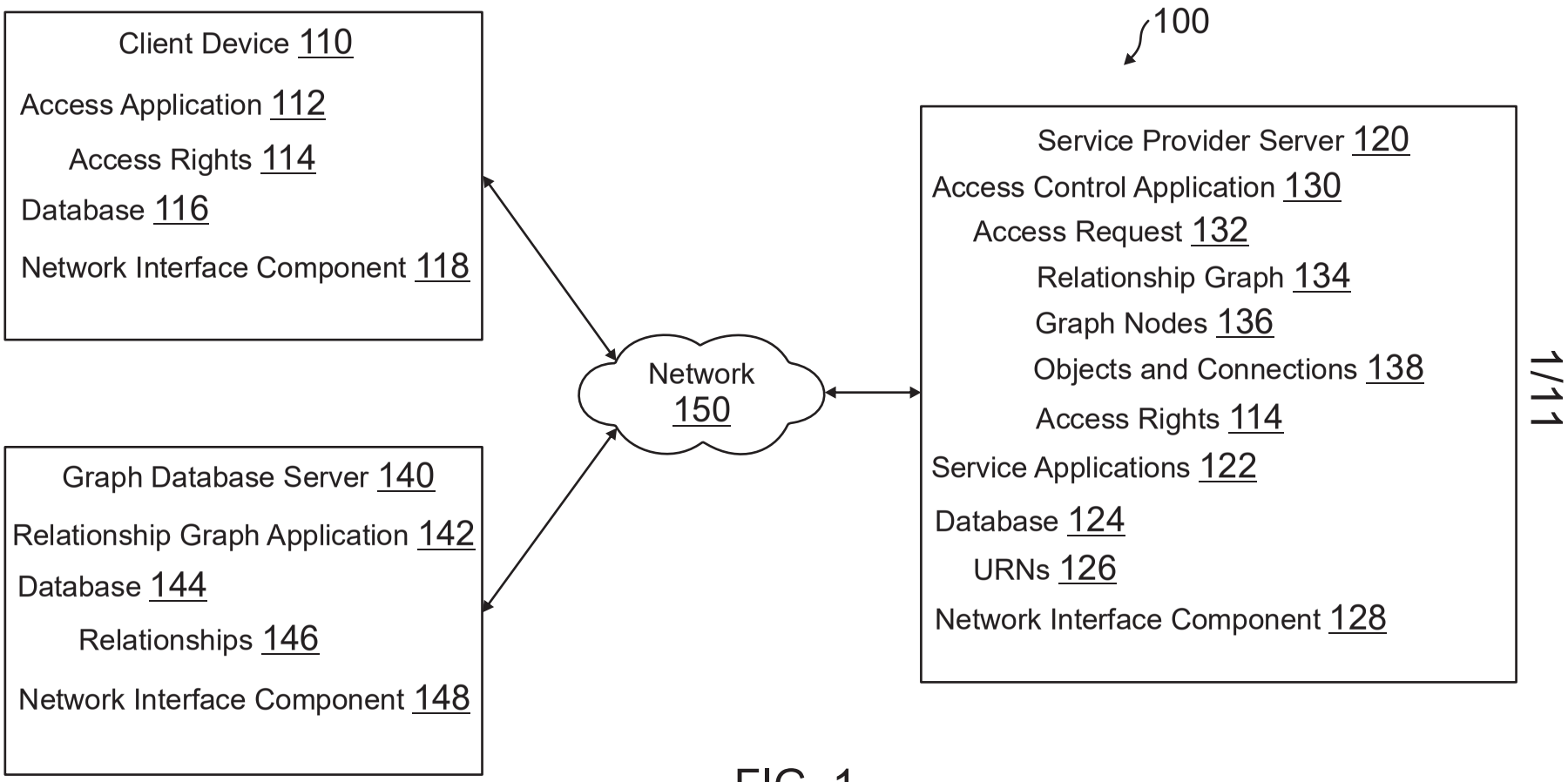
100
Client Device 110
Access Application 112
Access Rights 114
Database 116
Network Interface Component 118
Network
150
Graph Database Server 140
Relationship Graph Application 142
Database 144
Relationships 146
Network Interface Component 148
Service Provider Server 120
Access Control Application 130
Access Request 132
Relationship Graph 134
Graph Nodes 136
Objects and Connections 138
Access Rights 114
Service Applications 122
Database 124
URNs 126
Network Interface Component 128

