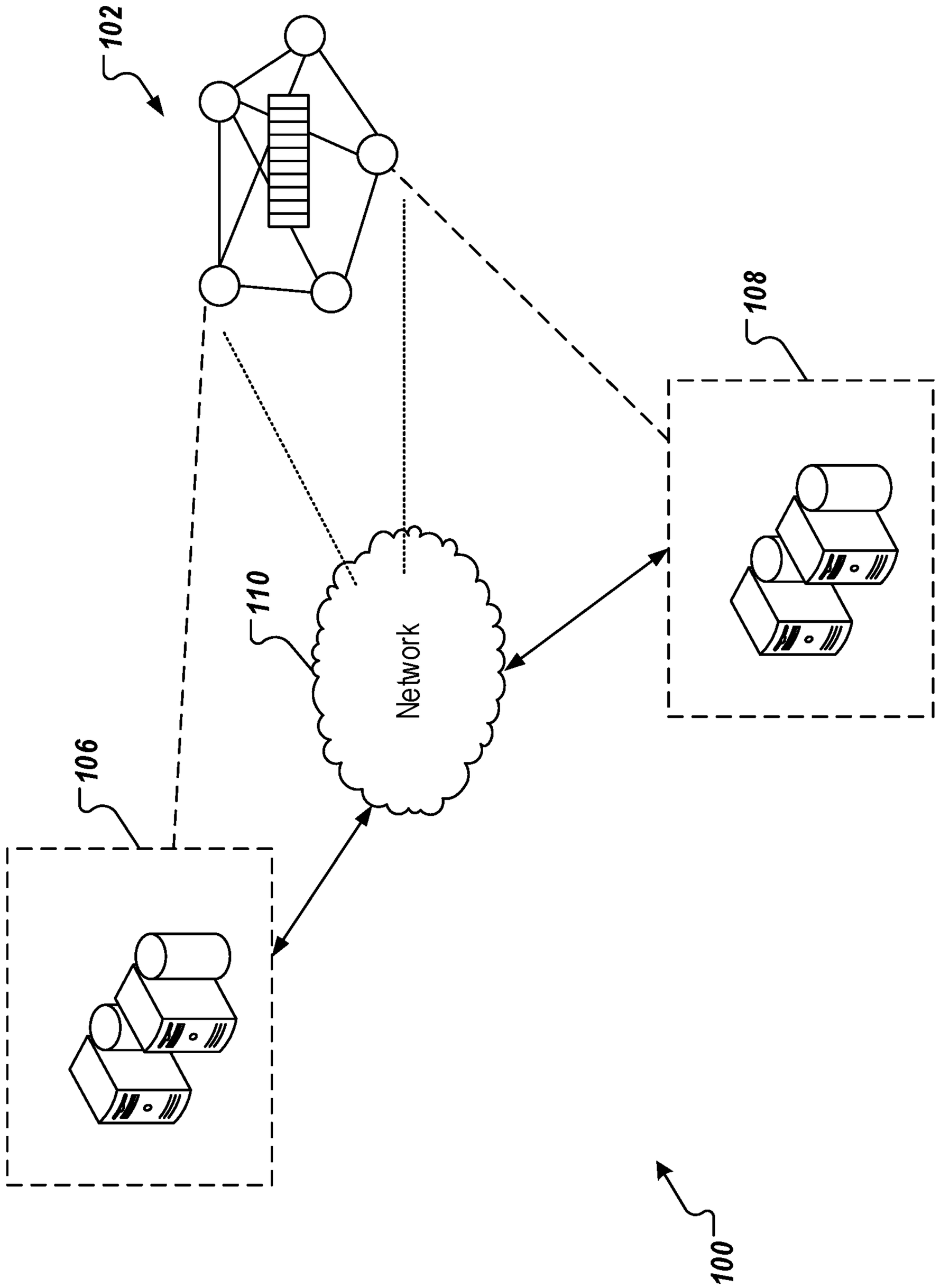

FIG.1

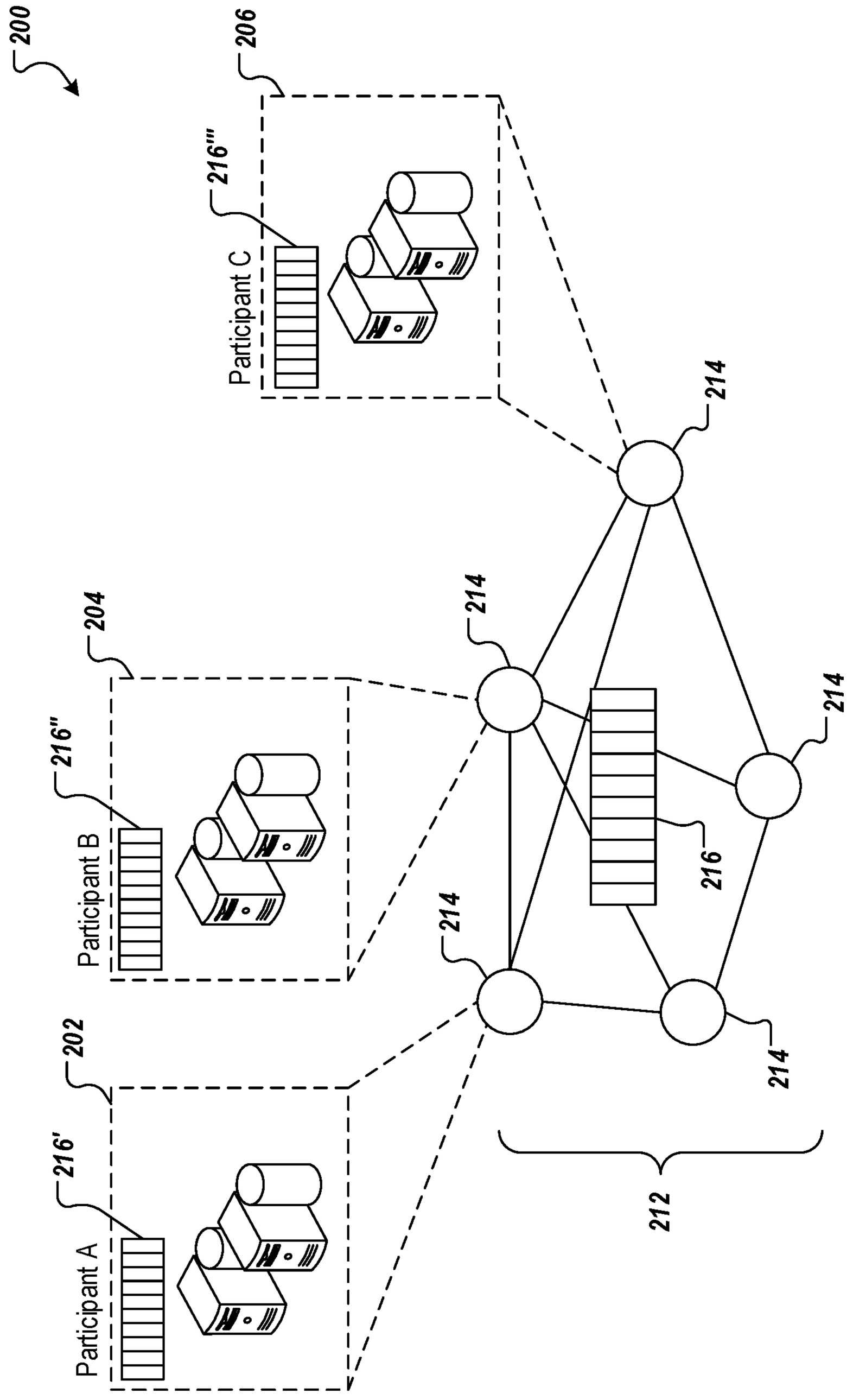
200
206
216'''
Participant C
214
204
214
214
216''
Participant B
216
214
202
216'
Participant A
212

