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(54) Title: SYSTEM AND METHOD FOR MANAGING TRADING ORDERS WITH DECAYING RESERVES

(57) Abstract: The present invention relates generally to electronic trading and more specifically to a system and method for managing trading orders with decaying reserves.

SYSTEM AND METHOD FOR MANAGING TRADING ORDERS
WITH DECAYING RESERVES

TECHNICAL FIELD OF THE INVENTION

The present invention relates generally to electronic trading and more specifically to a system and method for managing trading orders with decaying reserves.

BACKGROUND OF THE INVENTION

In recent years, electronic trading systems have gained wide spread acceptance for trading of a wide variety of items, such as goods, services, financial instruments, and commodities. For example, electronic trading systems have been created which
5 facilitate the trading of financial instruments and commodities such as stocks, bonds, currency, futures contracts, oil, and gold.

Many of these electronic trading systems use a bid/offer process in which bids and offers are submitted to the systems by a passive side and then those bids and offers are hit or lifted (or taken) by an aggressive side. For example, a passive trading
10 counterparty may submit a "bid" to buy a particular trading product. In response to such a bid, an aggressive side counterparty may submit a "hit" in order to indicate a willingness to sell the trading product to the first counterparty at the given price. Alternatively, a passive side counterparty may submit an "offer" to sell the particular trading product at the given price, and then the aggressive side counterparty may
15 submit a "lift" (or "take") in response to the offer to indicate a willingness to buy the trading product from the passive side counterparty at the given price.

SUMMARY OF THE INVENTION

In accordance with the present invention, the disadvantages and problems associated with prior electronic trading systems have been substantially reduced or eliminated.

5 In some embodiments, a system comprises a memory operable to store a trading order for a particular quantity of a trading product, wherein a first portion of the particular quantity is a displayed quantity and a second portion of the particular quantity is a reserved quantity. The system further comprises a processor communicatively coupled to the memory and operable to disclose the displayed
10 quantity to one or more market centers. The processor is further operable to identify a decay rate associated with the trading order. The processor is further operable to cause the reserved quantity to decay based at least in part on the identified decay rate.

 Various embodiments of the present disclosure may benefit from numerous advantages. It should be noted that one or more embodiments may benefit from
15 some, none, or all of the advantages discussed below.

 One advantage is that a trading system may allow a trader to submit a trading order comprising a displayed quantity and a reserved quantity. The trading system may disclose the displayed quantity to multiple market centers while preventing the disclosure of the reserved quantity. In some embodiment, the trading system causes
20 the reserved quantity of the trading order to decay over time. The trading system may thereby reduce certain risks associated with market volatility. In particular, by causing the reserved quantity to decay, the trading system may reduce the trader's risk of having exposure for a stale trading order with a price that is no longer favorable for the trader.

25 Another advantage is that, by causing the reserved quantity of trading order to decay, the trading system may improve system efficiency. In particular, as trading orders with reserved quantities are not aggressed, trading system may gradually delete the reserved quantities of such trading orders from one or more order books. Deleting portions of such trading orders may free up memory and processing resources in the
30 trading system. Trading system may thereby improve data throughput and/or conserve system resources.

Other advantages will be readily apparent to one having ordinary skill in the art from the following figures, descriptions, and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and its advantages, reference is now made to the following description, taken in conjunction with the accompanying drawings, in which:

5 FIGURE 1 illustrates one embodiment of a trading system in accordance with the present invention;

 FIGURE 2 illustrates decay of a trading order with a reserved quantity, according to certain embodiments;

 FIGURE 3 illustrates decay of a trading order with a reserved quantity,
10 according to certain embodiments; and

 FIGURE 4 illustrates a flowchart for managing a trading order with a reserved quantity, according to certain embodiments.

DETAILED DESCRIPTION OF THE INVENTION

FIGURE 1 illustrates one embodiment of a trading system 10. Generally, trading system 10 comprises a trading platform 50 communicatively coupled to clients 20, networks 30, and market centers 40. Trading platform 50 may receive and process trading orders 12 from traders 70. In some embodiments, trading platform 50 may cause a portion of trading order 12 to decay over time. Trading platform 50 may thereby reduce certain risks associated with market volatility. In particular, by causing a portion of trading order 12 to decay, trading platform 50 may reduce the risks of having exposure to a stale trading order 12 with a price that has become unfavorable.

A given trading order 12 may comprise two parts -- a "displayed quantity" and a "reserved quantity." In placing trading order 12, trader 70 may indicate that only a portion of the total quantity of trading order 12 should be displayed to other traders 70. This portion of trading order 12 to be displayed to other traders 70 is referred to as the "displayed quantity." The remaining portion of trading order 12 is referred to as the "reserved quantity." Designating a portion of trading order 12 as a "reserved quantity" allows trader 70 to enter a large trading order 12 while only displaying a portion of that trading order 12 to other traders 70. Trading platform 50 may incrementally fill a particular trading order 12 by first filling the displayed quantity of that trading order 12 and then using the reserved quantity to replenish the displayed quantity of that trading order 12.