FIG. 1

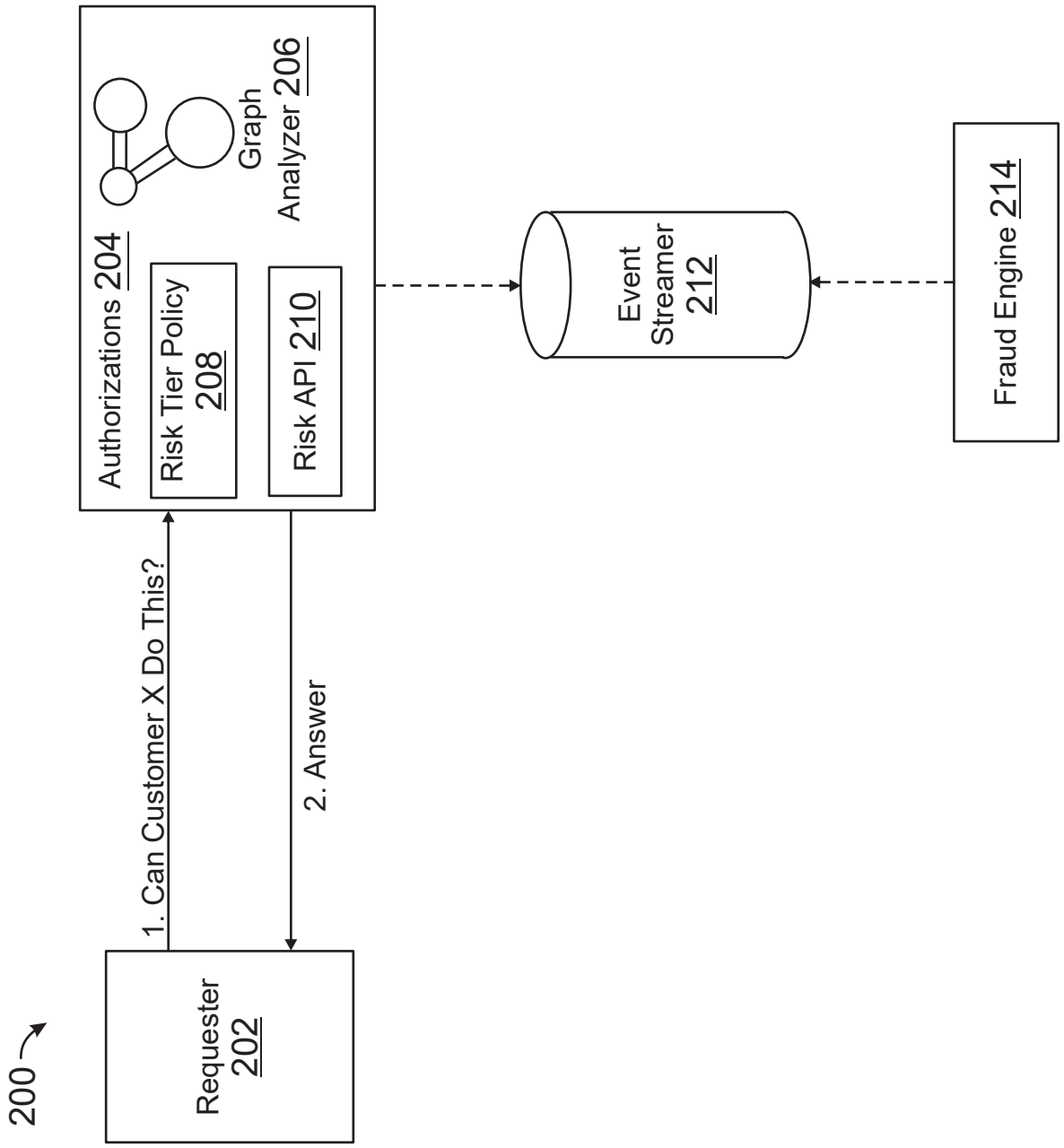
200
Requester 202
1. Can Customer X Do This?
2. Answer
Authorizations 204
Risk Tier Policy 208
Risk API 210
Graph Analyzer 206
Event Streamer 212
Fraud Engine 214

FIG. 2

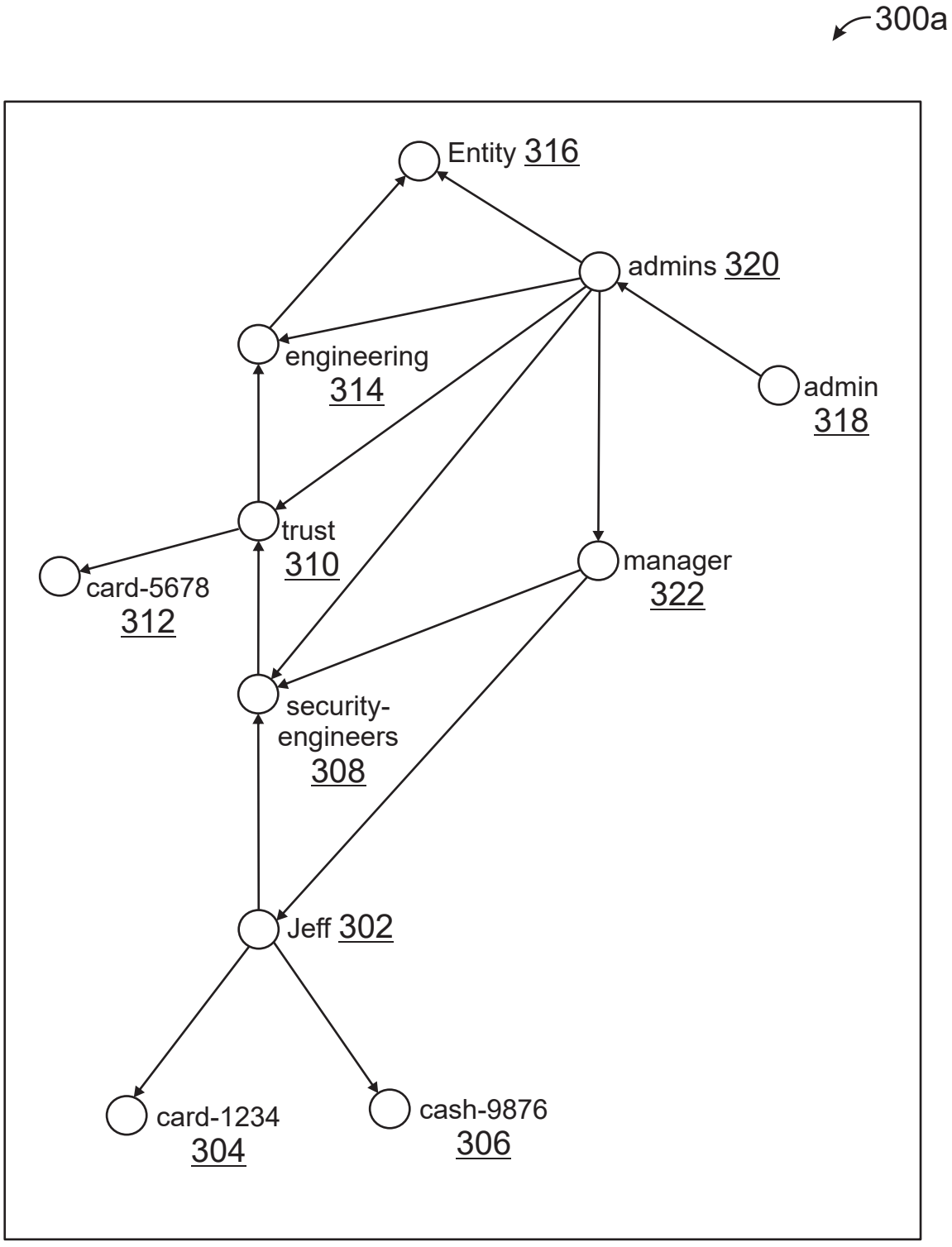
300a
Entity 316
admins 320
engineering
314
admin
318
trust
310
card-5678
312
manager
322
security-
engineers
308
Jeff 302
card-1234
304
cash-9876
306

