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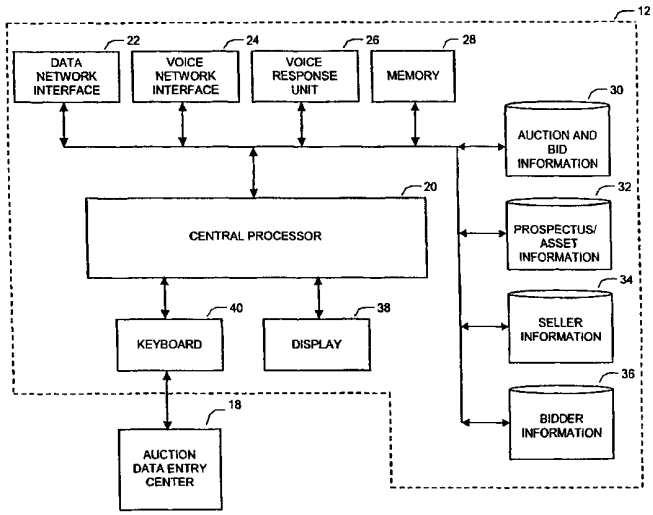
(54) **Title:** AUCTION METHOD AND APPARATUS FOR RAISING A FIXED AMOUNT OF CAPITAL



(57) **Abstract:** A method of auctioning a variable number of units of a property for a fixed amount of capital. The method includes process of receiving, calculating and allocating process. In the receiving process, bids are received at a computer (14), each bid having a total value and an associated price per unit. In a calculating step, the computer (12) calculates a winning price per unit based on the substantially fixed amount of capital, the price per unit and the total value in each of the bids. Then in an allocating step the computer (12) allocates a number units of the property for each bid having an associated price per unit at or above the winning price per unit based on the total value of each bid divided by the winning price per unit until the substantially fixed amount of capital is reached.

WO 00/73965 A1

AUCTION METHOD AND APPARATUS FOR RAISING A FIXED AMOUNT OF CAPITAL

FIELD OF THE INVENTION:

The present invention relates generally to finance and data processing and, more particularly, to methods for efficiently raising a fixed amount of capital by selling a variable number of substantially identical units of property at auction, where the number of substantially identical units sold is determined by the auction.

BACKGROUND OF THE INVENTION:

There are many ways of raising capital for an asset, such as a business or other property. Issuing debt instruments by pledging the asset as collateral is one way. However, debt instruments have the disadvantage of requiring regular payments to the holders of the debt instruments. Another way to raise capital is to sell equity or units of ownership in the asset, which typically does not require re-payment to those contributing capital. For assets whose future value is unpredictable or risky, selling equity is typically the only practical way to raise capital.

When the equity or units of ownership in an asset have a known price and an established market, raising capital for the asset is relatively simple. For example, in the case of a publicly traded business, the business can authorize and issue a certain number of additional shares of its stock, known as treasury stock, via brokers on a stock exchange. The brokers in turn sell the additional shares through tens, hundreds or thousands of individual transactions at a variable market price to raise a variable amount of money for the business. Alternatively, the brokers may sell a certain number of shares through many transactions at a single price below the market value. In the latter method,

both the amount of capital raised and the number of shares issued is fixed at a value near that which the market may bear.

When units of ownership in an asset do not have a known price and an established market, conventional methods of raising capital are unfavorable to and inefficient for those seeking capital. This is so because of costs and time associated with defining an acceptable unit price and identifying a market of potential buyers. Three main methods are used to raise capital for an asset without a set price and established market.

The first mechanism is to raise capital through a venture capital firm. Venture capital firms typically buy units of ownership in an asset if they believe that the asset will appreciate in value. Venture capital firms first analyze the asset to determine its value, which is a costly and inefficient method of determining value. Moreover, the value determined is typically favorable to the venture capital firm, not the owners of the asset who are seeking capital. Subsequently, the venture capital firm provides capital to the asset, based on the value determined for the asset, in exchange for partial or full ownership of the asset. Almost always, the venture capital firm takes some control of the asset. When the asset is a business, this is typically done by taking control of the board of directors of the business. For these reasons, the owners who seek venture capital to raise money for an asset must give up more ownership units and receive less money in return than would be the case if there was an established market for units of the asset or an efficient method for setting the price of the asset.

The second mechanism for raising capital is through an initial public offering (IPO). This is typically done when the asset is a business. Typically, an officer of the business approaches an investment bank to perform the IPO. After agreeing, the investment bank gathers information on the business in order to determine the value of the business, the price per unit of stock to be issued in the business and the number of

shares of stock to be issued. Unfortunately, the process of determining the price per unit is inefficient and costly to the business. The inefficiency and cost result typically in a market price for shares that is not favorable to the business. Another factor affecting price is the market for IPO shares, which is generally limited to preferred customers of the investment bank offering the IPO. Therefore, the investment bank has an incentive to select a low, uniform price per share for shares of stock in the IPO, which favors the bank's preferred customers, rather than the business seeking capital through the IPO process.