Trading orders 12 generally comprise orders 12a and counterorders 12b. Orders 12a and counterorders 12b may be buy orders 14 and sell orders 16. Orders 12a and counterorders 12b are complementary actions such as, for example, buying and selling. If an order 12a refers to a buy order 14, then a counterorder 12b refers to a sell order 16. Conversely, if an order 12a refers to a sell order 16, then a counterorder 12b refers to a buy order 14. A buy order 14 is a request to buy a particular quantity of a particular trading product (e.g., bid request). A sell order 16 is a request to sell a particular quantity of a particular trading product (e.g., offer request). In particular embodiments, trading order 12 may specify a target price (e.g., target bid price or target offer price) for the trading product. Although system 10 is exemplified below using equities as the trading product, the trading product that

forms the basis of trading order 12 may comprise any goods, services, financial instruments, commodities, etc. Examples of financial instruments include, but are not limited to, stocks, bonds, and futures contracts.

Clients 20 are operable to receive trading orders 12 from traders 70 and to
5 send trading orders 12 to trading platform 50 and/or market centers 40. Clients 20
comprise any suitable local or remote end-user devices that may be used by traders 70
to access one or more elements of trading system 10, such as trading platform 50. A
particular client 20 may comprise a computer, workstation, telephone, Internet
browser, electronic notebook, Personal Digital Assistant (PDA), pager, or any other
10 suitable device (wireless or otherwise), component, or element capable of receiving,
processing, storing, and/or communicating information with other components of
system 10. Client 20 may also comprise any suitable user interface such as a display,
microphone, keypad, keyboard, touch screen, or any other appropriate terminal
equipment according to particular configurations and arrangements. It will be
15 understood that there may be any number of clients 20 communicatively connected to
trading platform 50. In addition, there may be any number of clients 20
communicatively connected to market centers 40 without using trading platform 50.

Although clients 20 are described herein as being used by “traders” 70, it
should be understood that the term “trader” is meant to broadly apply to any user of
20 trading system 10, whether that user is an agent acting on behalf of a principal, a
principal, an individual, a legal entity (such as a corporation), or any machine or
mechanism that is capable of placing and/or responding to trading orders 12 in system
10.

According to certain embodiments, traders 70 may include market makers. A
25 market maker may include any individual or firm that submits and/or maintains either
or both bid and offer trading orders 12 simultaneously for the same instrument. For
example, a market maker may include an individual or firm, such as a brokerage or
bank, that maintains either a firm bid and/or offer price in a given security by standing
ready, willing, and able to buy and/or sell that security at publicly quoted prices. A
30 market maker generally displays bid and/or offer prices for specific numbers of
specific securities, and if these prices are met, the market maker will immediately buy
for and/or sell from its own accounts. According to certain embodiments, a single

trading order 12 may be filled by a number of market makers at potentially different prices.

Networks 30 are communication platforms operable to exchange data or information between clients 20 and trading platform 50 and/or market centers 40. According to certain embodiments, a particular network 30 may represent an Internet architecture which provides clients 20 with the ability to communicate trading or transaction information to trading platform 50 and/or market centers 40. According to certain embodiments, network 30 comprises a plain old telephone system (POTS), which traders 70 may use to perform the same operations and functions. Transactions may be assisted by a broker associated with trading platform 50 or manually keyed into a telephone or other suitable electronic device to request that a transaction be executed. In certain embodiments, network 30 may be any packet data network (PDN) offering a communications interface or exchange between any two nodes in system 10. Network 30 may comprise any combination of local area network (LAN), metropolitan area network (MAN), wide area network (WAN), wireless local area network (WLAN), virtual private network (VPN), intranet, or any other appropriate architecture or system that facilitates communications between clients 20 and trading platform 50 and/or market centers 40.

Market centers 40 comprise all manner of order execution venues including exchanges, Electronic Communication Networks (ECNs), Alternative Trading Systems (ATSS), market makers, or any other suitable market participants. Each market center 40 maintains a bid and offer price for a given trading product by standing ready, willing, and able to buy or sell that trading product at publicly quoted prices, also referred to as market center prices. Different market centers 40 may provide different market center prices for particular trading products. For example, a particular market center 40 may offer a particular bid price and/or offer price for a particular trading product, while another market center 40 may offer a different bid price and/or offer price for the same trading product. A particular market center 40 may charge a transaction cost to execute trading orders 12 that remain in the order books of that market center 40 for more than a certain length of time. Different market centers 40 may have different policies regarding the disclosure of various details of trading orders 12. For example, certain market centers 40 referred to as

“cooperative” market centers may disclose both the displayed quantities and the reserved quantities of trading orders 12 to trading platform 50. Other market centers 40 referred to as “non-cooperative” market centers may disclose only the displayed quantities of trading orders 12 to trading platform 50.