FIG.2

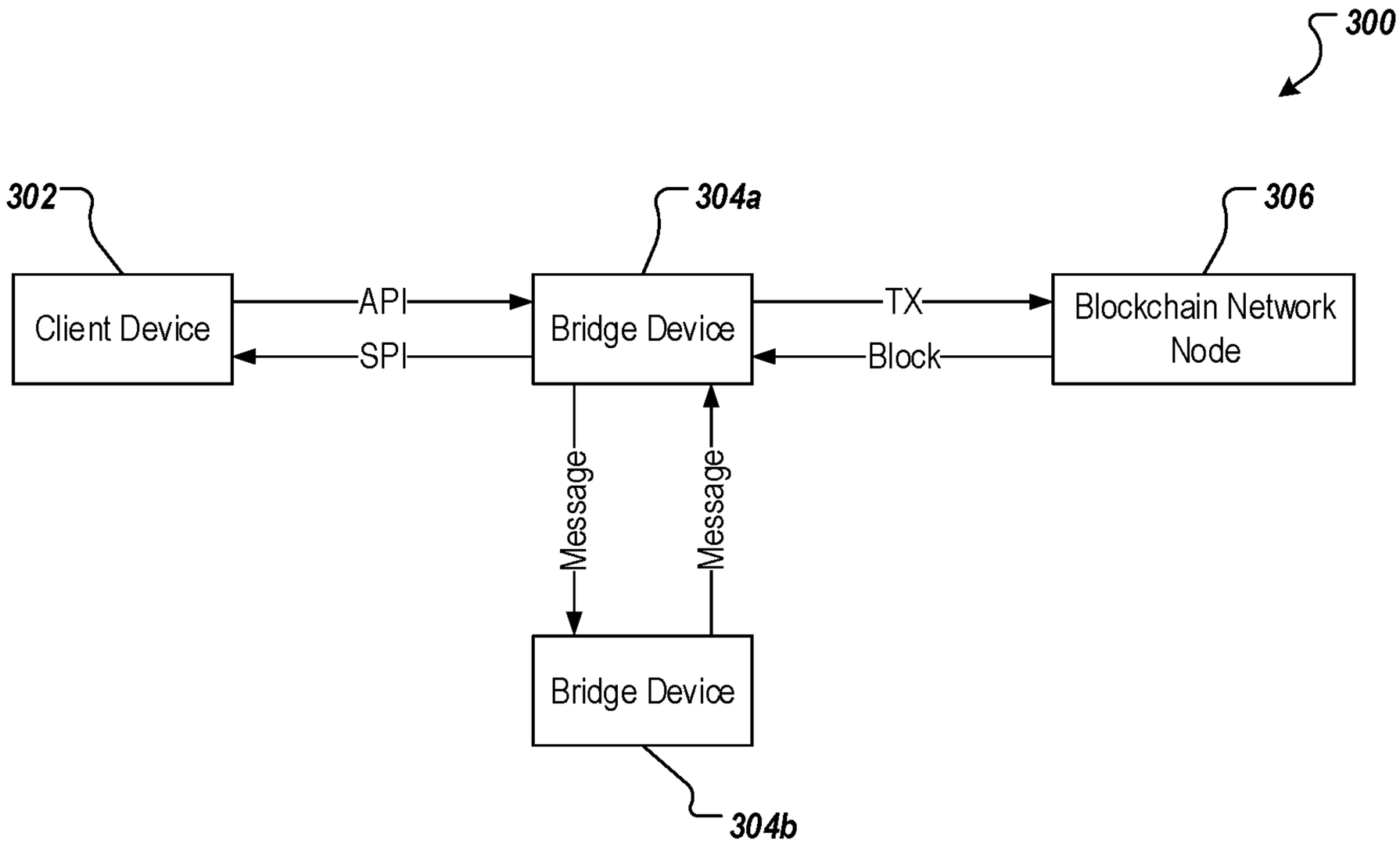
300
302
304a
306
Client Device
API
SPI
Bridge Device
TX
Block
Blockchain Network Node
Message
Message
Bridge Device
304b