FIG. 3A

300b

Resource 330	Access 332	Path 334
card-5678 336	[write]	Jeff-> security-engineers -> trust -> card-5678
card-1234 338	[read.write]	Jeff-> card-1234
cash-9876 340	[read.write]	Jeff-> cash-9876

FIG. 3B

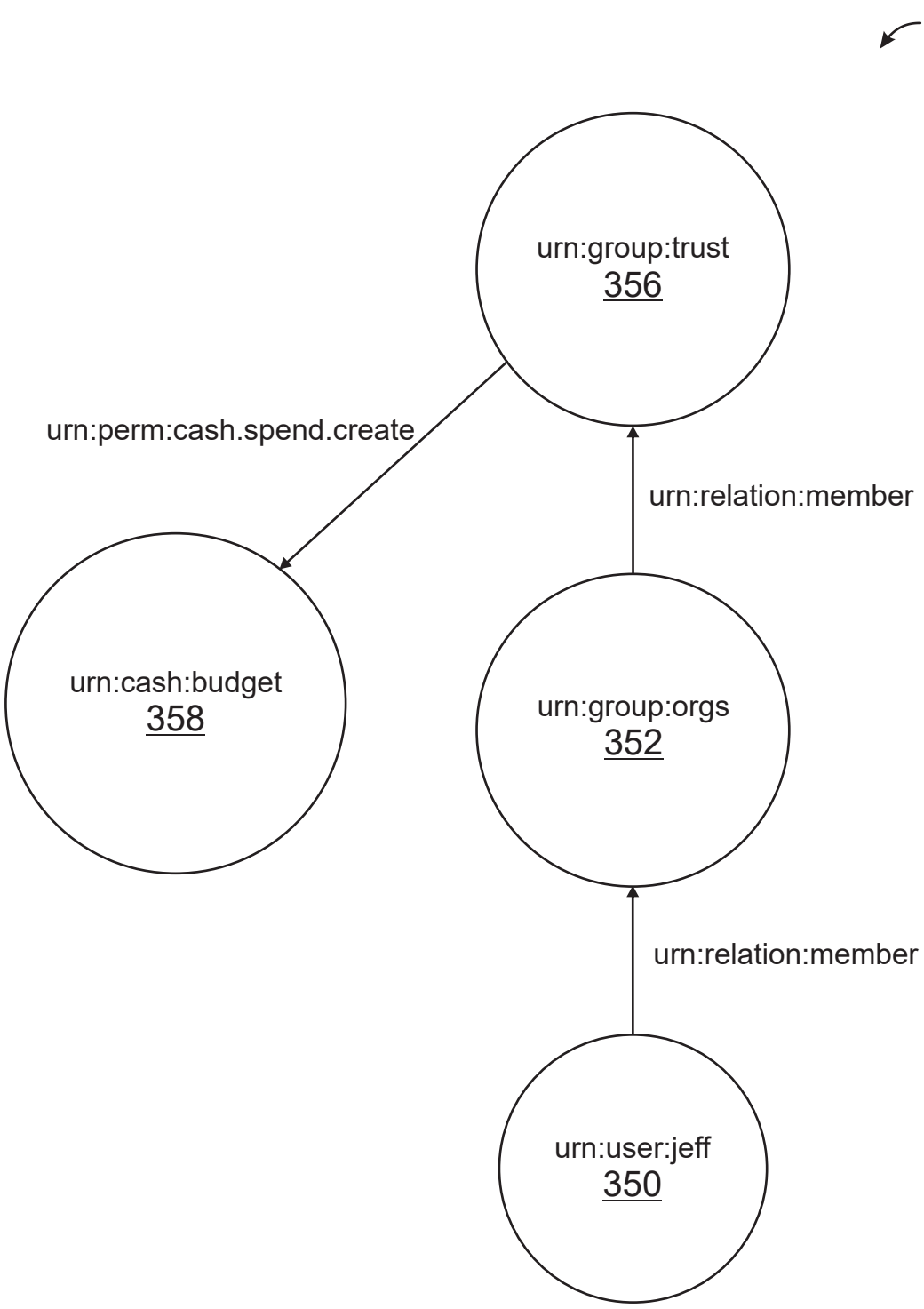
300c
urn:group:trust
356
urn:perm:cash.spend.create
urn:relation:member
urn:cash:budget
358
urn:group:orgs
352
urn:relation:member
urn:user:jeff
350