5 Trading platform 50 is a trading architecture that facilitates the routing, matching, and otherwise processing of trading orders 12. Trading platform 50 may comprise a management center or a headquartering office for any person, business, or entity that seeks to route, allocate, match, process, or fill trading orders 12. Accordingly, trading platform 50 may include any suitable combination of hardware,
10 software, personnel, devices, components, elements, or objects that may be utilized or implemented to achieve the operations and functions of an administrative body or a supervising entity that manages or administers a trading environment. In certain embodiments, trading platform 50 comprises client interface 52, market interface 54, processor 56, and memory module 60.

15 Client interface 52 of trading platform 50 is communicatively coupled to network 30 and supports communications between clients 20 and the various components of trading platform 50. According to certain embodiments, client interface 52 comprises a transaction server that receives trading orders 12 communicated by clients 20 via network 30.

20 Market interface 54 is communicatively coupled to market centers 40 and supports communications between market centers 40 and the various components of trading platform 50. Market interface 54 may comprise a transaction server that receives trading orders 12 communicated by market centers 40. Market interface 54 may be operable to send to market centers 40 trading orders 12 received from clients
25 20 connected directly to trading platform 50.

Client interface 52 and market interface 54 are communicatively coupled to processor 56. Processor 56 is operable to record trading orders 12 in memory module 60 and route trading orders 12 to market centers 40. Processor 56 is further operable to execute logic 62 stored in memory module 60 to match buy orders 14 and sell
30 orders 16 received by client interface 52 and market interface 54. In addition, processor 56 is operable to incrementally fill a particular trading order 12 by using the reserved quantity of that trading order 12 to replenish the displayed quantity of that

trading order 12. In some embodiments, processor 56 may cause the reserved quantity of trading order 12 to decay over time. Processor 56 may comprise any suitable combination of hardware and software implemented in one or more modules to provide the described function or operation.

5 Memory module 60 comprises any suitable arrangement of random access memory (RAM), read only memory (ROM), magnetic computer disk, CD-ROM, or other magnetic or optical storage media, or any other volatile or non-volatile memory devices that store one or more files, lists, tables, or other arrangements of information such as trading orders 12. Although FIGURE 1 illustrates memory module 60 as
10 internal to trading platform 50, it should be understood that memory module 60 may be internal or external to components of trading system 10, depending on particular implementations. Also, memory module 60 illustrated in FIGURE 1 may be separate or integral to other memory devices to achieve any suitable arrangement of memory devices for use in trading system 10.

15 According to certain embodiments, memory module 60 stores logic 62 and trader profiles 64. Logic 62 generally comprises software instructions for routing, matching, processing, or filling trading orders 12. Processor 56 is operable to execute logic 62 in memory module 60 to match buy orders 14 and sell orders 16 and to determine the priority of traders 70 associated with those buy orders 14 and sell orders
20 16.

 Memory module 60 may store a respective trader profile 64 for each trader 70 in trading system 10. Trader profile 64 for a particular trader 70 may comprise the name, account information, trading preferences, trade history, and/or other suitable information associated with the particular trader 70. In some embodiments, trader
25 profile 64 comprises one or more decay rules 66. Processor 56 may execute decay rule 66 to determine the rate and/or frequency at which to reduce the reserved quantity of trading order 12. Decay rule 66 may specify an amount by which the reserved quantity of trading order 12 should decay over time. For example, decay rule 66 may direct processor to reduce the reserved quantity of trading order 12 by one thousand
30 units per minute. By reducing the reserved quantity of trading order 12 over time, processor may reduce the risks associated with having a stale trading order 12 in a volatile market. In some embodiments, a particular decay rule 66 may be associated

with a decay interval 68 and a decay rate 72 (described below with respect to FIGURE 2).

It should be understood that the internal structure of trading platform 50 and the interfaces, processors, and memory devices associated therewith is malleable and
5 can be readily changed, modified, rearranged, or reconfigured in order to achieve the intended operations of trading platform 50.

In operation, trading platform 50 is operable to receive trading order 12 from client 20. Trading order 12 may be for a particular quantity of a particular trading product (e.g., equities, commodities, futures, currencies, bonds, and so forth). In
10 some embodiments, trading order 12 designates a portion of the particular quantity as a displayed quantity. Trading order 12 may designate another portion of the particular quantity of trading order 12 as the reserved quantity. Trading platform 50 may disclose the displayed quantity of trading order 12 to market center 40. In some
15 embodiments, trading platform 50 prevents the disclosure of the reserved quantity of trading order 12 to market center 40.

Upon receiving trading order 12, processor 56 may identify decay rule 66 stored in memory module 60. Decay rule 66 may instruct processor 56 to reduce the reserved quantity of trading order 12 over time. Reducing the reserved quantity of
20 trading order 12 may comprise deleting a portion of trading order 12 from one or more order books 74 in memory module 60. In some embodiments, the reduction of the reserved quantity of trading order 12 is based at least in part on decay rate 72 associated with decay rule 66.