FIG.3

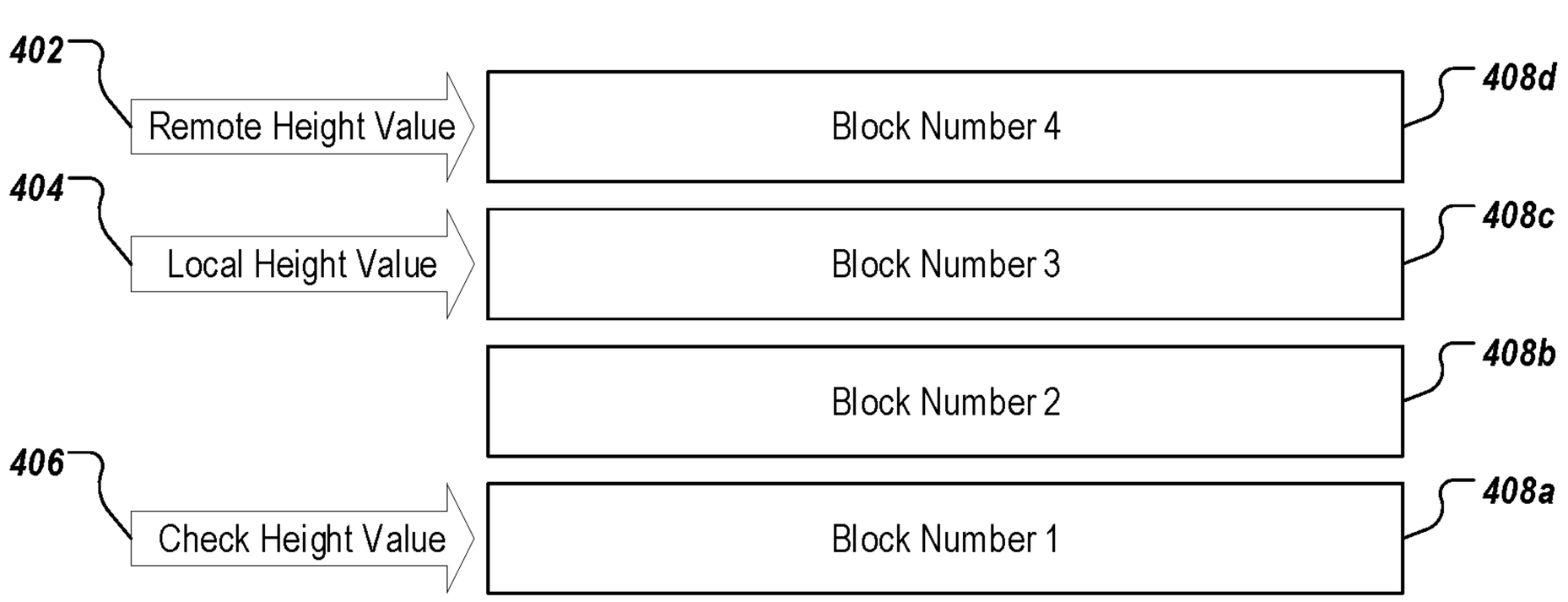
402
Remote Height Value
404
Local Height Value
406
Check Height Value
Block Number 4
Block Number 3
Block Number 2
Block Number 1
408d
408c
408b
408a