FIG. 3C

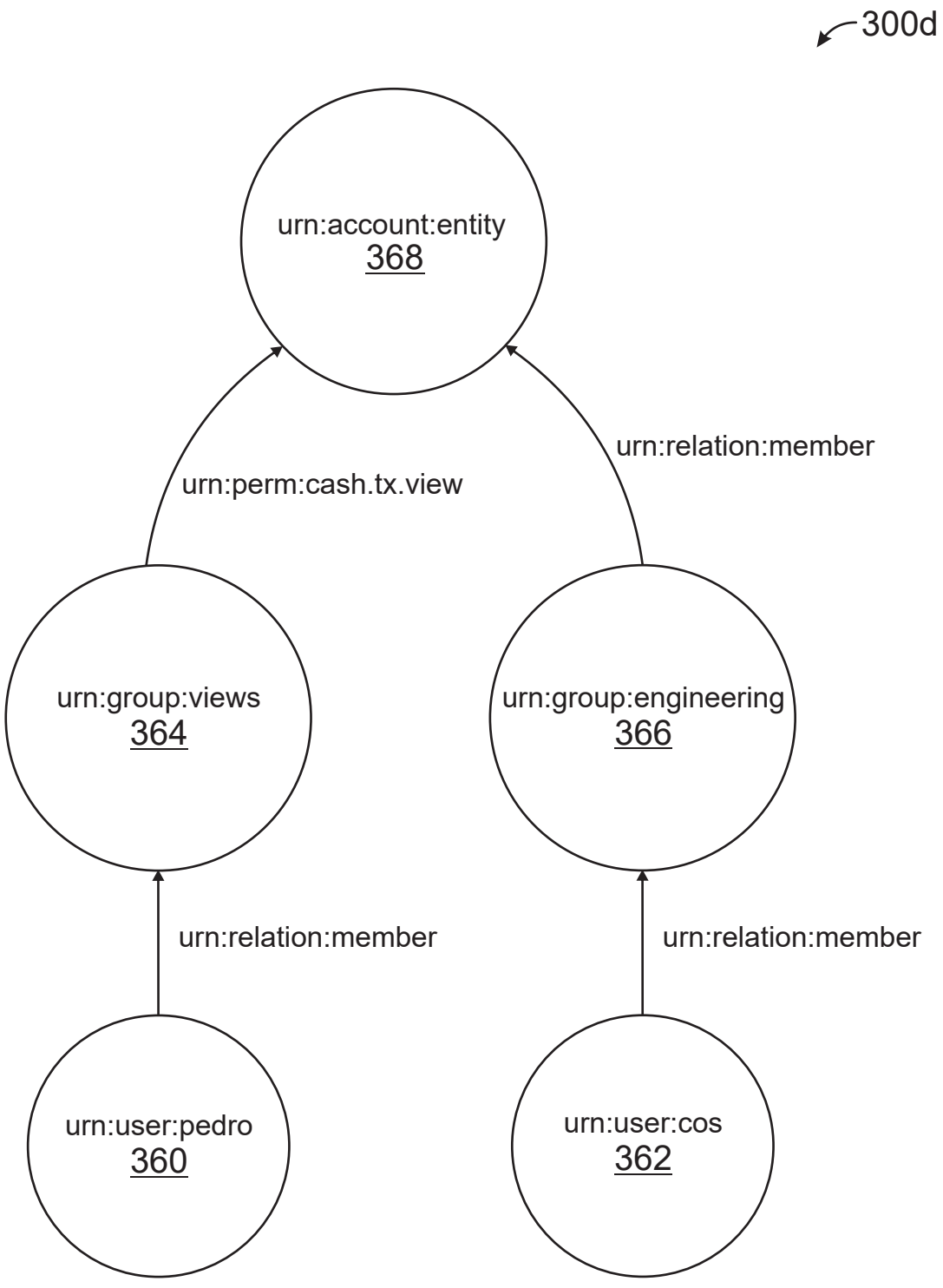
300d
urn:account:entity
368
urn:perm:cash.tx.view
urn:relation:member
urn:group:views
364
urn:group:engineering
366
urn:relation:member
urn:relation:member
urn:user:pedro
360
urn:user:cos
362

