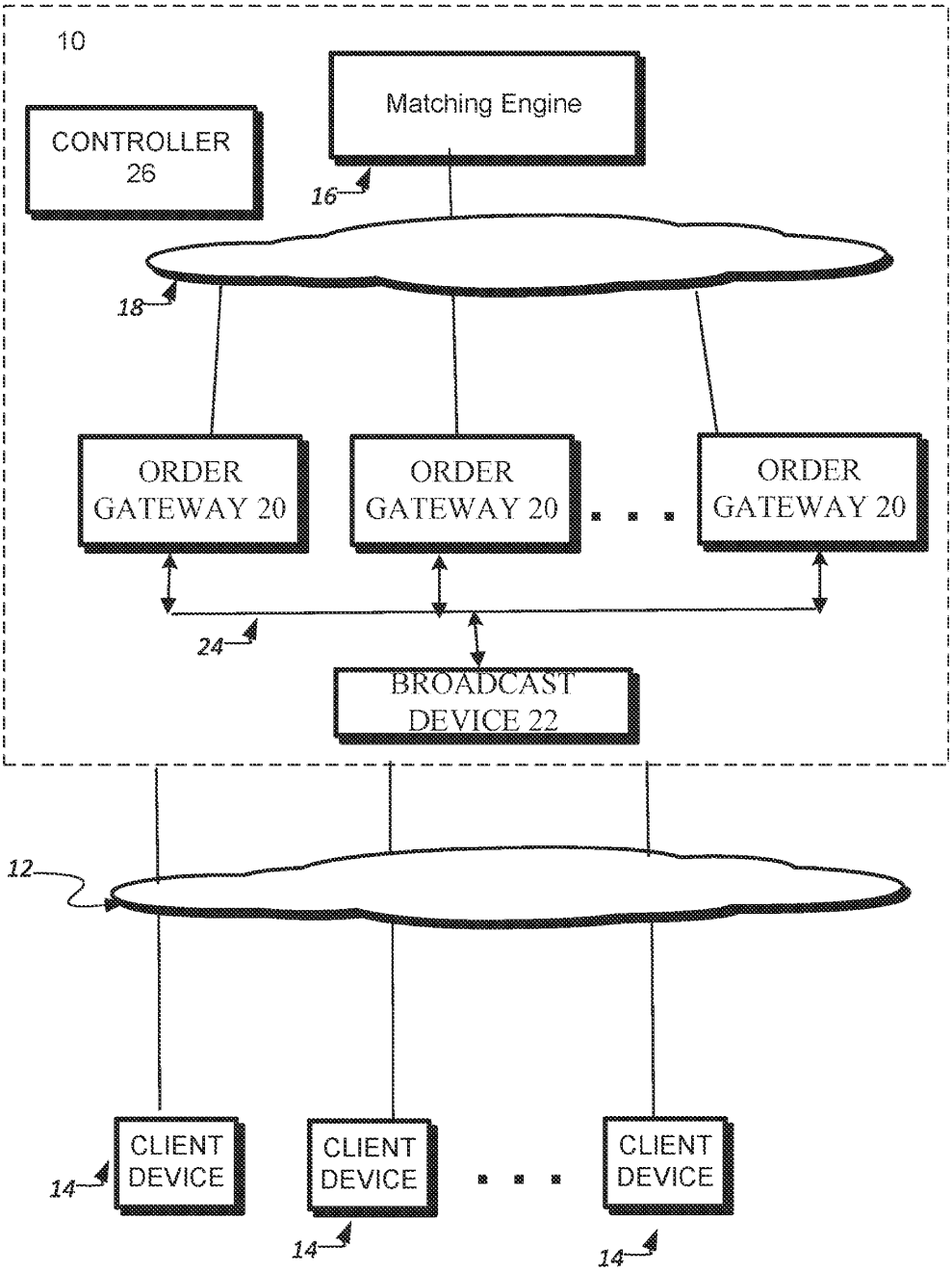
FIG. 1


10
Matching Engine
CONTROLLER 26
16
18
ORDER GATEWAY 20
ORDER GATEWAY 20
ORDER GATEWAY 20
24
BROADCAST DEVICE 22
12
CLIENT DEVICE
CLIENT DEVICE
CLIENT DEVICE
14
14
14