FIGURE 2 is a table 200 that sets forth an example illustrating the decay of trading order 12, according to certain embodiments. In this example, memory module
25 60 stores one or more decay rules 66 that cause the reserved quantity of trading order 12 to decay over time. As each successive interval of time expires, processor 56 may reduce the reserved quantity of trading order 12 by a configurable increment. The time intervals at which the reserved quantity decays may be referred to as decay intervals 68. The rate at which the reserved quantity decays may be referred to as
30 decay rate 72. For example, decay rule 66 may specify that, at the expiration of each successive minute after trading platform 50 receives trading order 12, processor 56 reduces reserved quantity of trading order 12 by five million units. In this example,

decay interval 68 is one minute and decay rate 72 is five million units/minute. Although the foregoing example illustrates decay interval 68 of one minute, it should be understood that decay interval 68 may be ten seconds, two minutes, ten minutes, and/or any suitable interval of time. Although the foregoing example illustrates decay
5 rate 72 of five million units/minute, it should be understood that decay rate 72 may be one hundred units/second, one million units/minute, and/or any suitable rate.

In some embodiments, once processor 56 uses counterorder 12b to fill the displayed quantity of order 12a, processor 56 may replenish the displayed quantity of order 12a. In particular, processor 56 may be configured to use a portion of the reserved quantity of order 12a to replenish the displayed quantity of order 12a. In
10 some embodiments, the filling and replenishing of the displayed quantity of order 12a occurs independently of the decay of the reserved quantity of order 12a.

The example order 12a in table 200 illustrates certain embodiments. In this example, trading platform 50 comprises decay rule 66 to reduce the reserved quantity
15 of trading order 12 by twenty million units per minute. In this example, at 10:26:02 a.m., trading platform 50 receives Bid A from Trader A. Bid A is for one hundred million units of Security X at a price of two dollars per unit. The trading product and price associated with Bid A is illustrated in columns 202 and 204, respectively. Bid A has a displayed quantity of ten million units and a reserved quantity of ninety million
20 units. The displayed quantity and reserved quantity of Bid A is illustrated in columns 206 and 208, respectively.

Upon receiving Bid A, processor 56 discloses the displayed quantity (i.e., ten million units) of Bid A to market centers 40. At 10:26:34 a.m., trading platform 50 receives Offer B, a matching counterorder 12b. Offer B is for ten million units of
25 Security X at two dollars per unit. Upon receiving Offer B, processor 56 uses the ten million units from Offer B to fill the displayed quantity of Bid A. Processor 56 then uses ten million units from the reserved quantity of Bid A to replenish the displayed quantity of Bid A. Thus, the reserved quantity of Bid A becomes eighty million units.

In this example, trading platform 50 does not receive any other matching
30 counterorders 12b prior to 10:27:02 a.m. -- one minute after trading platform 50 received Bid A. According to decay rule 66, at 10:27:02 a.m., processor 56 reduces reserved quantity of Bid A from eighty million units to sixty million units. With the

expiration of each successive minute, processor 56 continues to reduce reserved quantity of Bid A according to decay rule 66. By decaying the reserved quantity of Bid A over time, processor 56 may reduce certain risks associated with market volatility. In particular, by reducing the reserved quantity of Bid A over time, processor 56 may reduce the risk of Trader A having exposure for a stale trading order 12 with a price that is no longer favorable for Trader A.

In some embodiments, trading platform 50 may comprise different decay rules 66 for different traders 70. In particular, memory module 60 may store a respective trader profile 64 for each trader 70 in trading system 10. Trader profile 64 for a particular trader 70 may comprise one or more decay rules 66 that are configurable by that trader 70. In some embodiments, a particular trader profile 64 may comprise a first decay rule 66 for a first trading product, a second decay rule 66 for a second trading product, and so forth. Thus, a particular trader 70 may cause the reserved quantity of trading order 12 for a first trading product to decay at a different rate than the reserved quantity of trading order 12 for a second trading product. In some embodiments, upon receiving trading order 12, processor 56 identifies the particular trader 70 that submitted trading order 12. Processor 56 may then identify in memory module 60 trader profile 64 associated with the particular trader 70. Processor 56 may then retrieve the appropriate decay rule 66 from the identified trader profile 64. Thus, processor 56 may apply different decay rules 66 for different traders 70.

In some embodiments, decay rule 66 may specify an initial decay interval 68 that is longer or shorter than successive decay intervals 68. For example, a particular decay rule 66 may specify that, five minutes after trading platform 50 received trading order 12, processor 56 begins decaying the reserved quantity of trading order 12. After the initial five minute interval, the particular decay rule 66 may specify that processor 56 continue to decay the reserved quantity after each successive minute.

Decay rule 66 may comprise any suitable formula, table, algorithm, and/or instructions for reducing the reserved quantity of trading order 12. In some embodiments, decay rule 66 may comprise a formula for a variable decay rate 72.

