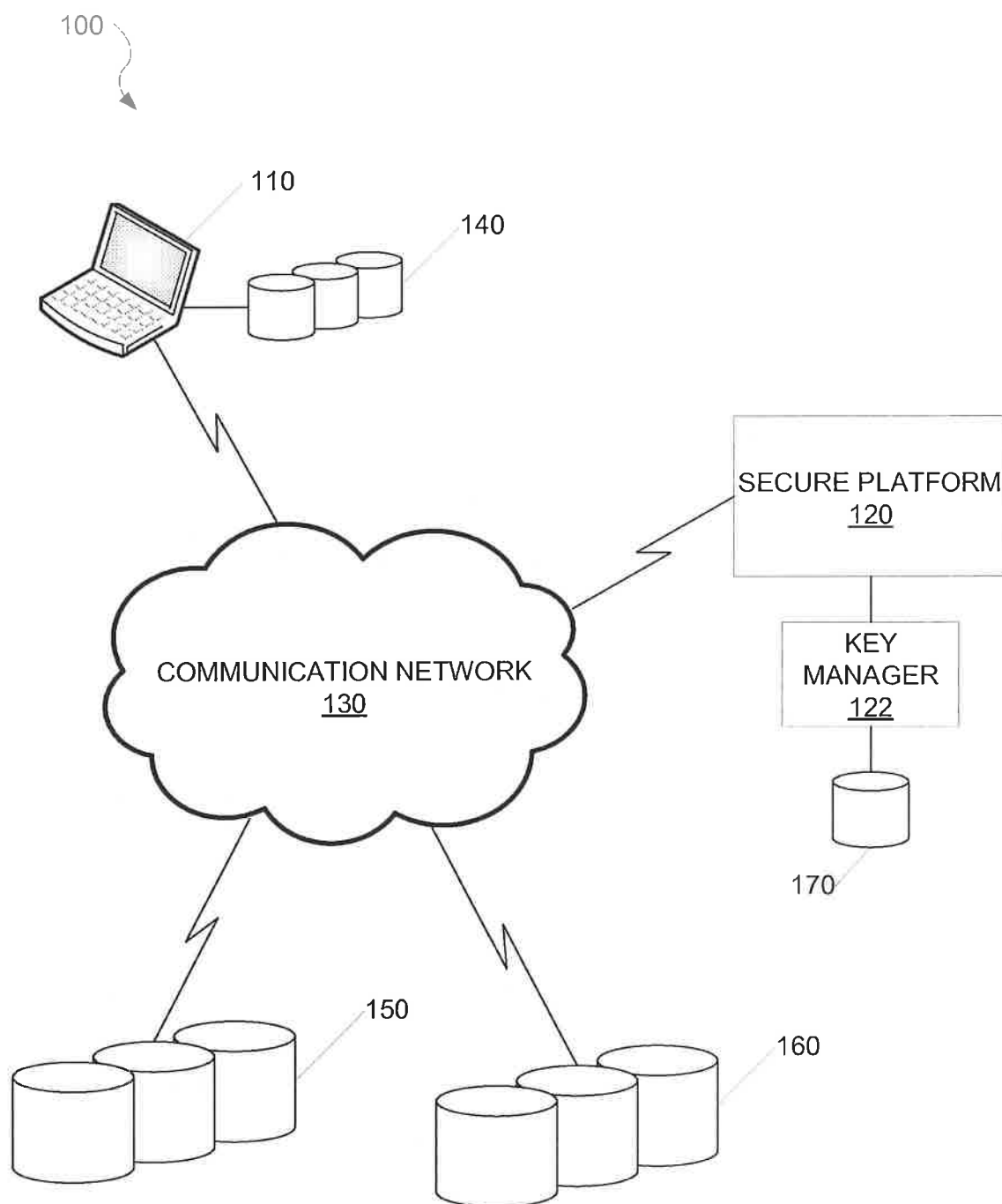
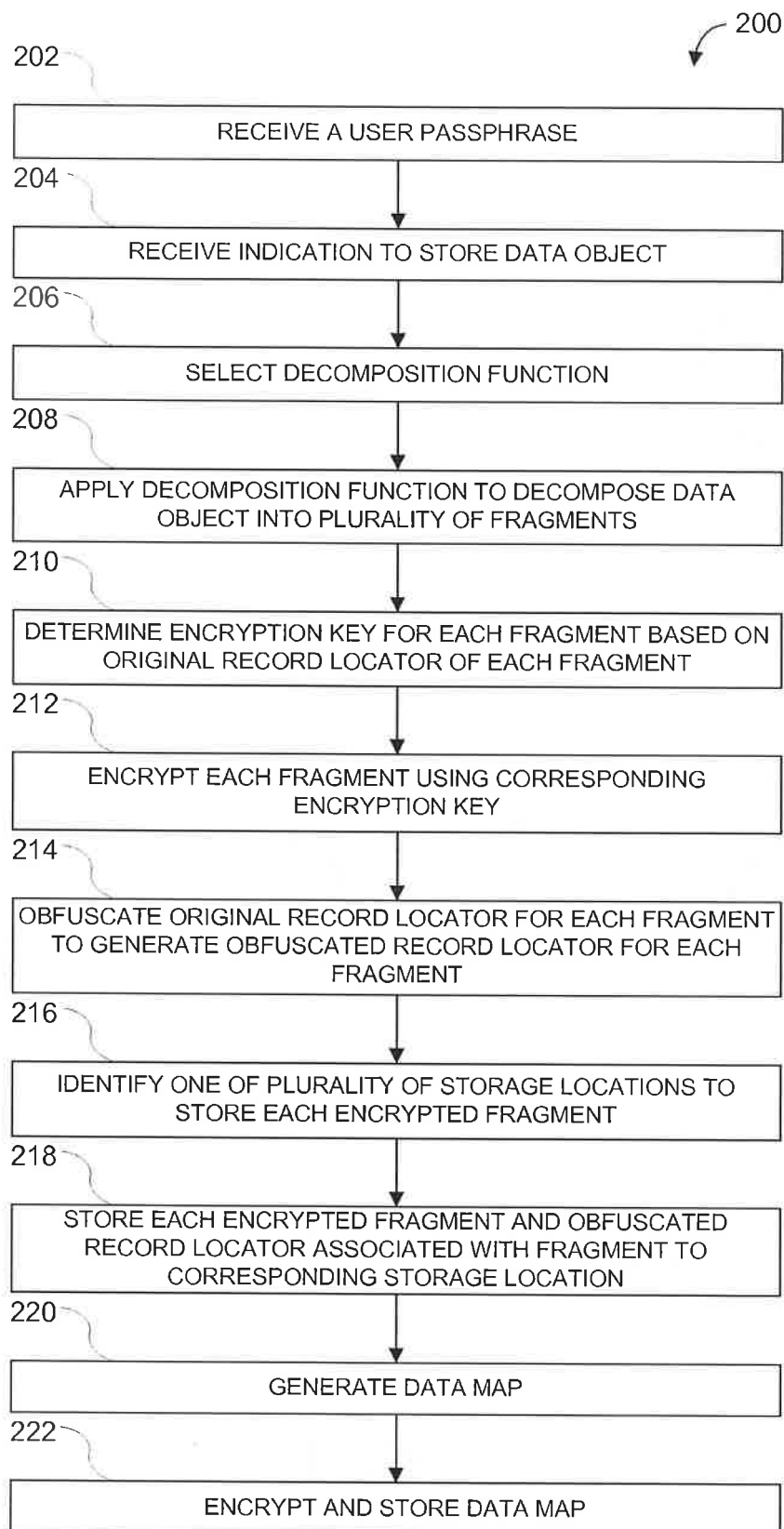
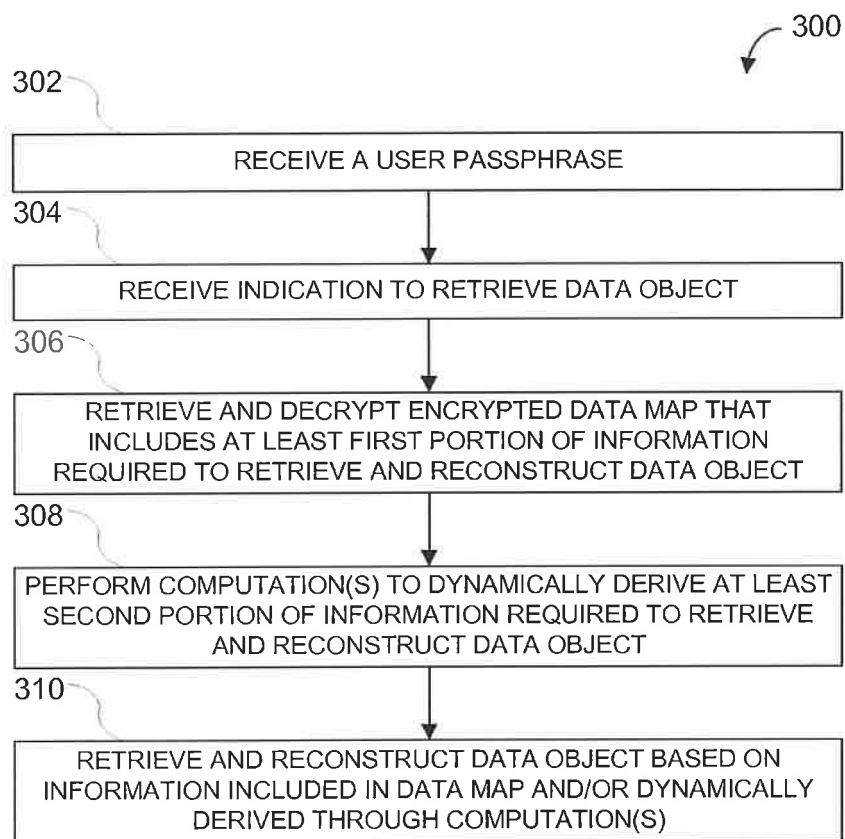