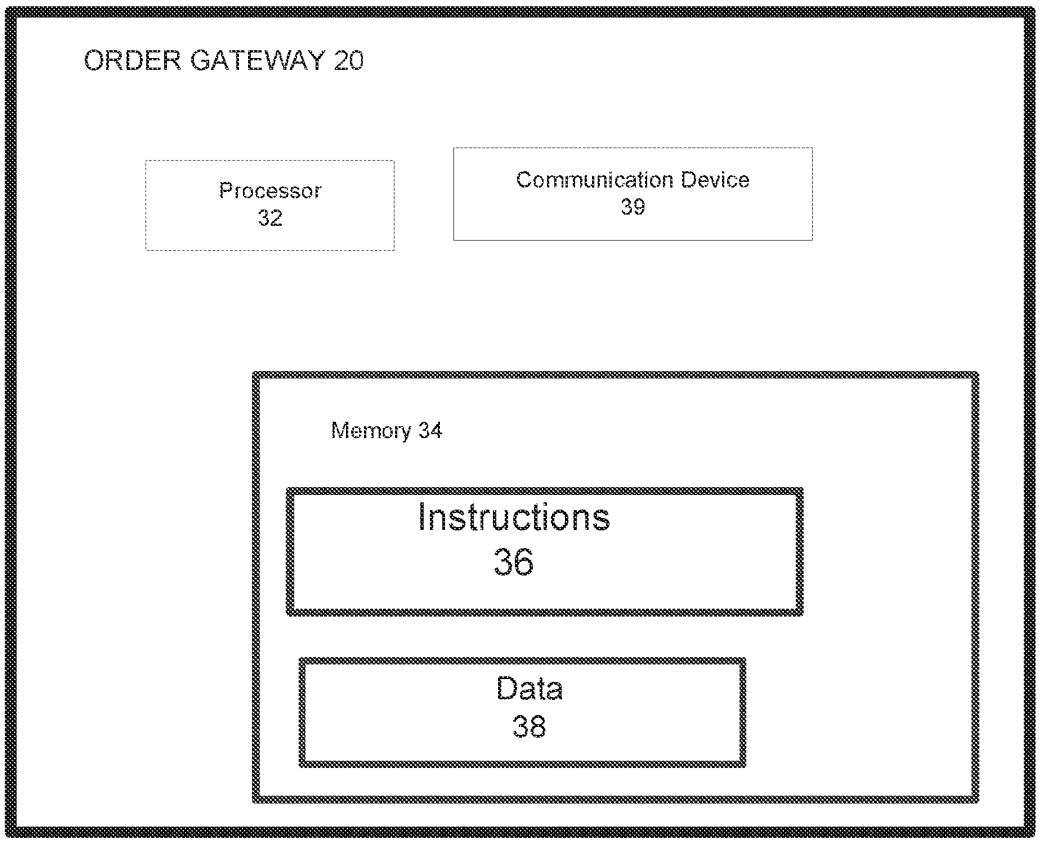

ORDER GATEWAY 20
Processor
32
Communication Device
39
Memory 34
Instructions
36
Data
38