FIGURE 3 is a table 300 that sets forth an example illustrating variable rate decay of trading order 12, according to certain embodiments. In this example, decay rule 66 instructs processor 56 to decay the reserved quantity of trading order 12 at a

rate of “ $10T$ ” where “ T ” is the number of minutes since trading platform 50 received trading order 12. At 11:42:12 a.m., trading platform 50 receives Bid A for one hundred units of Security Y. Bid A comprises a displayed quantity of ten units and a reserved quantity of ninety units. The trading product, displayed quantity, and reserved quantity associated with Bid A are illustrated in columns 302, 304, and 306, respectively.

In this example, processor 56 reduces the reserved quantity of Bid A according to decay rule 66. In particular, at 11:43:12 a.m., processor 56 reduces the reserved quantity of Bid A by ten units (i.e., 10×1). At 11:44:12 a.m., processor 56 further reduces the reserved quantity of Bid A by twenty units (i.e., 10×2). With each successive minute, processor 56 reduces the reserved quantity of Bid A by an increasing amount according to decay rule 66. The decay of the reserved quantity may continue until the reserved quantity is eliminated. Thus, decay rule 66 may specify a variable decay rate 72.

Although the foregoing example illustrates decay rate 72 associated with a particular formula, it should be understood that decay rule 66 may comprise any suitable formula, table, algorithm, and/or instructions for reducing the reserved quantity of trading order 12 over time.

FIGURE 4 illustrates a flowchart for managing trading orders 12, according to certain embodiments. The method begins at step 402 where trading platform 50 receives order 12a from client 20. Order 12a may be for a particular quantity of a trading product. A portion of the particular quantity of order 12a may be designated as a displayed quantity. The remaining portion of the particular quantity of order 12a may be designated as the reserved quantity. At step 404, trading platform 50 discloses the displayed quantity of order 12a to market centers 40. Disclosing the displayed quantity of order 12a may comprise transmitting data regarding the displayed quantity of order 12a to market centers 40.

At step 406, processor 56 determines whether trading platform 50 has received counterorder 12b that matches order 12a. In some embodiments, the determination of whether counterorder 12b matches order 12a is based at least in part on whether counterorder 12b and order 12a are for the same product, the same price, and/or or crossing prices. If processor 56 determines at step 406 that trading platform 50 has

not received counterorder 12b that matches order 12a, then the method proceeds to step 414. However, if processor 56 determines at step 406 that trading platform 50 has received counterorder 12b that matches order 12a, then at step 408 processor 56 uses the counterorder 12b to fill the displayed quantity of order 12a. At step 410, processor 56 determines whether the reserved quantity of order 12a is greater than zero. If processor 56 determines at step 410 that the reserved quantity of order 12a is not greater than zero, then the method ends. However, if processor 56 determines at step 410 that the reserved quantity of order 12a is greater than zero, then at step 412 processor 56 uses a portion of the reserved quantity of order 12a to replenish the displayed quantity of order 12a. The method then proceeds to step 414.

At step 414, processor 56 determines whether decay interval 68 associated with decay rule 66 has expired. If processor 56 determines at step 414 that decay interval 68 has not expired, then the method returns to step 406. However, if processor 56 determines at step 414 that decay interval 68 has expired, then at step 416 processor 56 determines whether the reserved quantity of order 12a is greater than zero. If processor 56 determines at step 416 that the reserved quantity is not greater than zero, then the method returns to step 406. However, if processor 56 determines at step 416 that the reserved quantity is greater than zero, then at step 418 processor 56 reduces the reserved quantity of order 12a by a configurable amount according to decay rule 66. Decay rule 66 may comprise any suitable formula, table, algorithm, and/or instructions for reducing the reserved quantity of order 12a over time. Decay rule 66 may specify any suitable length of decay interval 68 and/or may specify any suitable decay rate 72. After processor 56 reduces the reserved quantity of order 12a at step 418, the method returns to step 406. The method ends when, at step 410, processor 56 determines that the reserved quantity of order 12a is not greater than zero. In some embodiments, the method may also end when order 12a expires and/or when trading platform 50 receives a cancel order associated with order 12a.

Although the present invention has been described in several embodiments, a myriad of changes and modifications may be suggested to one skilled in the art, and it is intended that the present invention encompass such changes and modifications as fall within the scope of the present appended claims.

WHAT IS CLAIMED IS:

1. A system, comprising:
a memory operable to store a trading order for a particular quantity of a trading product, wherein:
5 a first portion of the particular quantity is a displayed quantity; and
a second portion of the particular quantity is a reserved quantity;
a processor communicatively coupled to the memory and operable to:
disclose the displayed quantity to one or more market centers;
identify a decay rate associated with the trading order; and
10 cause the reserved quantity to decay based at least in part on the identified decay rate.

2. The system of Claim 1, wherein:
the trading order is received at a first time;
15 the decay rate is associated with a decay quantity and a time interval; and
causing the reserved quantity to decay based at least in part on the identified decay rate comprises:
in response to expiration of the time interval after the first time,
subtracting the decay quantity from the reserved quantity; and
20 in response to expiration of each successive time interval, subtracting the decay quantity from the reserved quantity such that the reserved quantity decays until the reserved quantity is eliminated.