**FIG. 1**

**FIG. 2**

**FIG. 3**

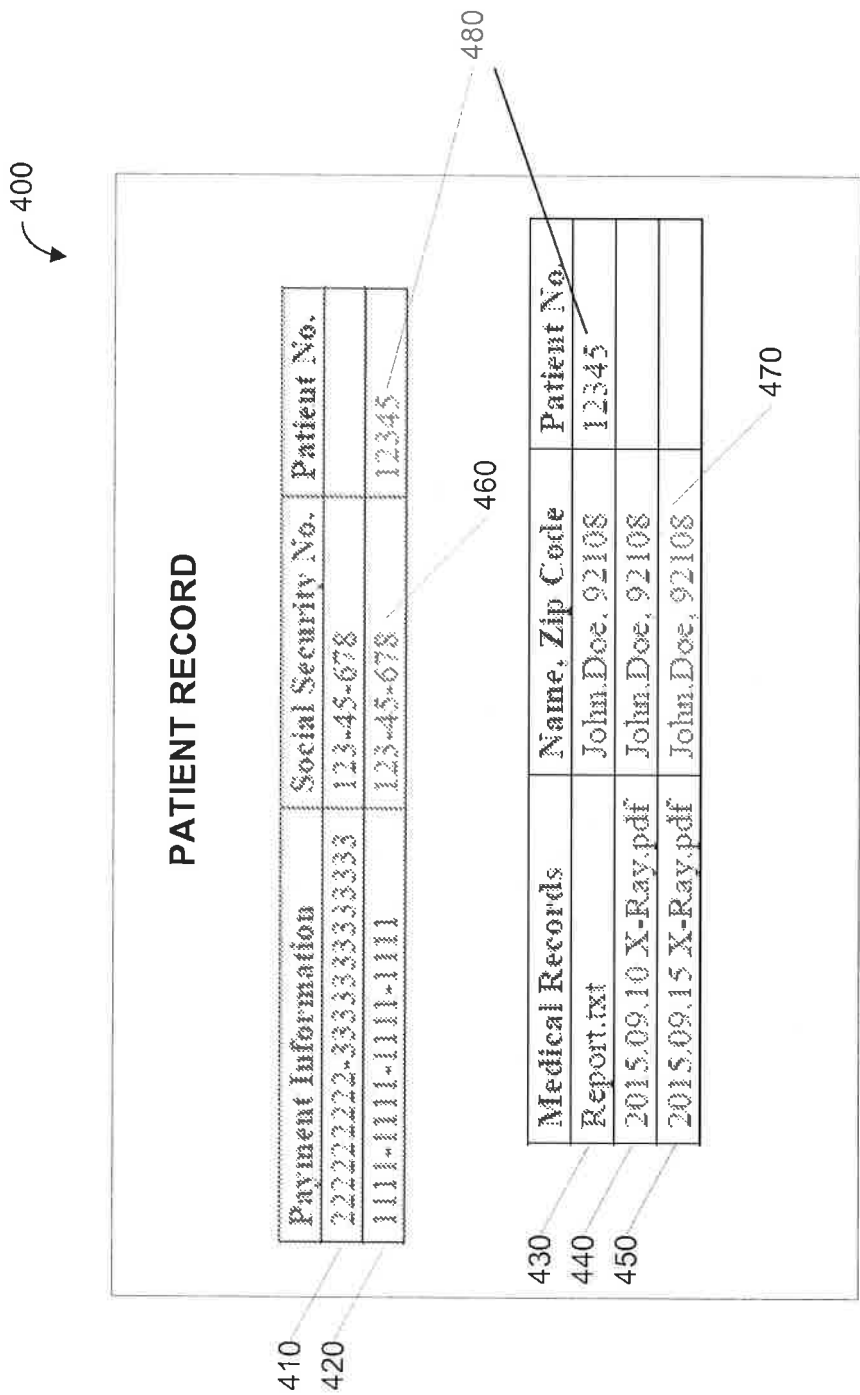
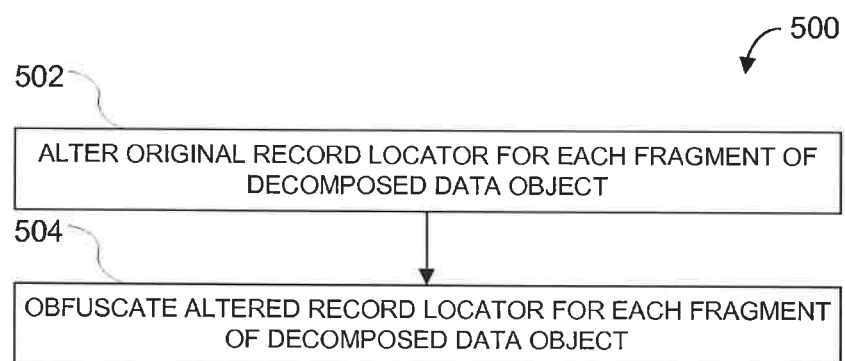