FIG. 2

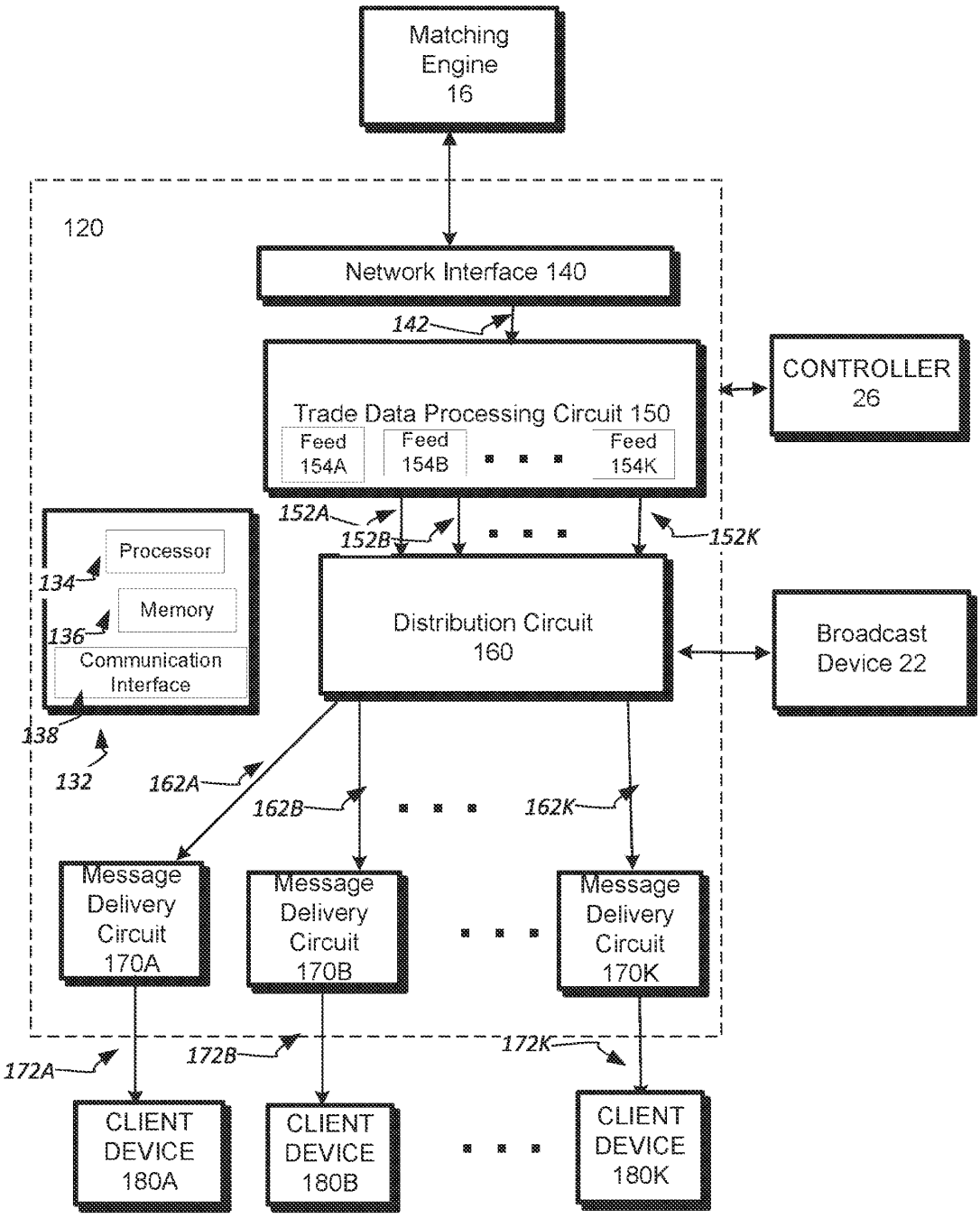

Matching Engine 16
120
Network Interface 140
142
Trade Data Processing Circuit 150
Feed 154A
Feed 154B
Feed 154K
CONTROLLER 26
152A
152B
152K
Processor
134
Memory
136
Communication Interface
138
132
Distribution Circuit 160
Broadcast Device 22
162A
162B
162K
Message Delivery Circuit 170A
Message Delivery Circuit 170B
Message Delivery Circuit 170K
172A
172B
172K
CLIENT DEVICE 180A
CLIENT DEVICE 180B
CLIENT DEVICE 180K