3. The system of Claim 1, wherein:
25 the decay rate is associated with a time interval; and
the decay rate is a variable rate such that, upon expiration of each successive time interval, the reserved quantity diminishes at an increasing rate.

4. The system of Claim 1, wherein:
30 the decay rate is associated with a time interval; and
the decay rate is a variable rate such that, upon expiration of each successive time interval, the reserved quantity diminishes at a decreasing rate.

5. The system of Claim 1, wherein the processor is further operable to:
receive a counterorder for the trading product;
fill the displayed quantity of the trading order with a portion of the
5 counterorder; and
replenish the displayed quantity of the trading order with a portion of the
reserved quantity of the trading order.

6. The system of Claim 5, wherein the displayed quantity of the trading
10 order is replenished independently of the decay of the reserved quantity.

7. The system of Claim 1, wherein:
the trading order is from a first trader;
the processor is further operable to receive a second trading order for the
15 trading product;
the second trading order comprises a second displayed quantity and a second
reserved quantity;
the second trading order is from a second trader; and
the processor is further operable to:
20 identify a second decay rate associated with the second trader; and
cause the second reserved quantity to decay based at least in part on
the second decay rate.

8. The system of Claim 1, wherein:
25 the decay rate is a first decay rate and the trading product is a first trading
product; and
the memory is further operable to storing a plurality of decay rates, wherein
each decay rate is associated with a respective trading product.

9. The system of Claim 1, wherein:

the processor is further operable to record the displayed quantity and the reserved quantity in an order book; and

causing the reserved quantity to decay based at least in part on the identified

5 decay rate comprises:

in response to expiration of a first time interval, deleting a first portion of the reserved quantity from the order book; and

in response to expiration of a second time interval, deleting a second portion of the reserved quantity from the order book.

10. A method, comprising:
receiving a trading order for a particular quantity of a trading product,
wherein:

5 a first portion of the particular quantity is a displayed quantity; and
a second portion of the particular quantity is a reserved quantity;
disclosing the displayed quantity to one or more market centers;
identifying a decay rate associated with the trading order; and
causing the reserved quantity to decay based at least in part on the identified
decay rate.

10

11. The method of Claim 10, wherein:
the trading order is received at a first time;
the decay rate is associated with a decay quantity and a time interval; and
causing the reserved quantity to decay based at least in part on the identified
15 decay rate comprises:

in response to expiration of the time interval after the first time,
subtracting the decay quantity from the reserved quantity; and
in response to expiration of each successive time interval, subtracting
the decay quantity from the reserved quantity such that the reserved quantity
20 decays until the reserved quantity is eliminated.

12. The method of Claim 10, wherein:
the decay rate is associated with a time interval; and
the decay rate is a variable rate such that, upon expiration of each successive
25 time interval, the reserved quantity diminishes at an increasing rate.

13. The method of Claim 10, wherein:
the decay rate is associated with a time interval; and
the decay rate is a variable rate such that, upon expiration of each successive
30 time interval, the reserved quantity diminishes at a decreasing rate.

14. The method of Claim 10, further comprising:
receiving a counterorder for the trading product;
filling the displayed quantity of the trading order with a portion of the
counterorder; and
5 replenishing the displayed quantity of the trading order with a portion of the
reserved quantity of the trading order.
15. The method of Claim 14, wherein the displayed quantity of the trading
order is replenished independently of the decay of the reserved quantity.
10
16. The method of Claim 10, wherein:
the trading order is from a first trader;
and further comprising:
receiving a second trading order for the trading product, wherein:
15 the second trading order comprises a second displayed quantity
and a second reserved quantity; and
the second trading order is from a second trader;
identifying a second decay rate associated with the second trader; and
causing the second reserved quantity to decay based at least in part on
20 the second decay rate.
17. The method of Claim 10, wherein:
the decay rate is a first decay rate and the trading product is a first
trading product;
25 and further comprising:
storing a plurality of decay rates, wherein each decay rate is associated
with a respective trading product.

18. The method of Claim 10, further comprising:
recording the displayed quantity and the reserved quantity in an order
book;

wherein causing the reserved quantity to decay based at least in part on the
5 identified decay rate comprises:

in response to expiration of a first time interval, deleting a first
portion of the reserved quantity from the order book; and

in response to expiration of a second time interval, deleting a
second portion of the reserved quantity from the order book.

19. Logic encoded in computer-readable media and operable when executed by a processor to:

receive a trading order for a particular quantity of a trading product, wherein:

a first portion of the particular quantity is a displayed quantity; and

5 a second portion of the particular quantity is a reserved quantity;

disclose the displayed quantity to one or more market centers;

identify a decay rate associated with the trading order; and

cause the reserved quantity to decay based at least in part on the identified decay rate.