FIG. 4A

400

PATIENT RECORD		
410	Payment Information	Obfuscated Record Locator
420	22222222-333333333333	4qbu0joblr43qy
	1111-1111-1111-1111	Bqwp09tq
430	Medical Records	Obfuscated Record Locator
440	Report.txt	sQbo8q34
450	2015.09.10 X-Ray.pdf	dph8q43h4n
435	2015.09.15 X-Ray.pdf	Bnoireqb0gb
445		
455		

FIG. 4B

**FIG. 5**

400

PATIENT RECORD		
610 615	Payment Information	Obfuscated Record Locator
	diboenfoa-burobipabodq	4qbu0joblr43qy
	fbpebiedeobpdqb	Bqwp09tq
620 625 630	Medical Records	Obfuscated Record Locator
	objepubipepb	sQbo8q34
	eofoepibneobpam	dph8q43h4u
	pbonheobjepqibpd	Buoneqb02b

FIG. 6A

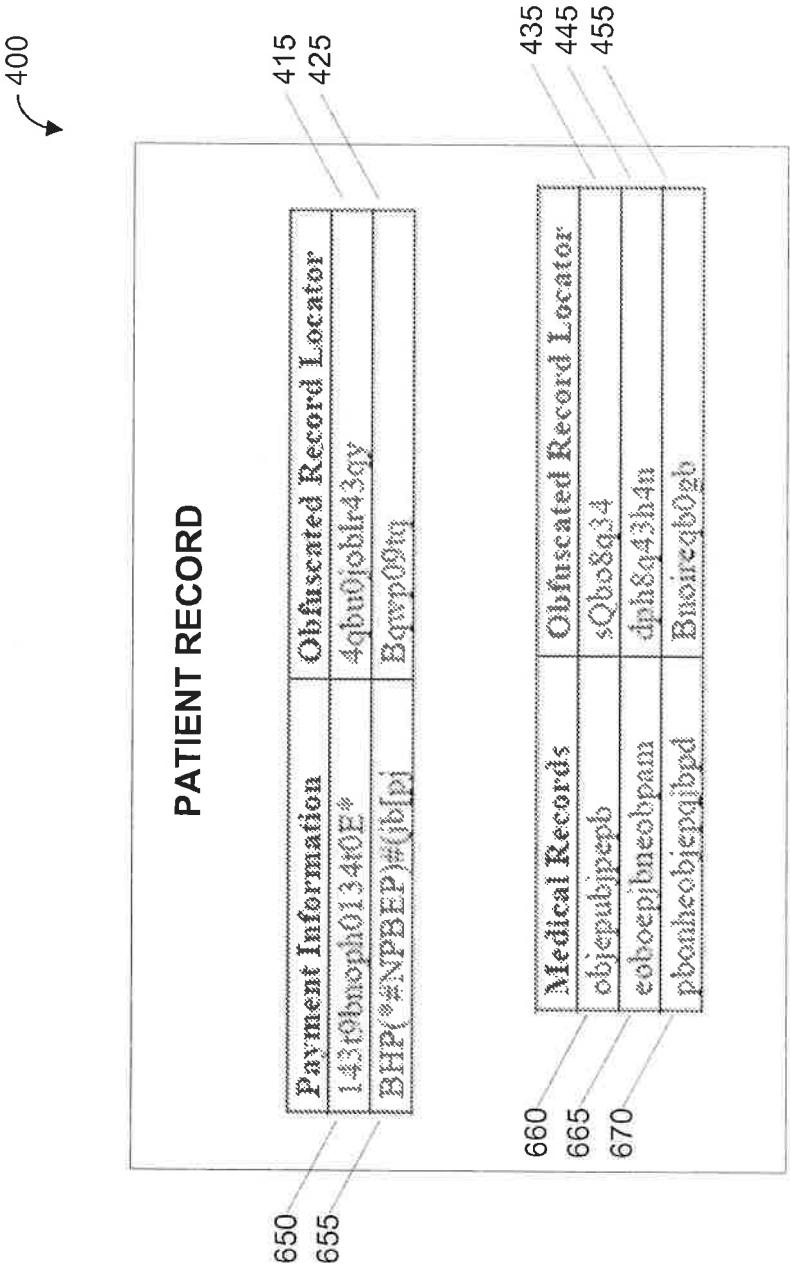
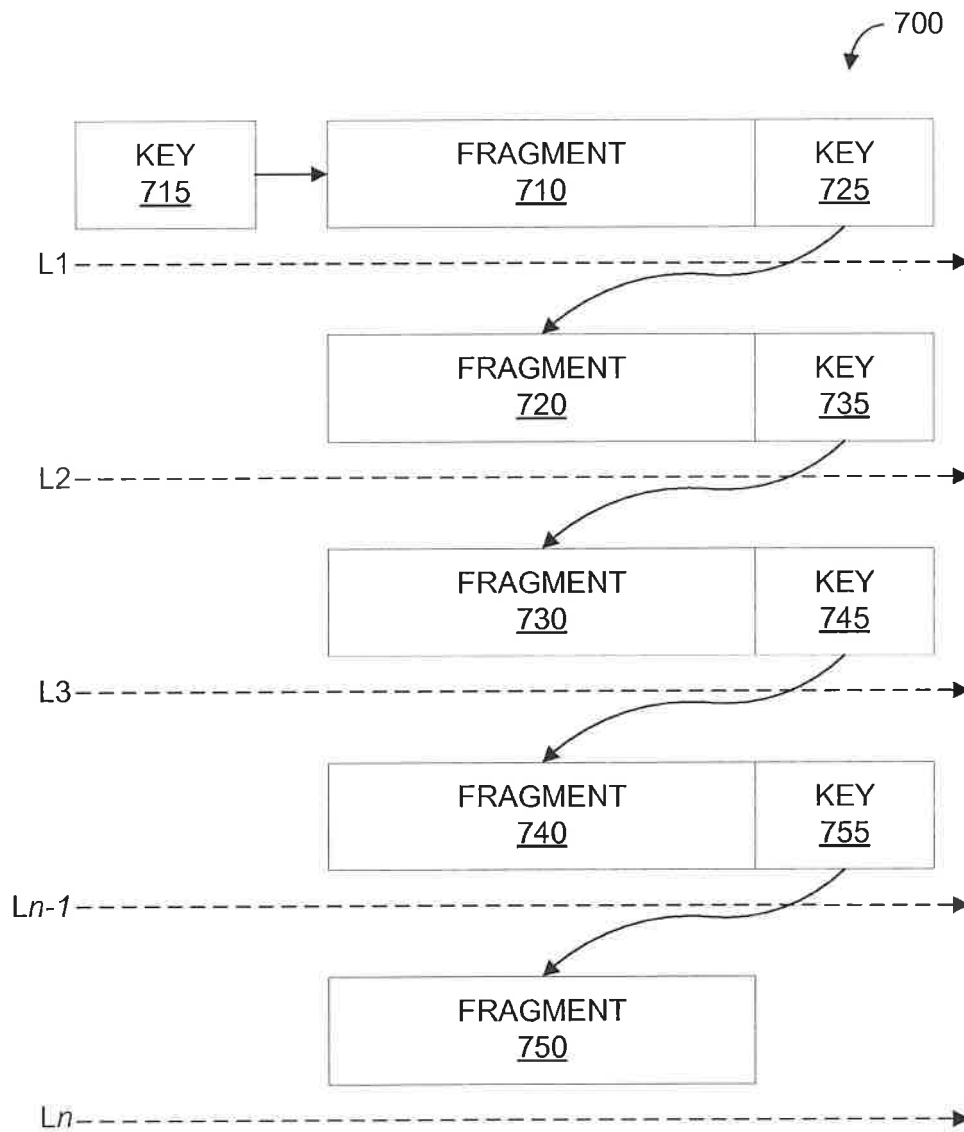