FIG. 3

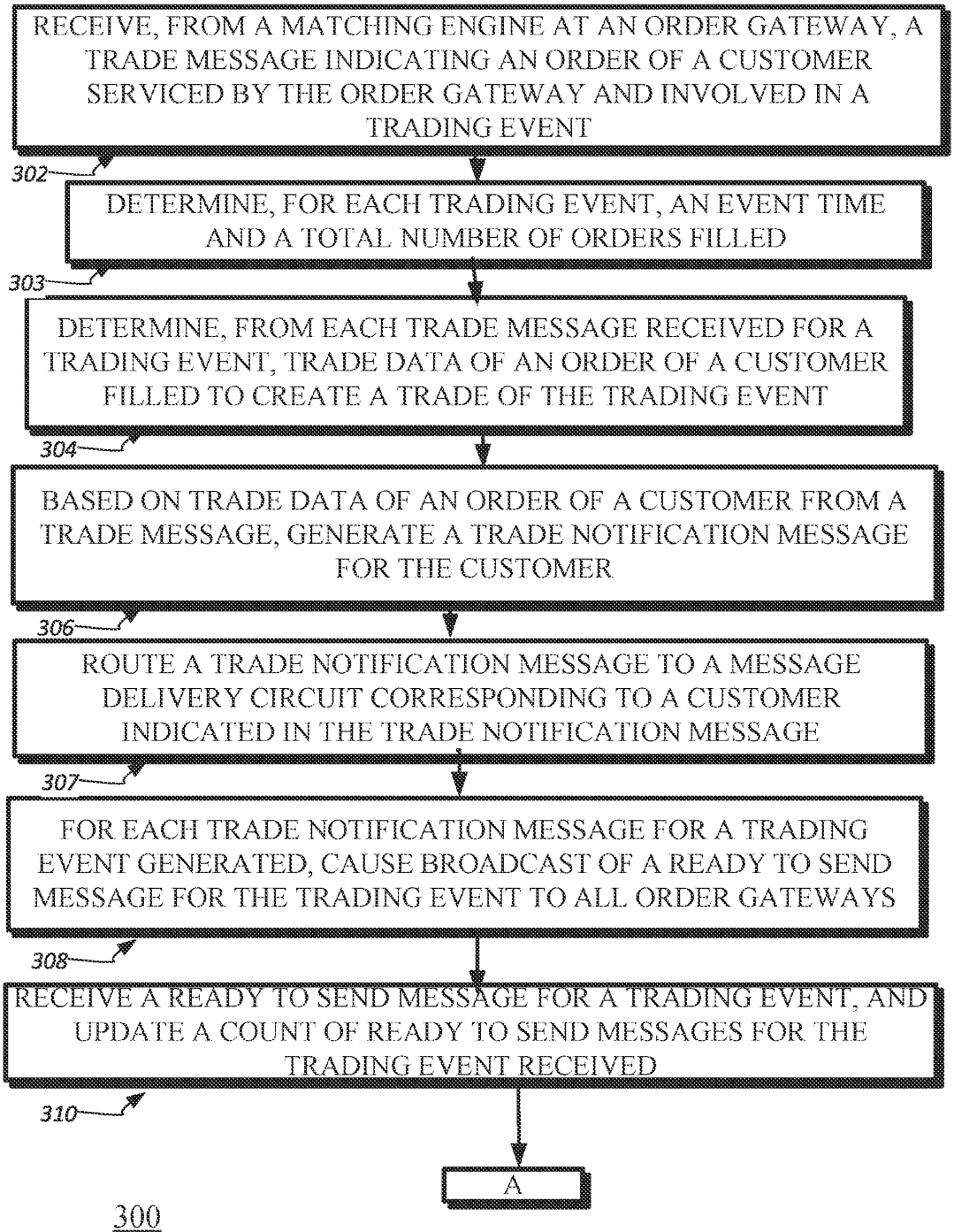

RECEIVE, FROM A MATCHING ENGINE AT AN ORDER GATEWAY, A TRADE MESSAGE INDICATING AN ORDER OF A CUSTOMER SERVICED BY THE ORDER GATEWAY AND INVOLVED IN A TRADING EVENT
302
DETERMINE, FOR EACH TRADING EVENT, AN EVENT TIME AND A TOTAL NUMBER OF ORDERS FILLED
303
DETERMINE, FROM EACH TRADE MESSAGE RECEIVED FOR A TRADING EVENT, TRADE DATA OF AN ORDER OF A CUSTOMER FILLED TO CREATE A TRADE OF THE TRADING EVENT
304
BASED ON TRADE DATA OF AN ORDER OF A CUSTOMER FROM A TRADE MESSAGE, GENERATE A TRADE NOTIFICATION MESSAGE FOR THE CUSTOMER
306
ROUTE A TRADE NOTIFICATION MESSAGE TO A MESSAGE DELIVERY CIRCUIT CORRESPONDING TO A CUSTOMER INDICATED IN THE TRADE NOTIFICATION MESSAGE
307
FOR EACH TRADE NOTIFICATION MESSAGE FOR A TRADING EVENT GENERATED, CAUSE BROADCAST OF A READY TO SEND MESSAGE FOR THE TRADING EVENT TO ALL ORDER GATEWAYS
308
RECEIVE A READY TO SEND MESSAGE FOR A TRADING EVENT, AND UPDATE A COUNT OF READY TO SEND MESSAGES FOR THE TRADING EVENT RECEIVED
310
A
300