FIG.4

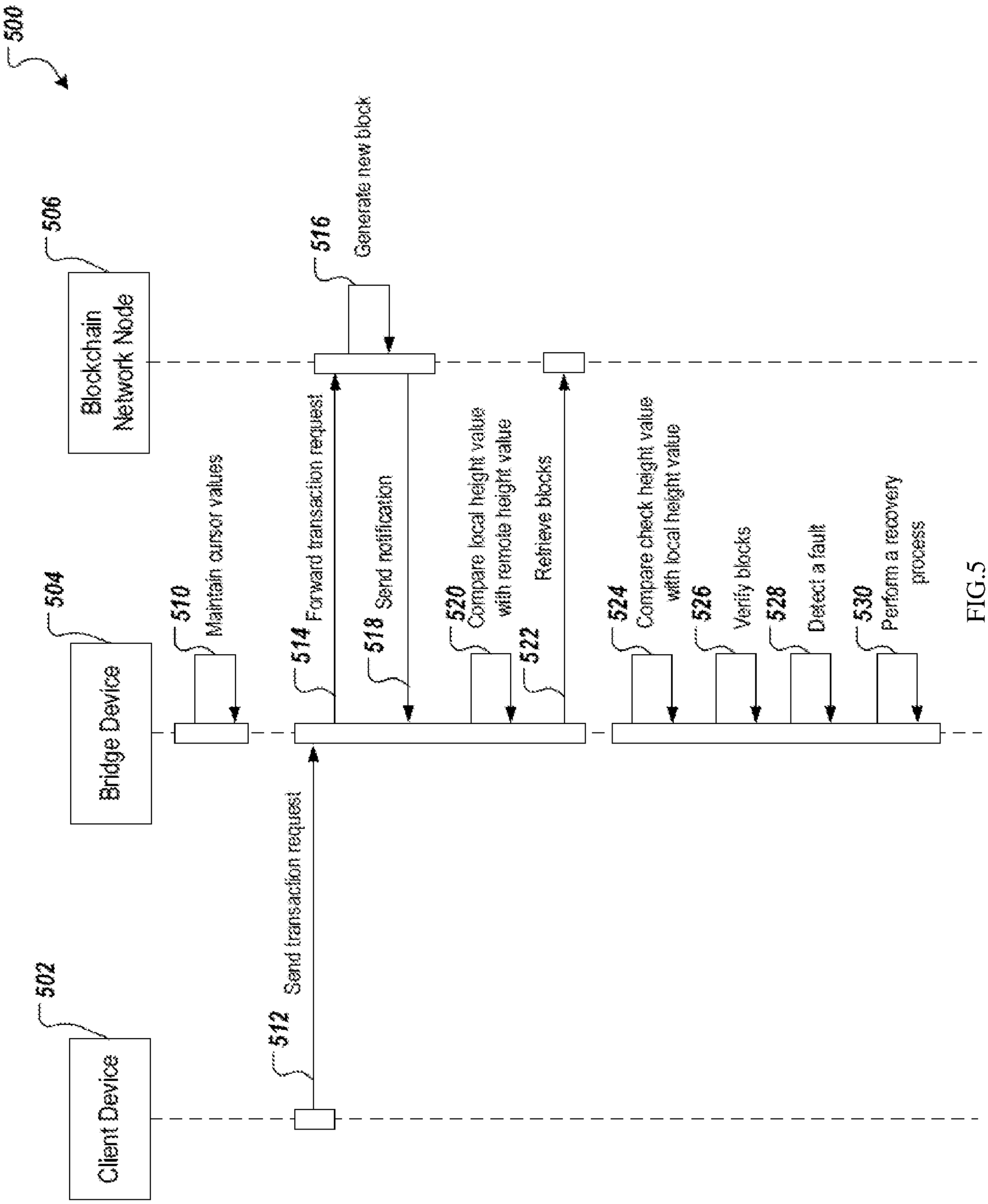
500
Client Device
502
Bridge Device
504
Blockchain Network Node
506
Send transaction request
512
Maintain cursor values
510
Forward transaction request
514
Send notification
518
Compare local height value with remote height value
520
Retrieve blocks
522
Generate a new block
516
Compare check height value with local height value
524
Verify blocks
526
Detect a fault
528
Perform a recovery process
530