FIG. 6B

**FIG. 7**

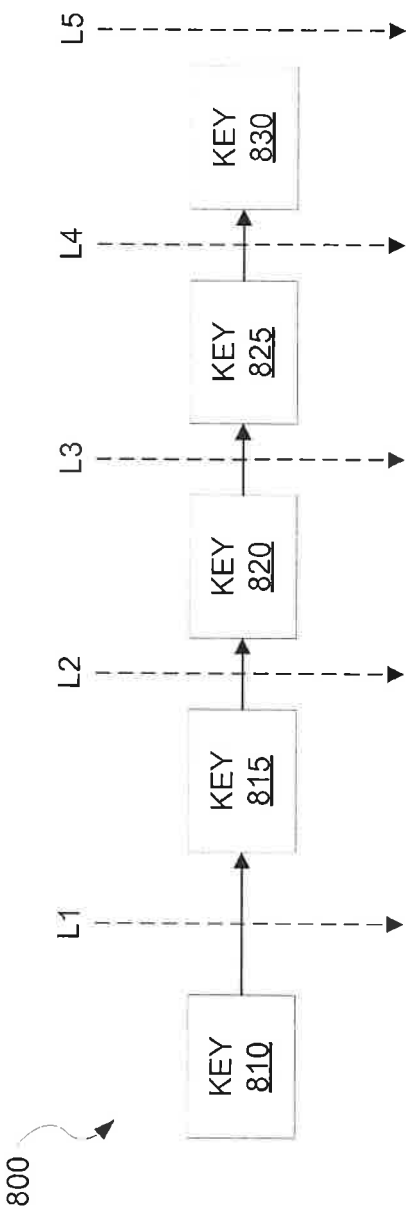


FIG. 8

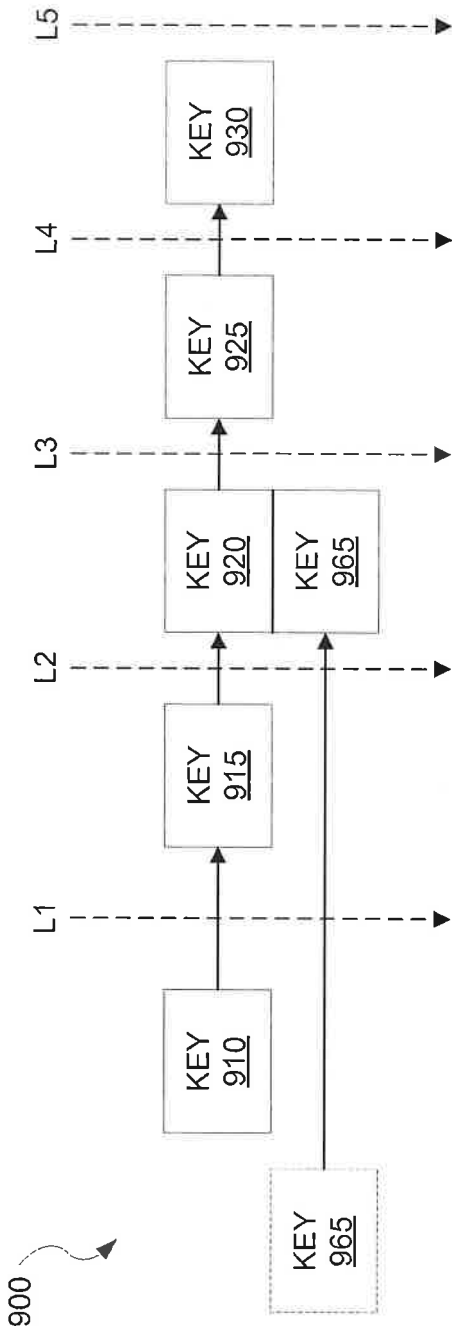


FIG. 9

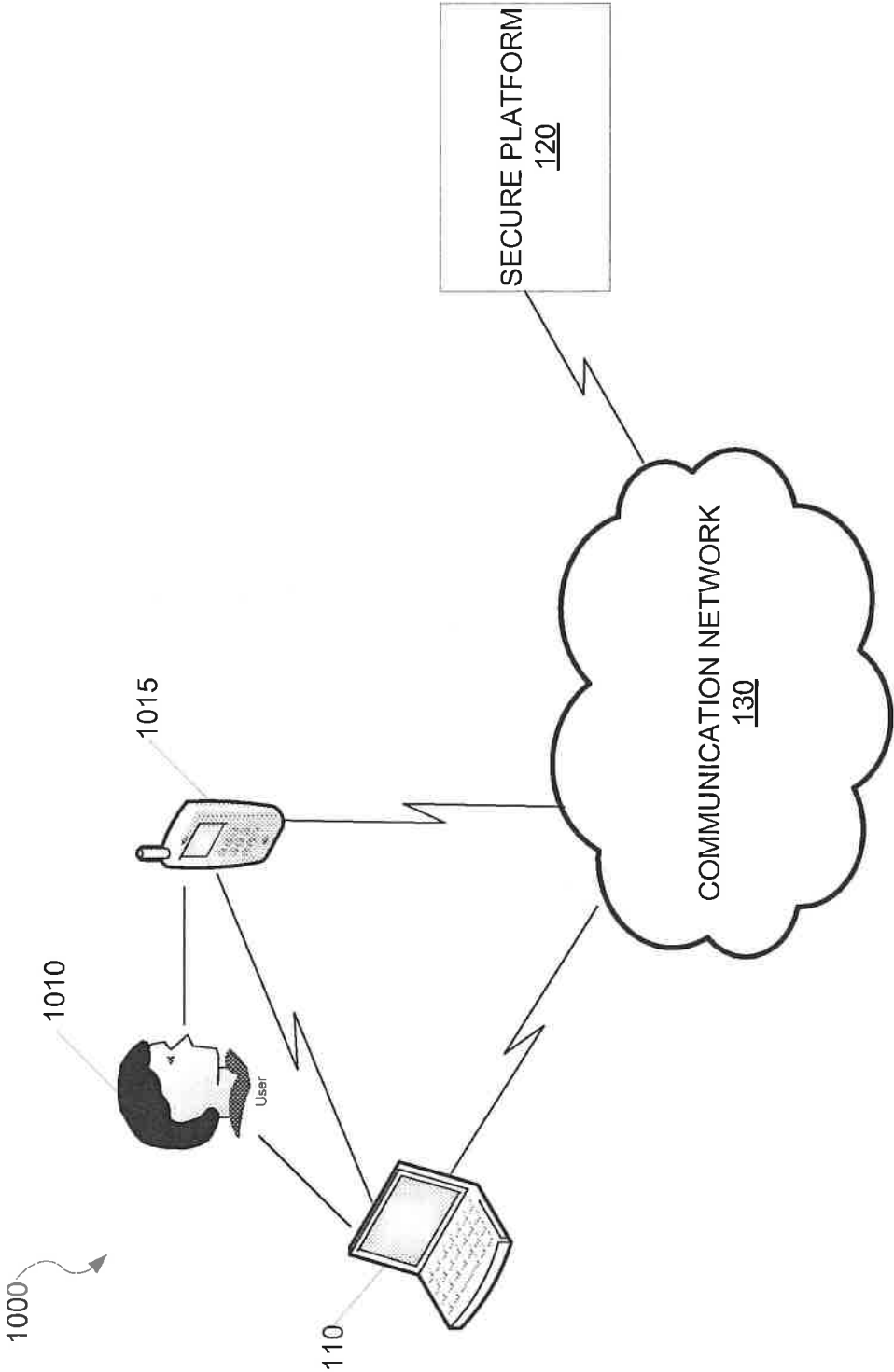
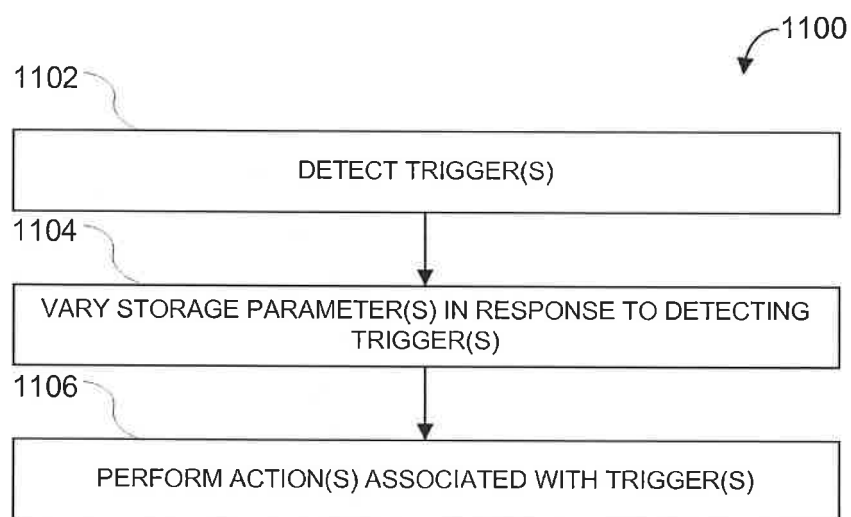


FIG. 10

**FIG. 11**

1200

Obfuscated Field and Account Identifiers	Encrypted Field Values
obfuscateAlgorithm(JohnSmith, Salary)	EncryptionAlgorithm(\$50,000.00)
obfuscateAlgorithm(JaneDoe, Salary)	EncryptionAlgorithm(\$50,000.00)
obfuscateAlgorithm(JohnBrown, Salary)	EncryptionAlgorithm(\$45,000.00)
obfuscateAlgorithm(JohnBrown, ZipCode)	EncryptionAlgorithm(12345)
obfuscateAlgorithm(JaneDoe, ZipCode)	EncryptionAlgorithm(98765)
obfuscateAlgorithm(JohnBrown, ZipCode)	EncryptionAlgorithm(12345)
obfuscateAlgorithm(JohnSmith, Age)	EncryptionAlgorithm(55)
obfuscateAlgorithm(JaneDoe, Age)	EncryptionAlgorithm(65)
obfuscateAlgorithm(JohnBrown, Age)	EncryptionAlgorithm(55)

FIG. 12

1300

AAR Equality Query Keys	AAR Values
obfuscateAlgorithm(Salary, \$50,000)	EncryptionAlgorithm([JohnSmith, JaneDoe])
obfuscateAlgorithm(Salary, \$45,000)	EncryptionAlgorithm([JohnBrown])
obfuscateAlgorithm(ZipCode, 12345)	EncryptionAlgorithm([JohnSmith, JohnBrown])
obfuscateAlgorithm(ZipCode, 98765)	EncryptionAlgorithm([JaneDoe])
obfuscateAlgorithm([Salary, Age], [\$50,000, 55])	EncryptionAlgorithm([JohnSmith])
obfuscateAlgorithm([Salary, Age], [\$50,000, 65])	EncryptionAlgorithm([JaneDoe])
obfuscateAlgorithm([Salary, Age], [\$45,000, 55])	EncryptionAlgorithm([JohnBrown])