10

20. The logic of Claim 19, wherein:

the trading order is received at a first time;

the decay rate is associated with a decay quantity and a time interval; and

causing the reserved quantity to decay based at least in part on the identified

15 decay rate comprises:

in response to expiration of the time interval after the first time, subtracting the decay quantity from the reserved quantity; and

in response to expiration of each successive time interval, subtracting the decay quantity from the reserved quantity such that the reserved quantity

20 decays until the reserved quantity is eliminated.

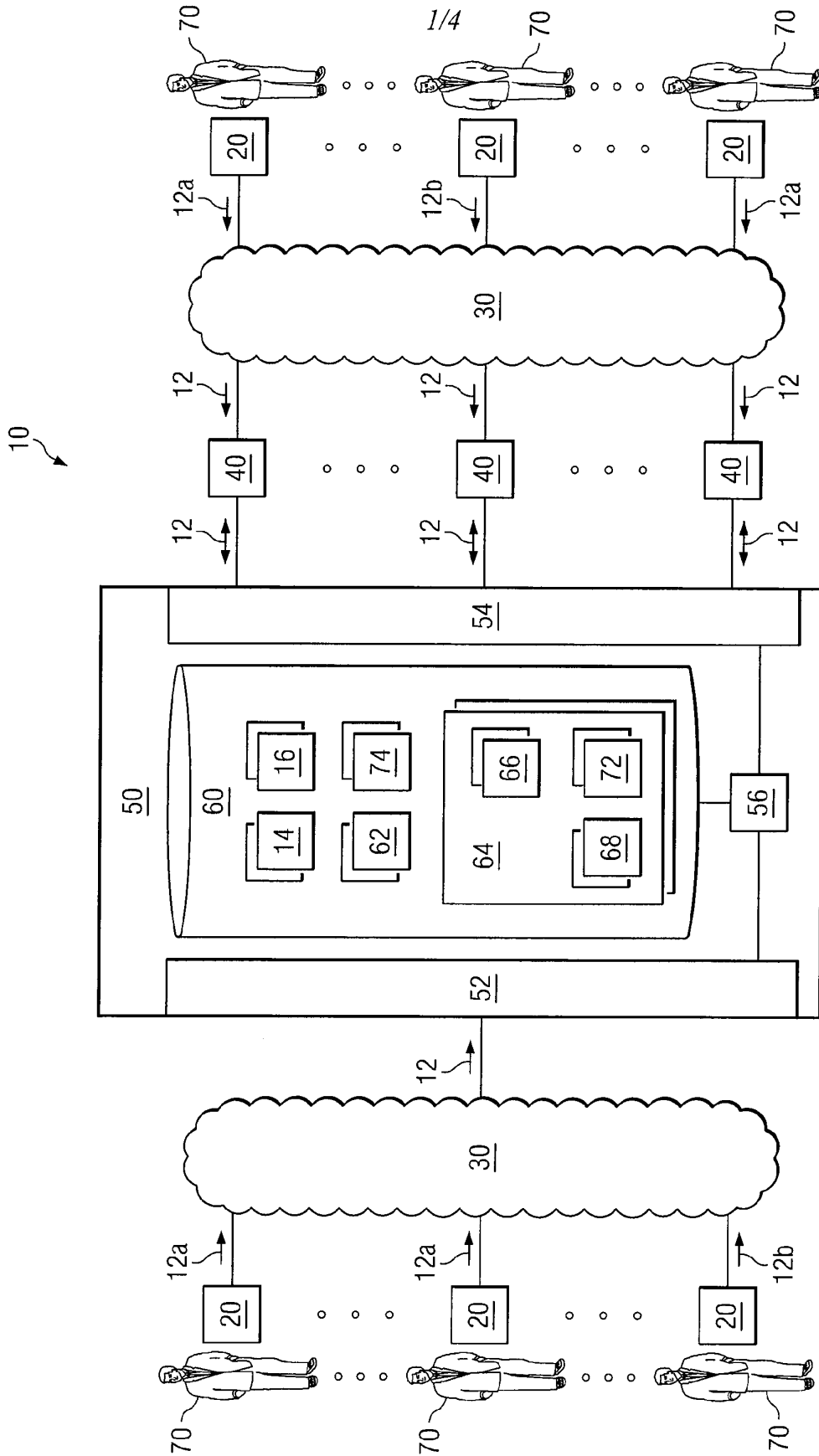


FIG. 1

72							66					
DECAY RULE: REDUCE RESERVED QUANTITY BY 20,000,000 UNITS/MINUTE							RESERVED QUANTITY	DISPLAYED QUANTITY	PRICE PER UNIT	TOTAL QUANTITY	TRADING PRODUCT	TRADING ORDER
10:26:02	BID A	SECURITY X	100,000,000	\$2.00	10,000,000	90,000,000						
							REPLENISH					
	BID A	SECURITY X	90,000,000	\$2.00	10,000,000	80,000,000						
10:27:02	BID A	SECURITY X	70,000,000	\$2.00	10,000,000	60,000,000						
10:28:02	BID A	SECURITY X	50,000,000	\$2.00	10,000,000	40,000,000						
10:29:02	BID A	SECURITY X	30,000,000	\$2.00	10,000,000	20,000,000						
10:30:02	BID A	SECURITY X	10,000,000	\$2.00	10,000,000	0						