FIG.5

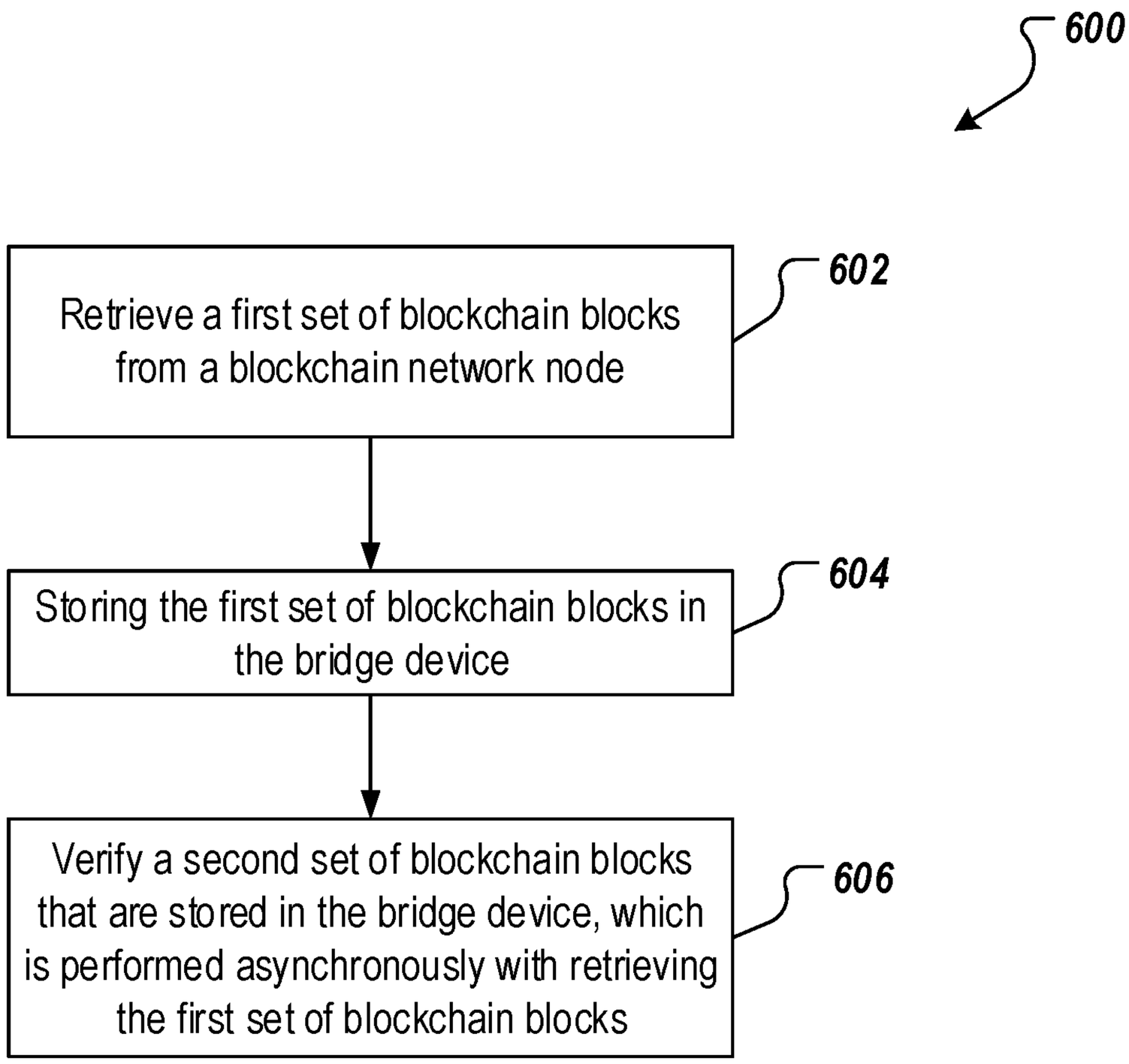
600
Retrieve a first set of blockchain blocks from a blockchain network node
602
Storing the first set of blockchain blocks in the bridge device
604
Verify a second set of blockchain blocks that are stored in the bridge device, which is performed asynchronously with retrieving the first set of blockchain blocks
606