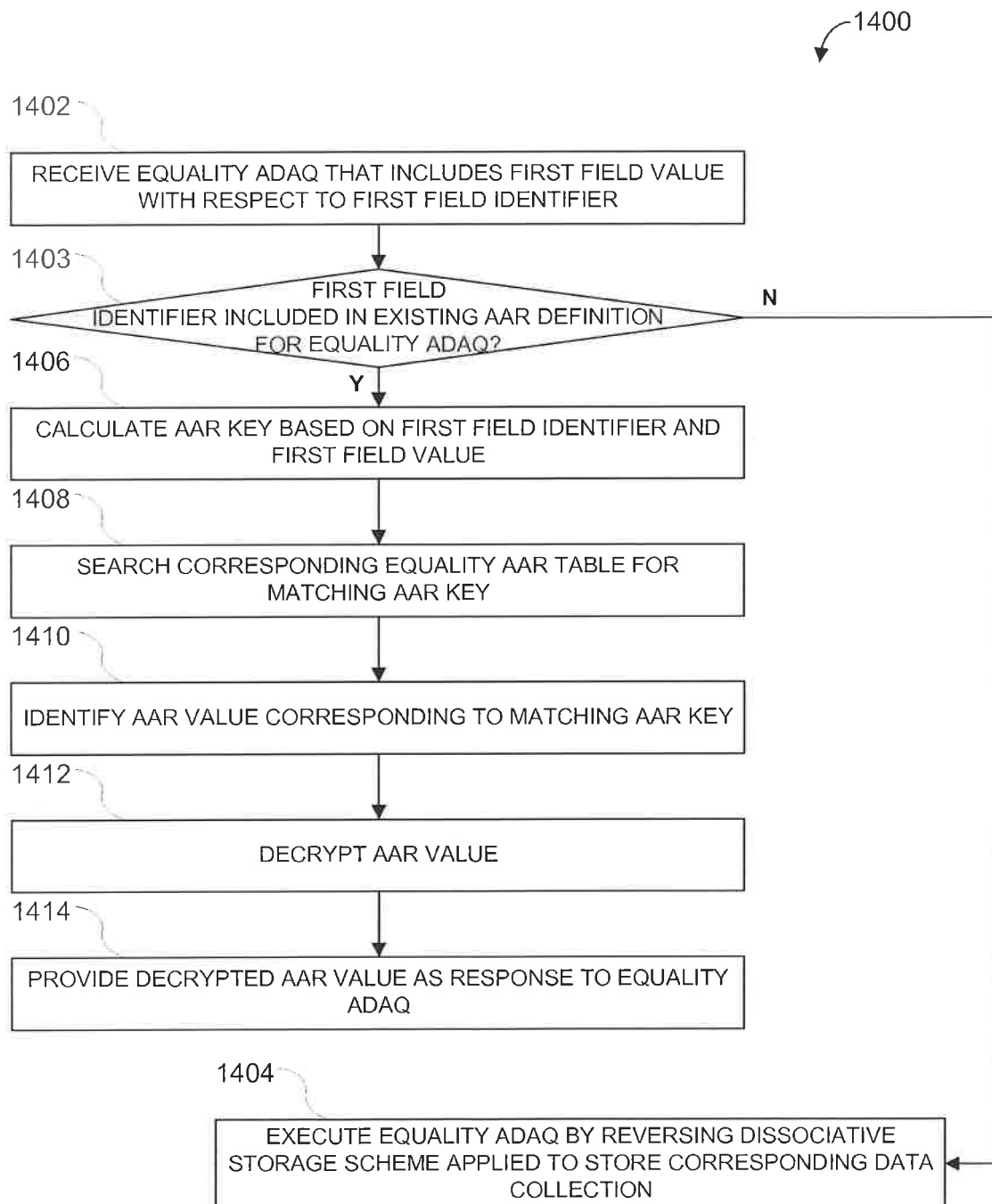
1310

1320

1330

1340

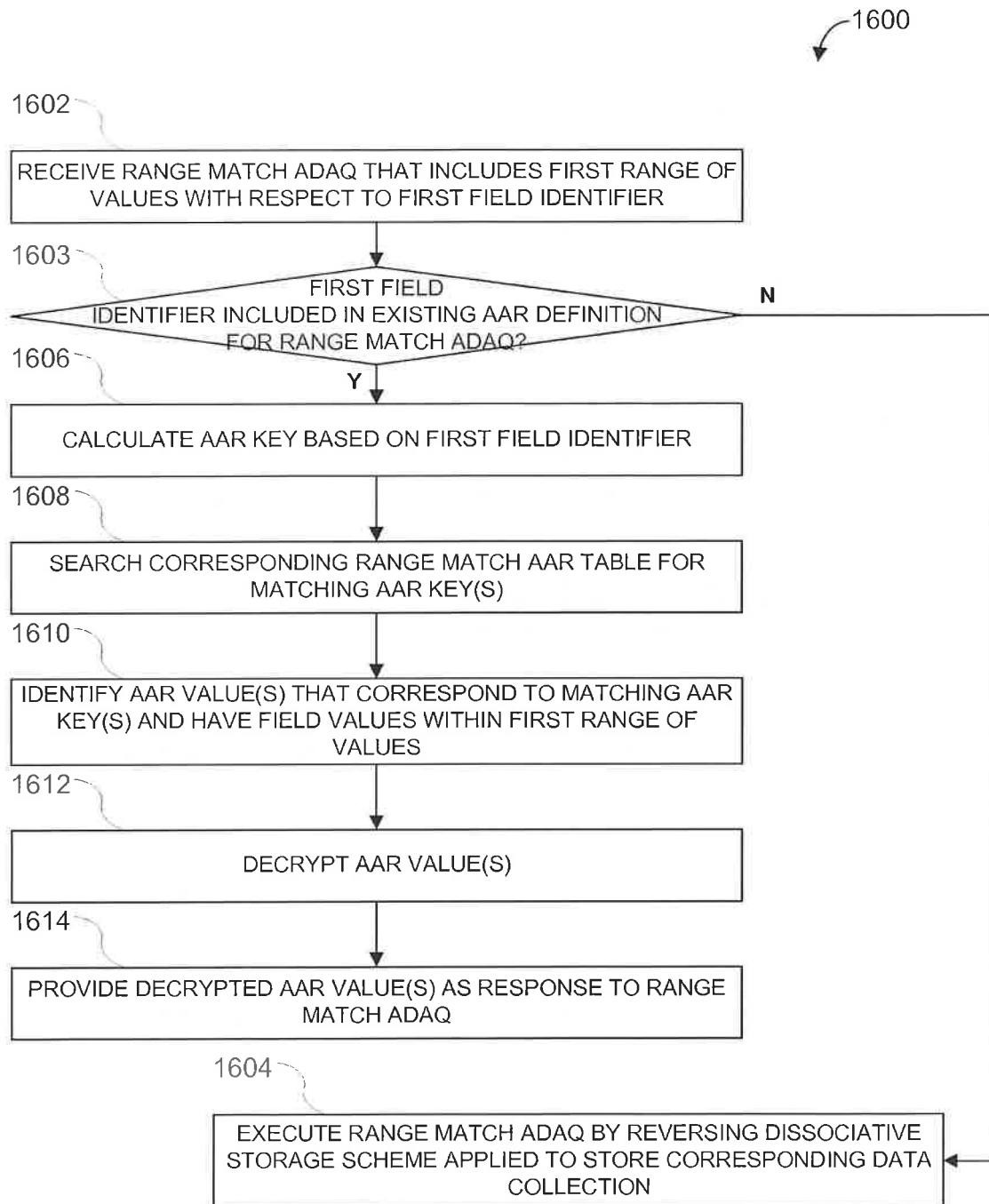
FIG. 13

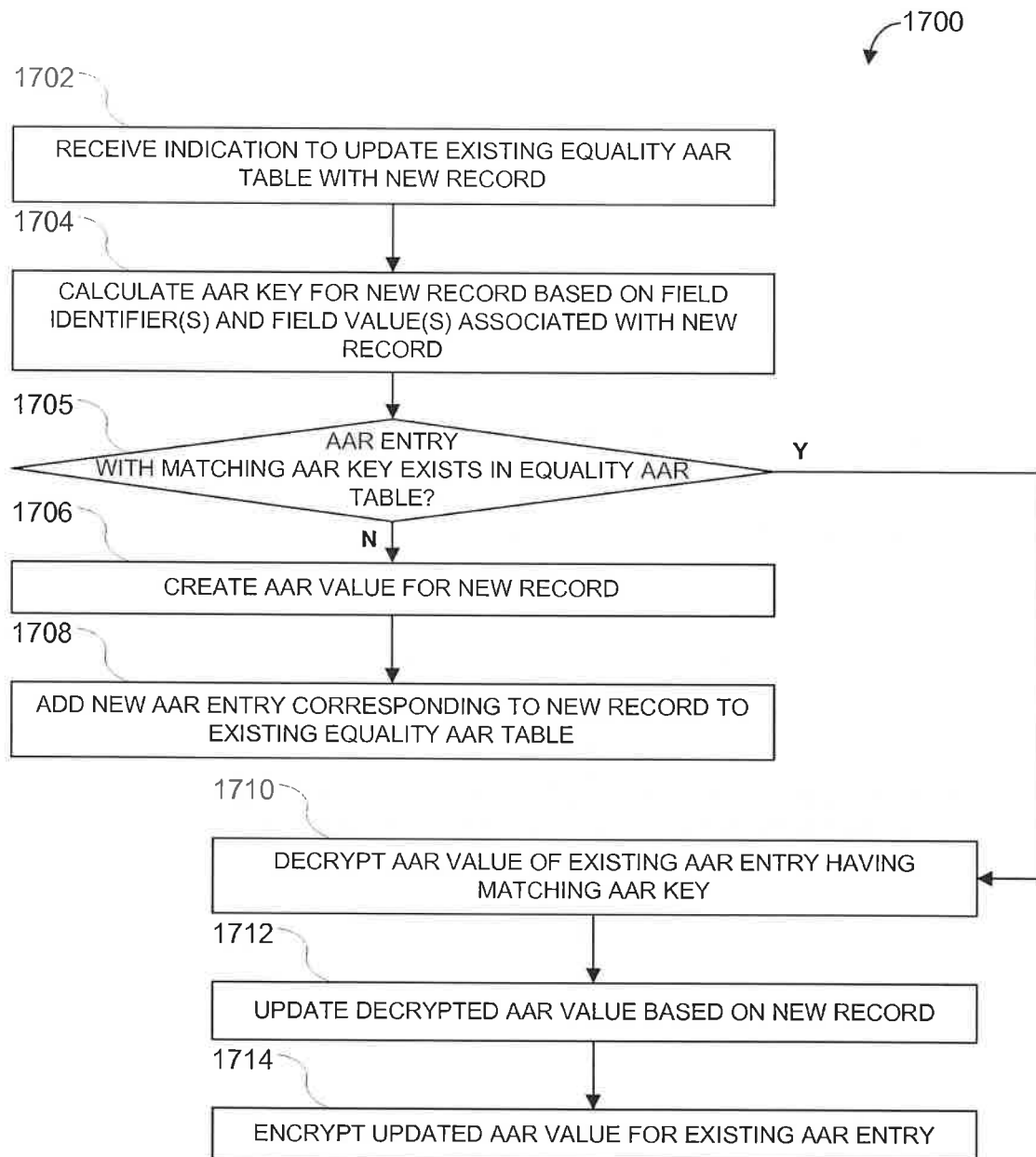
**FIG. 14**

1500

Field Identifiers	Field Values	AAR Values
obfuscateAlgorithm(Salary)	50000	encryptionAlgorithm([JohnSmith, JaneDoe])
obfuscateAlgorithm(Salary)	45000	encryptionAlgorithm([JohnBrown])
obfuscateAlgorithm(ZipCode)	12345	encryptionAlgorithm([JohnSmith, JohnBrown])
obfuscateAlgorithm(ZipCode)	98765	encryptionAlgorithm([JaneDoe])
obfuscateAlgorithm([Salary, Age])	50000, 55	encryptionAlgorithm([JohnSmith])
obfuscateAlgorithm([Salary, Age])	50000, 65	encryptionAlgorithm([JaneDoe])
obfuscateAlgorithm([Salary, Age])	45000, 55	encryptionAlgorithm([JohnBrown])

FIG. 15

**FIG. 16**

**FIG. 17**

18

AAR Equality Query Keys	AAR Values
RLO'(salary, 55000)	SA({janedoe})
RLO'(age, 45)	SA({janedoe})
RLO'(zipcode, 20500)	SA({janedoe})
RLO'((salary, age), (55000, 45))	SA({janedoe})

FIG. 18A

1810

AAR Equality Query Keys	AAR Values
RLO'(salary, 50000)	SA({johnsmith})