FIG. 3D

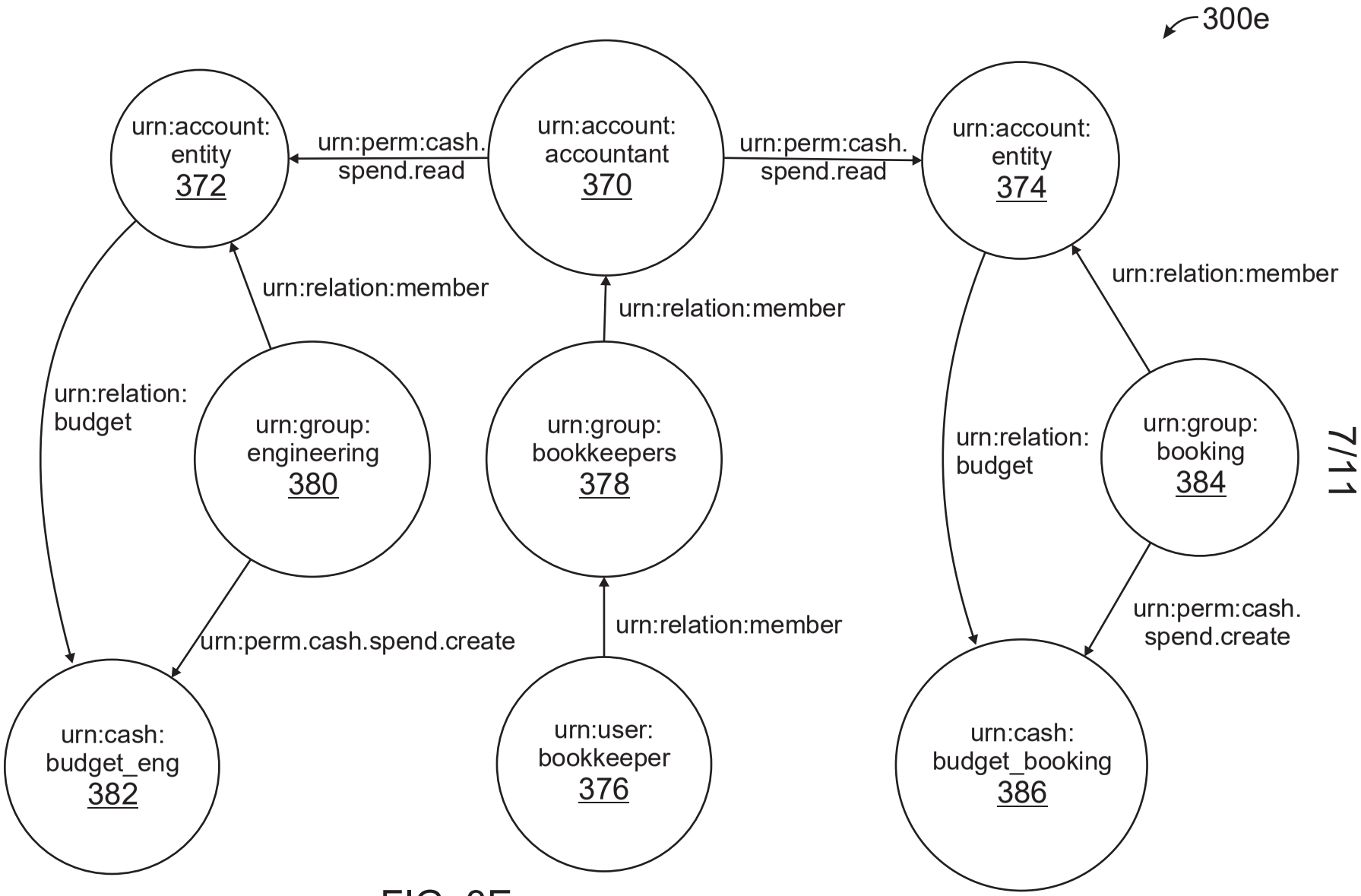
300e
urn:account:
entity
372
urn:perm:cash.
spend.read
urn:account:
accountant
370
urn:perm:cash.
spend.read
urn:account:
entity
374
urn:relation:member
urn:relation:member
urn:relation:member
urn:relation:
budget
urn:group:
engineering
380
urn:group:
bookkeepers
378
urn:relation:
budget
urn:group:
booking
384
urn:perm.cash.spend.create
urn:relation:member
urn:perm:cash.
spend.create
urn:cash:
budget_eng
382
urn:user:
bookkeeper
376
urn:cash:
budget_booking
386