FIG.6A

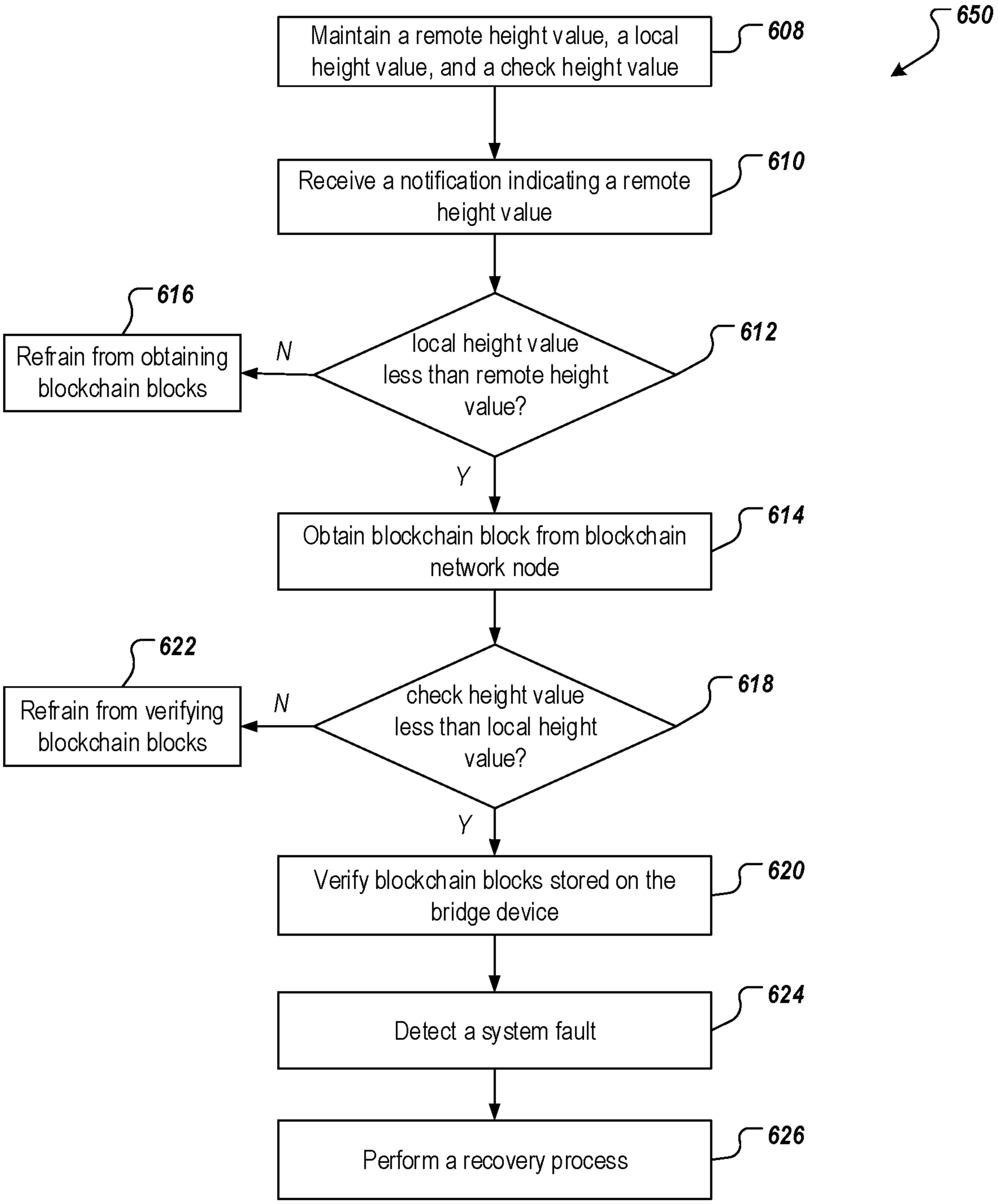
650
Maintain a remote height value, a local height value, and a check height value
608
Receive a notification indicating a remote height value
610
local height value less than remote height value?
612
N
Refrain from obtaining blockchain blocks
616
Y
Obtain blockchain block from blockchain network node
614
check height value less than local height value?
618
N
Refrain from verifying blockchain blocks
622
Y
Verify blockchain blocks stored on the bridge device
620
Detect a system fault
624
Perform a recovery process
626