FIG. 18B

1830

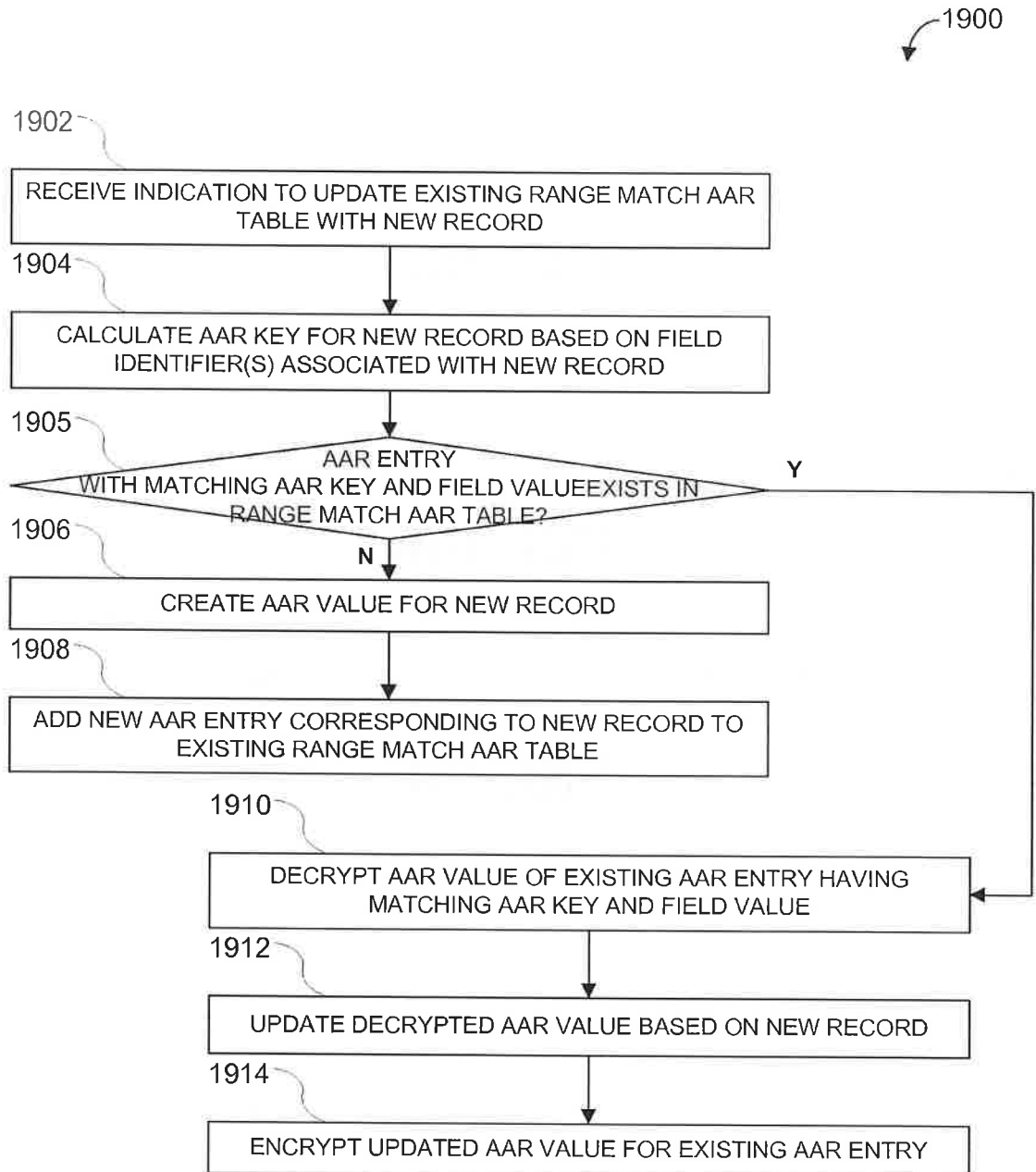
AAR Equality Query Keys	AAR Values
RLO'(zipcode, 20500)	SA({janedoe, johnsmith})

FIG. 18C

1800

AAR Equality Query Keys	AAR Values
RLO'(salary, 55000)	SA({janedoe})
RLO'(age, 45)	SA({janedoe})
RLO'(zipcode, 20500)	SA({janedoe, johnsmith})
RLO'((salary, age), (55000, 45))	SA({janedoe})
RLO'((salary, age), (50000, 50))	SA({johnsmith})
RLO'(salary, 50000)	SA({johnsmith})
RLO'(age, 45)	SA({johnsmith})

FIG. 18D

**FIG. 19**

2000

Field Identifiers	Field Values	AAR Values
RLO*(salary)	55000	SA([janedoe])
RLO*(age)	45	SA([janedoe])
RLO*(lastname)	DOE	SA([janedoe])

FIG. 20A

2010

Field Identifiers	Field Values	AAR Values
RLO*(age)	50	SA([johnsmith])

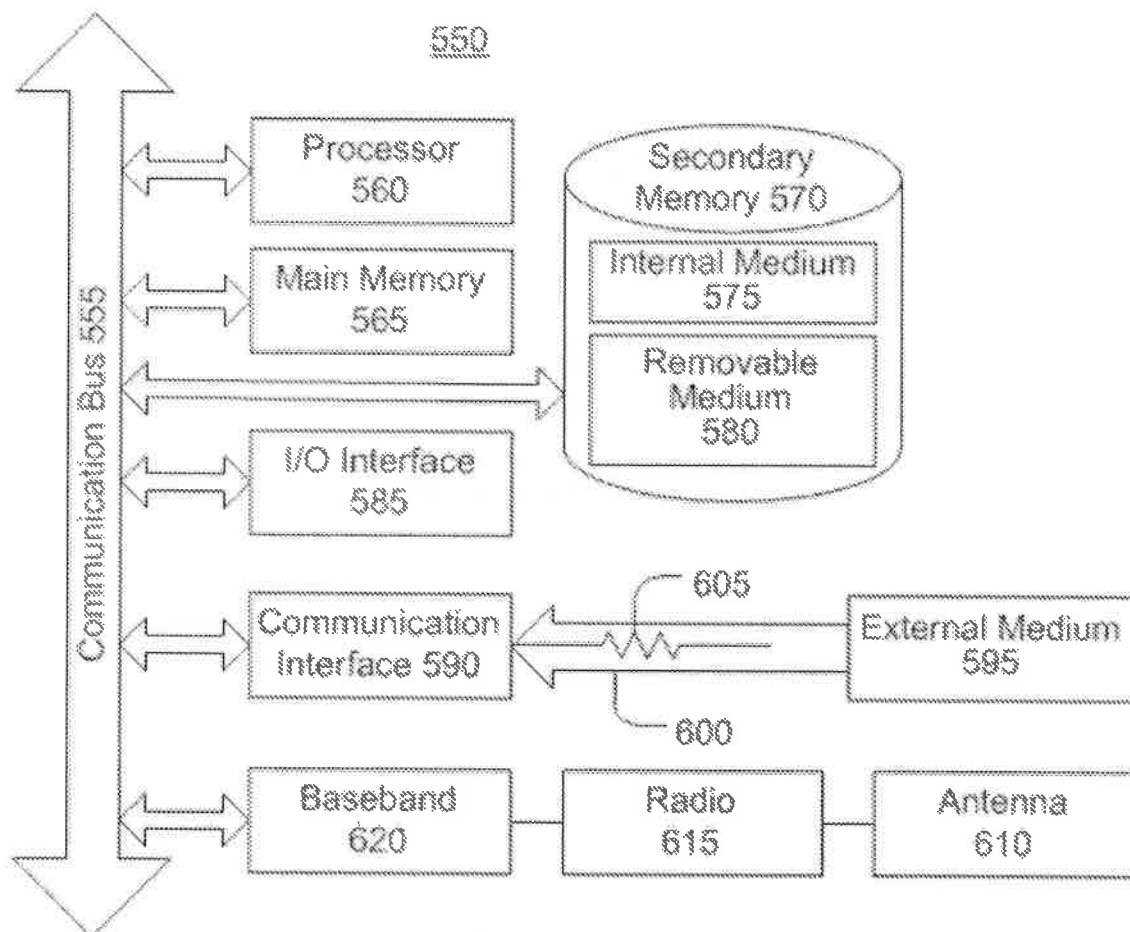
FIG. 20B

2000

Field Identifiers	Field Values	AAR Values
RLO*(salary)	55000	SA([janedoe])
RLO*(age)	45	SA([janedoe])
RLO*(lastname)	DOE	SA([janedoe])
RLO*(age)	50	SA([johnsmith])

2010

FIG. 20C

**FIG. 21**