FIG. 3E

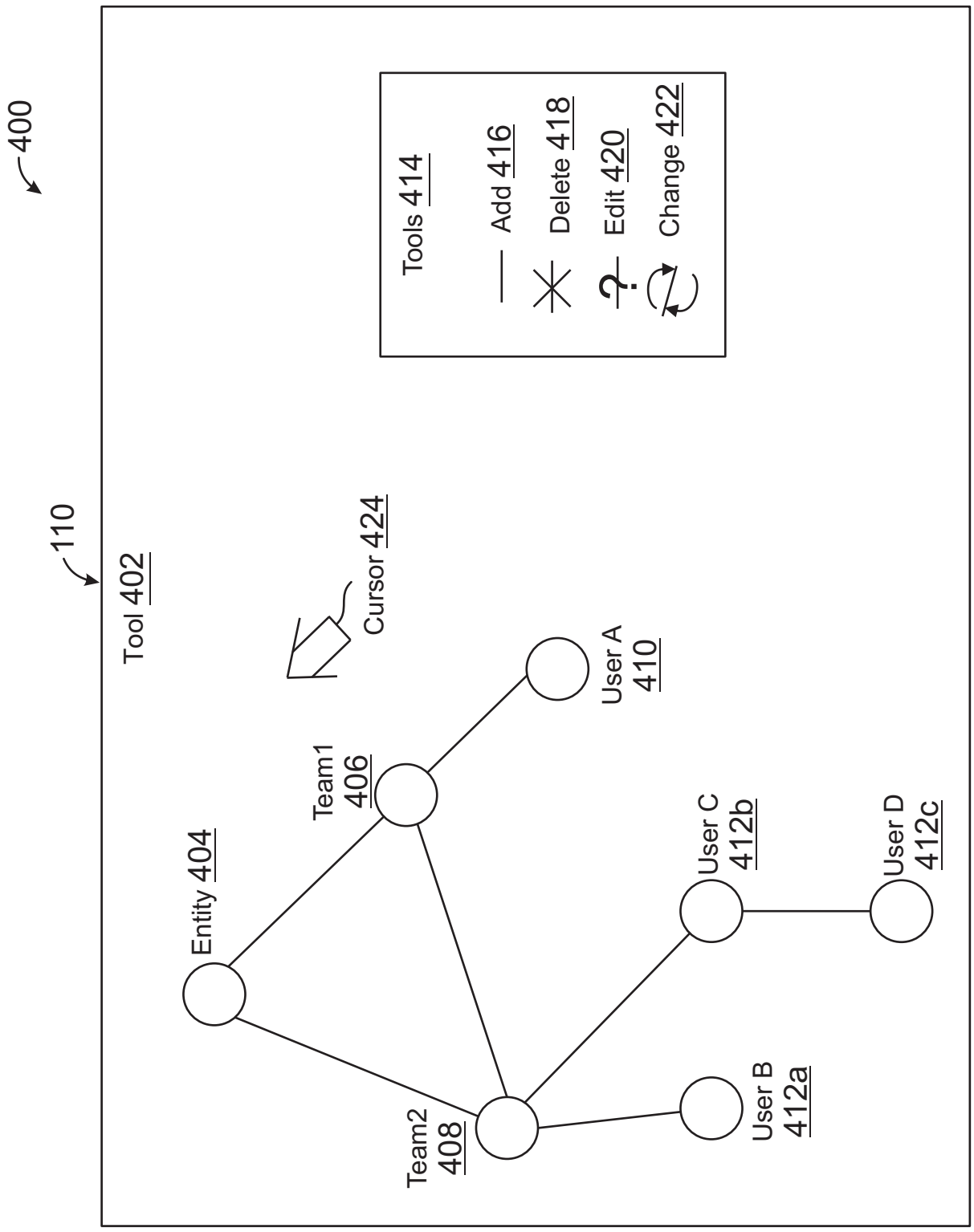
400
110
Tool 402
Tools 414
Add 416
Delete 418
Edit 420
Change 422
Cursor 424
Entity 404
Team1 406
Team2 408
User A 410
User B 412a
User C 412b
User D 412c