FIG. 4A

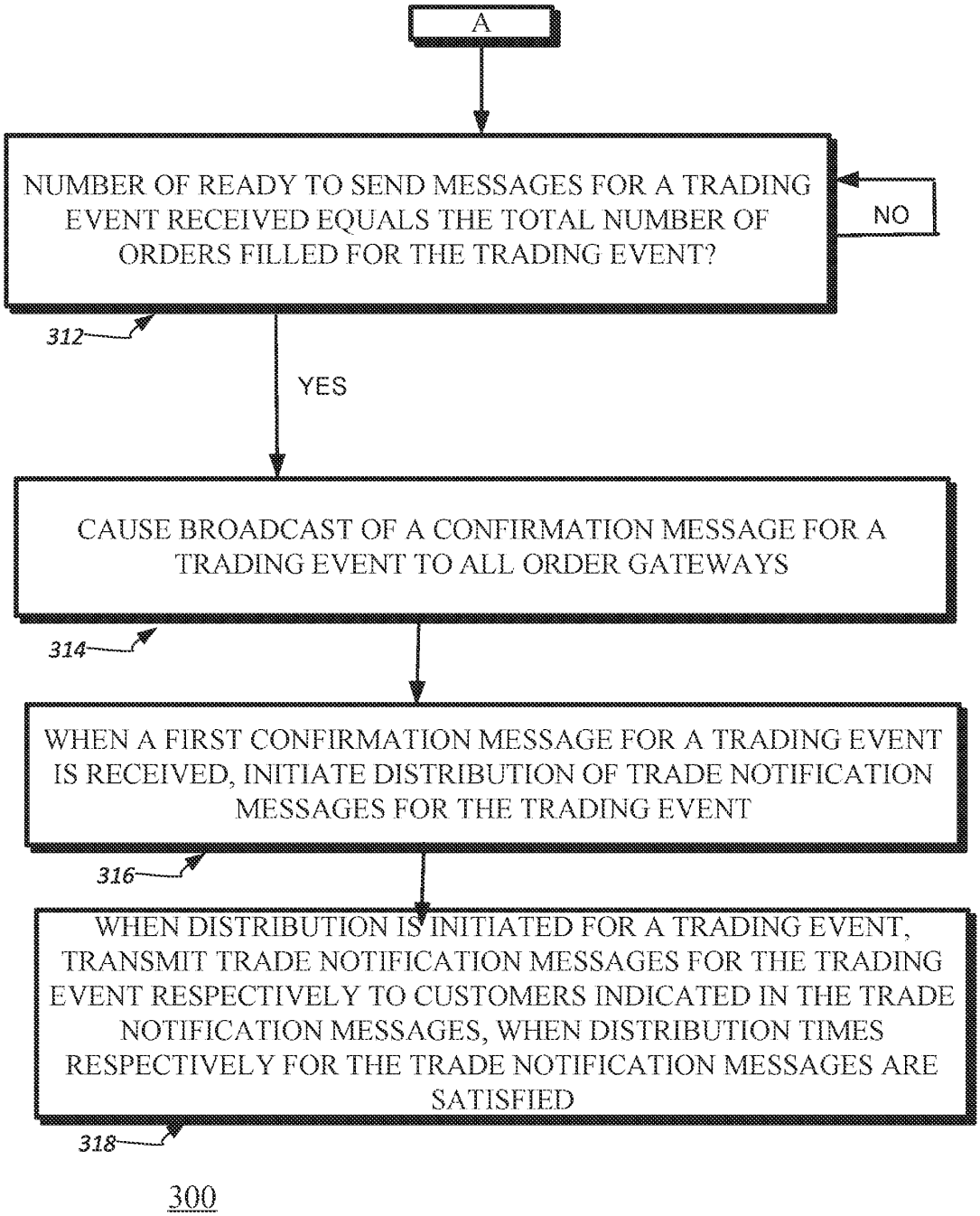

A
NUMBER OF READY TO SEND MESSAGES FOR A TRADING EVENT RECEIVED EQUALS THE TOTAL NUMBER OF ORDERS FILLED FOR THE TRADING EVENT?
NO
312
YES
CAUSE BROADCAST OF A CONFIRMATION MESSAGE FOR A TRADING EVENT TO ALL ORDER GATEWAYS
314
WHEN A FIRST CONFIRMATION MESSAGE FOR A TRADING EVENT IS RECEIVED, INITIATE DISTRIBUTION OF TRADE NOTIFICATION MESSAGES FOR THE TRADING EVENT
316
WHEN DISTRIBUTION IS INITIATED FOR A TRADING EVENT, TRANSMIT TRADE NOTIFICATION MESSAGES FOR THE TRADING EVENT RESPECTIVELY TO CUSTOMERS INDICATED IN THE TRADE NOTIFICATION MESSAGES, WHEN DISTRIBUTION TIMES RESPECTIVELY FOR THE TRADE NOTIFICATION MESSAGES ARE SATISFIED
318
300