TIME	COUNTERORDER	TRADING PRODUCT	QUANTITY	PRICE
10:26:34	OFFER B	SECURITY X	10,000,000	\$2.00

MATCH

12b

200

12a 202 204 206 208

FIG. 2

300

66 72

DECAY RULE: REDUCE RESERVED QUANTITY AT RATE OF 10% (T = ELAPSED MINUTES SINCE RECEIPT OF ORDER)

TIME	TRADING ORDER	TRADING PRODUCT	TOTAL QUANTITY	DISPLAYED QUANTITY	RESERVED QUANTITY
11:42:12	BID A	SECURITY Y	100	10	90
11:43:12	BID A	SECURITY Y	90	10	80
11:44:12	BID A	SECURITY Y	70	10	60
11:45:12	BID A	SECURITY Y	40	10	30
11:46:12	BID A	SECURITY Y	10	10	0

12 302 304 306

FIG. 3

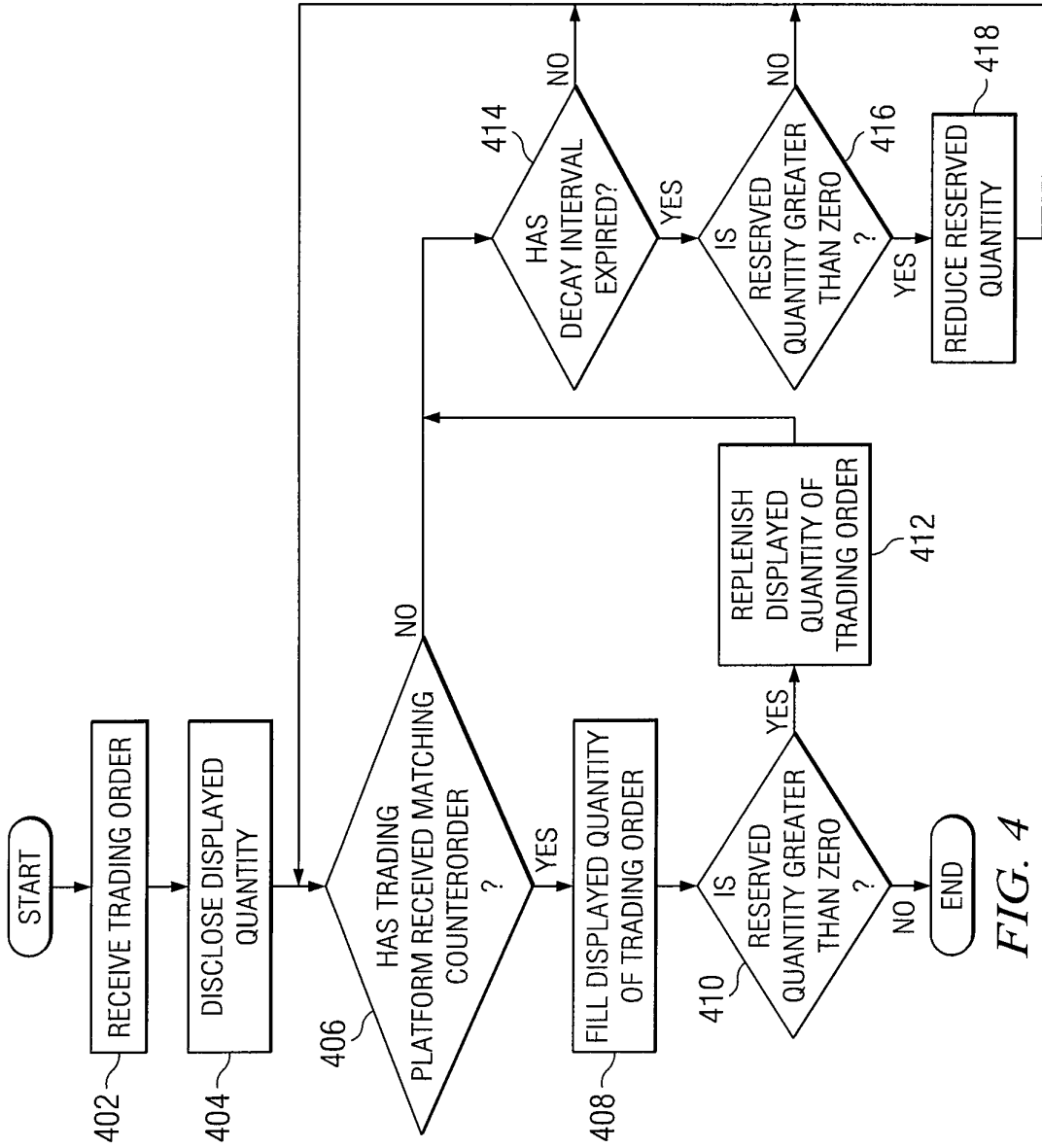


FIG. 4