FIG. 4

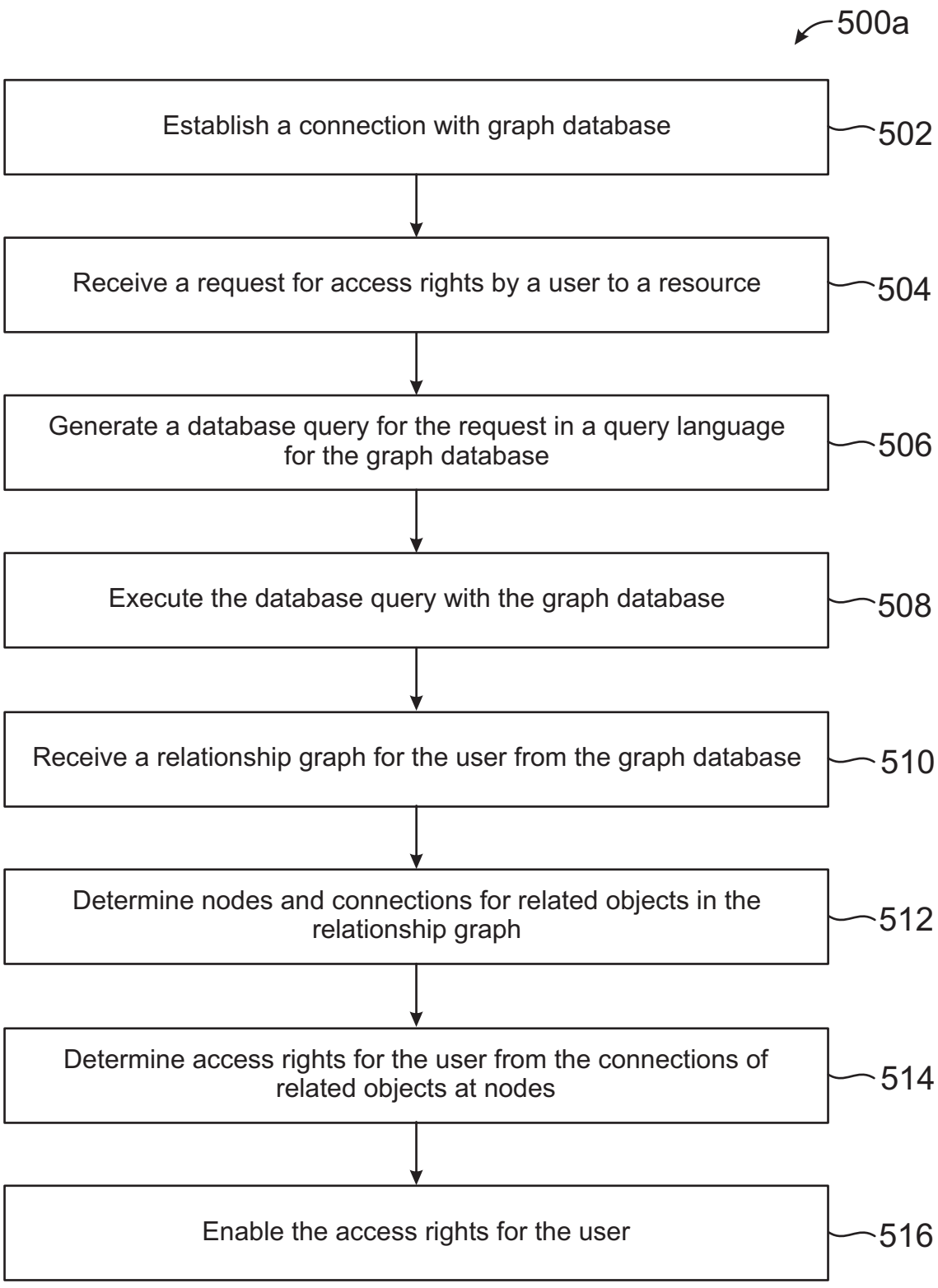
500a
Establish a connection with graph database
502
Receive a request for access rights by a user to a resource
504
Generate a database query for the request in a query language for the graph database
506
Execute the database query with the graph database
508
Receive a relationship graph for the user from the graph database
510
Determine nodes and connections for related objects in the relationship graph
512
Determine access rights for the user from the connections of related objects at nodes
514
Enable the access rights for the user
516

FIG. 5A

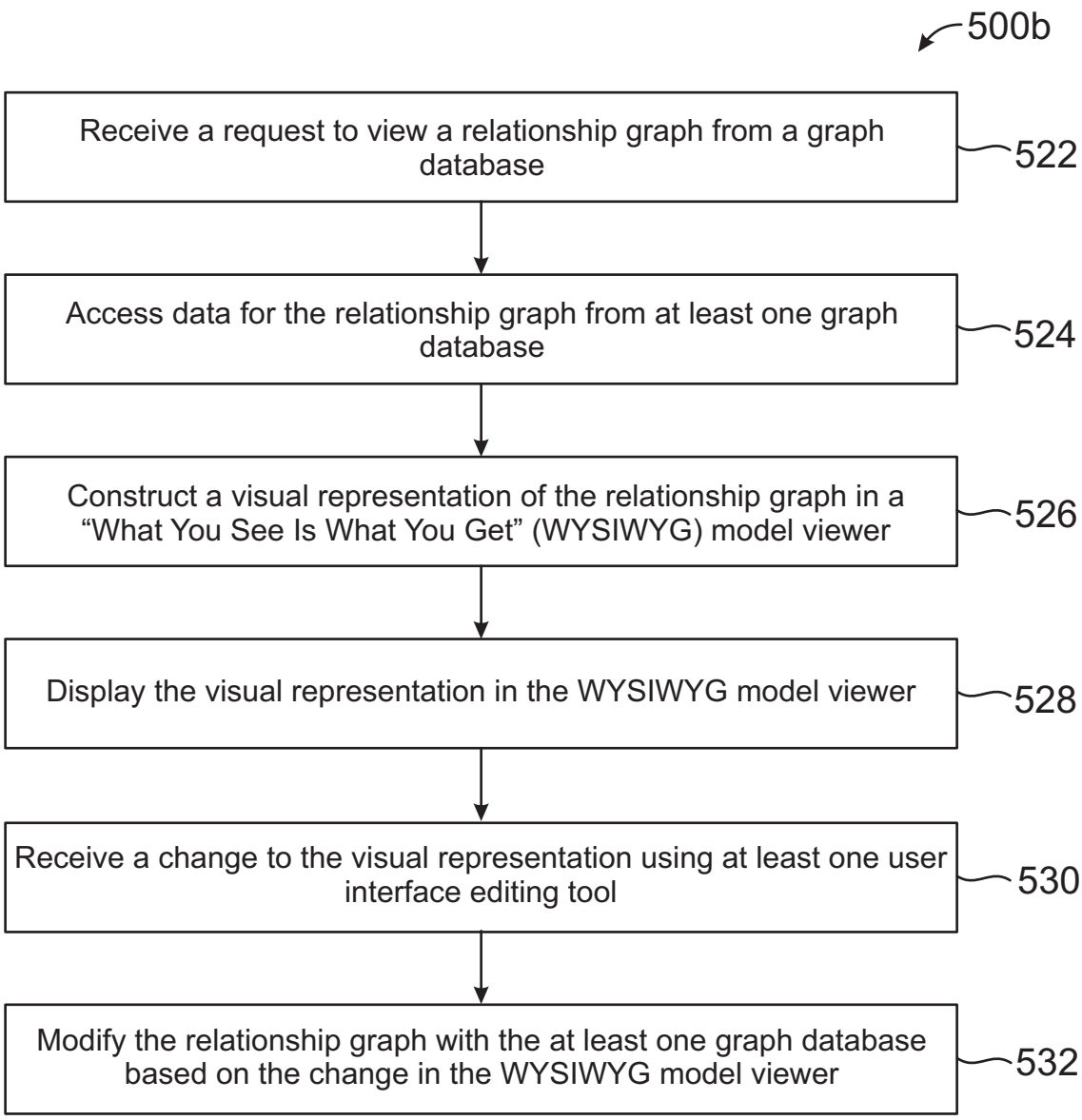
500b
Receive a request to view a relationship graph from a graph database
522
Access data for the relationship graph from at least one graph database
524
Construct a visual representation of the relationship graph in a "What You See Is What You Get" (WYSIWYG) model viewer
526
Display the visual representation in the WYSIWYG model viewer
528
Receive a change to the visual representation using at least one user interface editing tool
530
Modify the relationship graph with the at least one graph database based on the change in the WYSIWYG model viewer
532