FIG. 4B

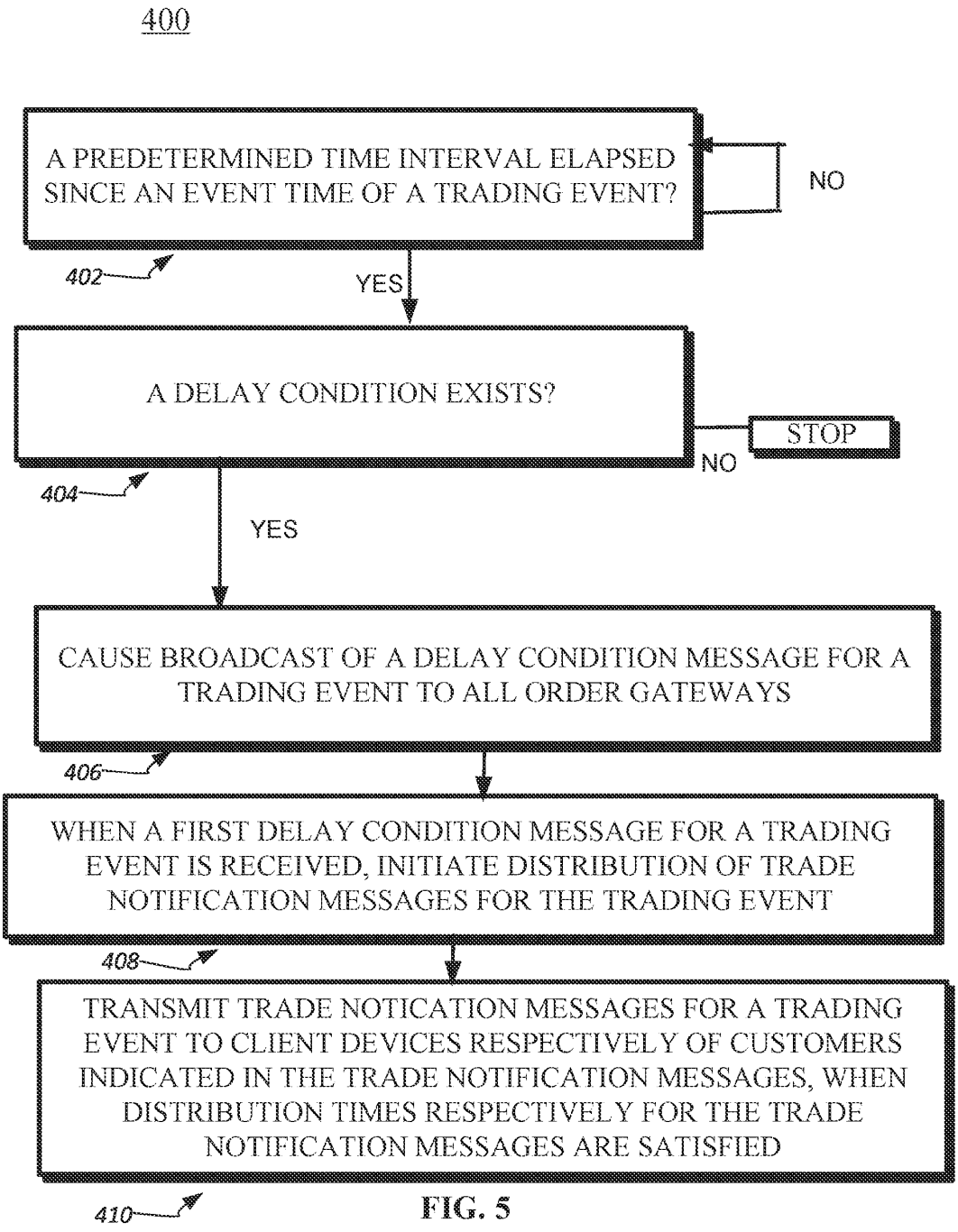