FIG.6B

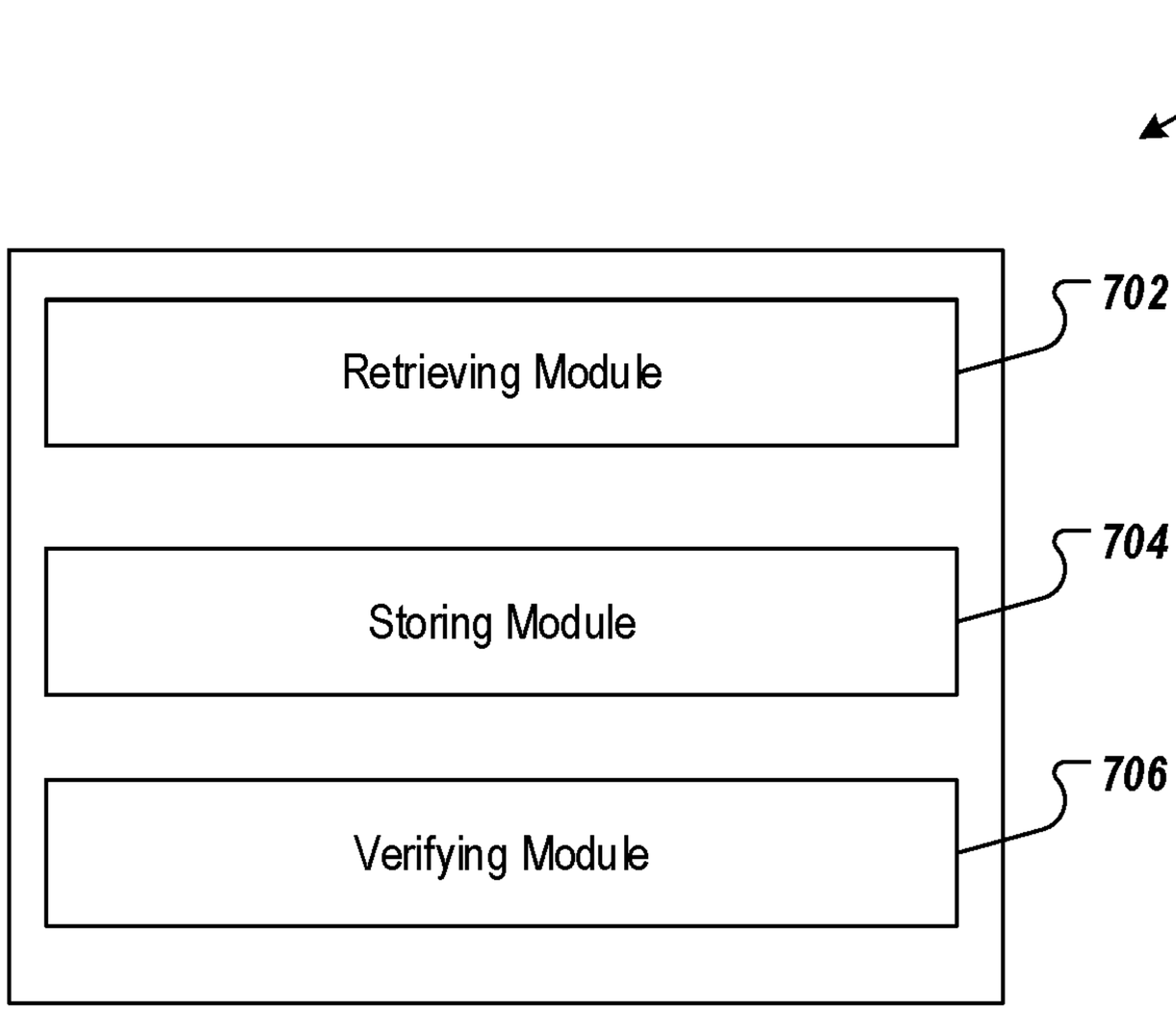
700
702
Retrieving Module
704
Storing Module
706
Verifying Module

FIG.7