FIG. 5B

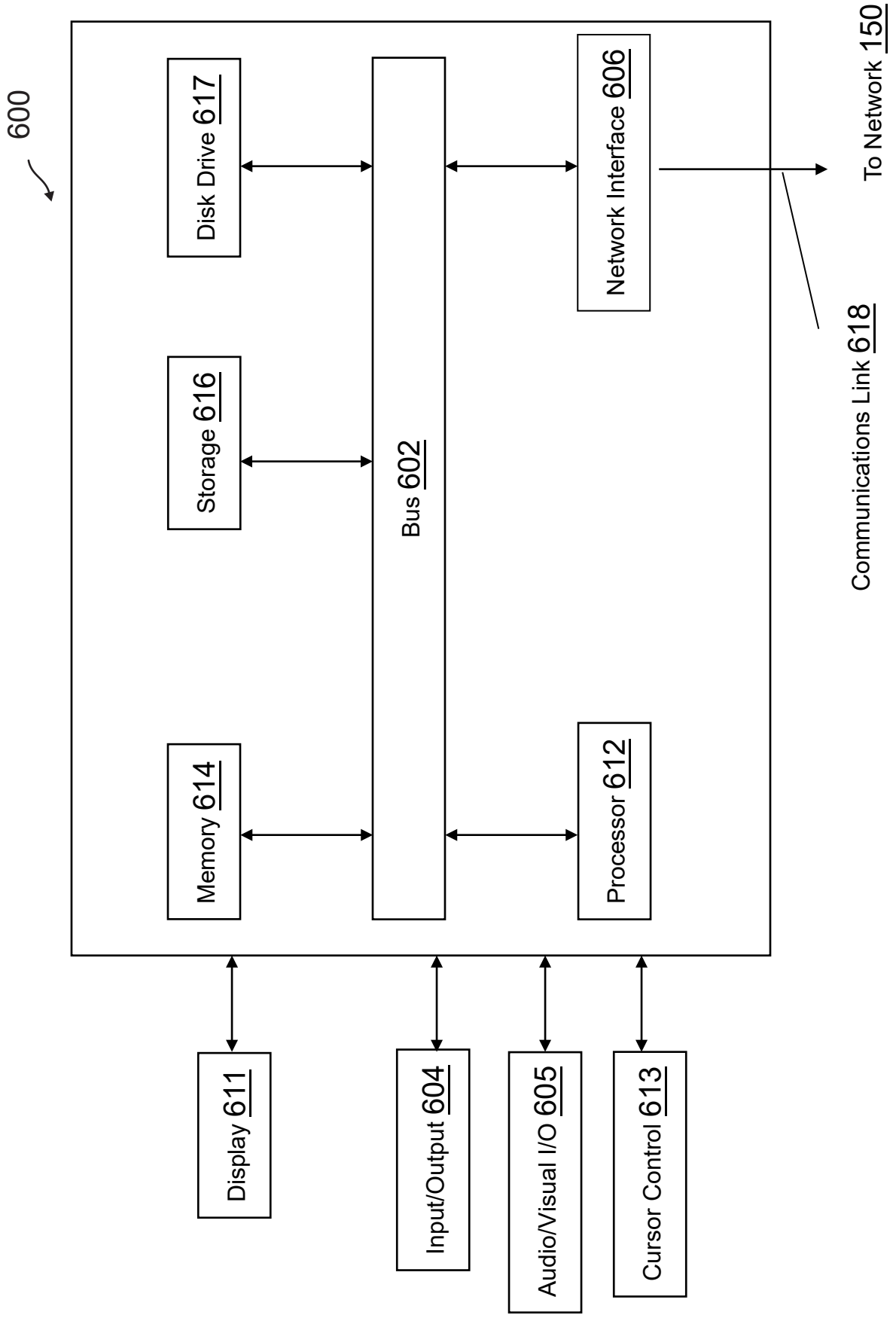
600
Disk Drive 617
Storage 616
Memory 614
Bus 602
Network Interface 606
Processor 612
To Network 150
Communications Link 618
Display 611
Input/Output 604
Audio/Visual I/O 605
Cursor Control 613

FIG. 6