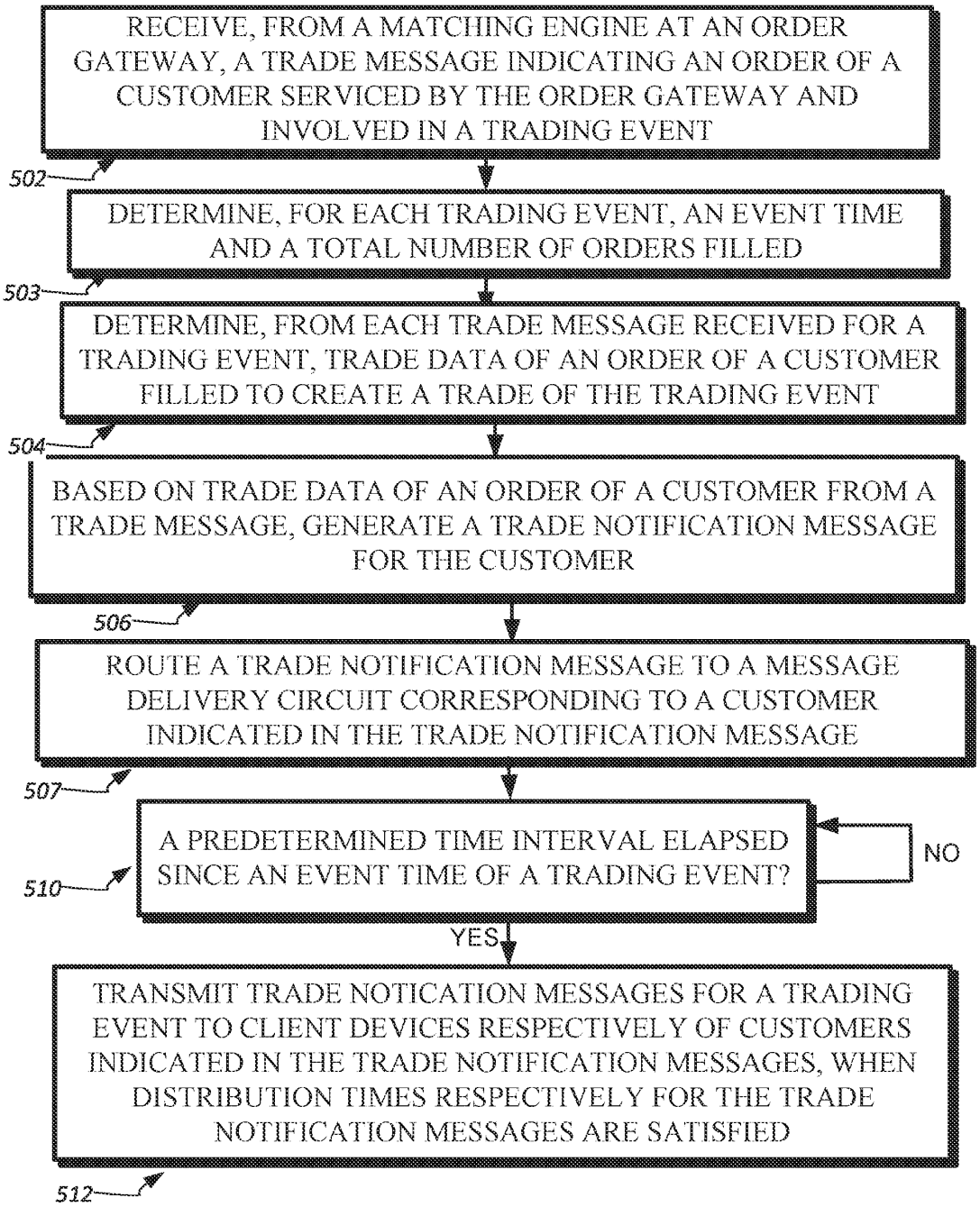

400
A PREDETERMINED TIME INTERVAL ELAPSED SINCE AN EVENT TIME OF A TRADING EVENT?
NO
402
YES
A DELAY CONDITION EXISTS?
STOP
NO
404
YES
CAUSE BROADCAST OF A DELAY CONDITION MESSAGE FOR A TRADING EVENT TO ALL ORDER GATEWAYS
406
WHEN A FIRST DELAY CONDITION MESSAGE FOR A TRADING EVENT IS RECEIVED, INITIATE DISTRIBUTION OF TRADE NOTIFICATION MESSAGES FOR THE TRADING EVENT
408
TRANSMIT TRADE NOTICATION MESSAGES FOR A TRADING EVENT TO CLIENT DEVICES RESPECTIVELY OF CUSTOMERS INDICATED IN THE TRADE NOTIFICATION MESSAGES, WHEN DISTRIBUTION TIMES RESPECTIVELY FOR THE TRADE NOTIFICATION MESSAGES ARE SATISFIED
410

FIG. 5

FIG. 6

Customer	Order	Trade message	Trade(s) indicated in trade notification message	Trade notification message	Order gateway	Client device	Propagation delay offset (nsec)	First confirmation time at order gateway (microseconds)	Distribution time at order gateway (microseconds)	Transmission sequence for trading event
A	A	A	AB, AC, AD and AE	A	120A	180A(A)	10	10	10.0100	2
B	B	B	AB	B	120A	180B(A)	15	10	10.015	3
C	C	C	AC	C	120A	180C(A)	5	10	10.005	1
D	D	D	AD	D	120B	180A(B)	20	9	9.020	4
E	E	E	AE	E	120B	180B(B)	15	9	9.015	3


RECEIVE, FROM A MATCHING ENGINE AT AN ORDER GATEWAY, A TRADE MESSAGE INDICATING AN ORDER OF A CUSTOMER SERVICED BY THE ORDER GATEWAY AND INVOLVED IN A TRADING EVENT
502
DETERMINE, FOR EACH TRADING EVENT, AN EVENT TIME AND A TOTAL NUMBER OF ORDERS FILLED
503
DETERMINE, FROM EACH TRADE MESSAGE RECEIVED FOR A TRADING EVENT, TRADE DATA OF AN ORDER OF A CUSTOMER FILLED TO CREATE A TRADE OF THE TRADING EVENT
504
BASED ON TRADE DATA OF AN ORDER OF A CUSTOMER FROM A TRADE MESSAGE, GENERATE A TRADE NOTIFICATION MESSAGE FOR THE CUSTOMER
506
ROUTE A TRADE NOTIFICATION MESSAGE TO A MESSAGE DELIVERY CIRCUIT CORRESPONDING TO A CUSTOMER INDICATED IN THE TRADE NOTIFICATION MESSAGE
507
A PREDETERMINED TIME INTERVAL ELAPSED SINCE AN EVENT TIME OF A TRADING EVENT?
NO
510
YES
TRANSMIT TRADE NOTICATION MESSAGES FOR A TRADING EVENT TO CLIENT DEVICES RESPECTIVELY OF CUSTOMERS INDICATED IN THE TRADE NOTIFICATION MESSAGES, WHEN DISTRIBUTION TIMES RESPECTIVELY FOR THE TRADE NOTIFICATION MESSAGES ARE SATISFIED
512

500

FIG. 7