A third mechanism for raising capital is to conduct an auction. Auctions have played a significant role in commerce for centuries. Recently, increased importance has been attributed to the auction as an efficient method of setting a transaction price for assets. The latest manifestations of this increased importance include the awarding of a Nobel price to William Vickrey and James A. Mirrlees for their work in the area of auction theory, the wide-spread use by the U.S. Government of auctions as a way of selling everything from portions of the electromagnetic spectrum to treasury bonds, and the success of various internet-based auction houses, which include e-bay and on-sale.com, among others.

Many different auction formats have been used to sell property. One format is conventionally called an English auction. In an English auction, bids are openly declared for one or more of a defined number of units of property. All new bids must be greater in price than the preceding bid. The winning bid is the last bid made and the unit or units are awarded to the maker of the last bid at the last bid price. In an English auction, a fixed number of units is put up for auction and the money raised for the seller is not fixed. Rather, it depends on the final price per unit.

The Dutch (or declining price) auction is another auction format. In a Dutch auction, the asking price per unit is openly declared by the owner or agent for a defined number of units for auction. The asking price is then lowered at predefined intervals. Bidders openly declare when they accept an asking price for one or more units. Bidding is closed when all units have been bid on. The bidder or bidders who first accept an asking price win one or more units at the asking price. Similar to the English auction, according to the Dutch auction, the number of units for auction is fixed and the money raised is dependent on the final price per unit.

In sealed bid auctions, bids are secretly declared for one or more of a defined number of units for auction at a predefined time. The units may be one or more identical units of property or alternatively may be the right to perform on a contract. The latter scenario frequently occurs in the context of awarding government contracts. Bidding is typically closed at the end of a predefined period, with the highest bidder winning the auctioned units. As with the English and Dutch auctions, a fixed number of units are conventionally up for auction in a sealed bid auction and the money raised in a sealed bid auction varies with the price of the winning bid.

When multiple identical units are auctioned by a seller, the sale price per unit is conventionally either discriminatory, at a first uniform price or a second uniform price. When identical units are awarded to bidders at different prices, the auction is discriminatory. As an example, consider a Dutch auction where 10 identical hats are for auction. The auction begins at a price of $50.00 per hat. As the auction proceeds and the price per hat drops, individual bidders bid on the hats thereby resulting in the sale of some of the hats from the pool of 10 hats at a first price. For the remaining hats, the price is further lowered pursuant to the Dutch auction. Bidders bid on the remaining hats, thus resulting in the award of some of the remaining hats at at least one additional, lower price.

Because identical units, in this case hats, are awarded at different prices in the auction the auction is called discriminatory.

In a uniform first price auction, bids are taken for a predetermined number of identical units. When all of the units have been bid on, the units are awarded to winning bidders at a uniform price. The uniform price is set at the lowest winning bid price. A uniform second price auction works in the same manner as the uniform first price auction. However, the predetermined number of bids are awarded to all winning bidders at the highest losing bid price. The investment banking firm WR Hambrecht & Co. recently has used a first price, sealed bid auction format to sell shares of companies that are conducting an IPO. WR Hambrecht & Company conducts the auctions on-line on the internet at its website www.openipo.com.

The WR Hambrecht auction format, as well as the other auction formats described above, all have several disadvantages in common. Most importantly, none of the auction formats raise a fixed amount of capital. For example, in the WR Hambrecht & Company auction format, if a company is auctioning 100 shares of stock to the public, the auction results in determinations of a price per share for the stock, winning bidders, and an allocation of the shares to the bidders at the winning price. However, the proceeds of the auction are 100 shares times the price per share, which varies based on the bids received. Therefore, the WR Hambrecht auction cannot raise a fixed amount of capital and does not minimize the amount of ownership of the business transferred to the public. The other auction formats described above have the same disadvantage because, these auctions are for a fixed number of items (1 or more), which may have been described with particularity to bidders, and which are being sold during the auction for variable proceeds on behalf of the owners.

Investors tend to view with skepticism excess capital raised by businesses through the IPO process. This is because investors may have confidence in a business's ability to put a fixed amount of capital to profitable use on projects defined by the business in, for example, the business's prospectus. However, investors may not have the same level of confidence in the same business to profitably use excess capital on new projects not mentioned in the prospectus. Therefore, investors typically view excess capital as either adding unnecessary risks to the success of the business or as a diluting the expected return on their investment.

Accordingly, there is a need for a different auction format which permits the owner of an asset to sell, by auction, as little of their ownership in the asset as possible to raise a fixed amount of capital. There is also a need for an auction which maximizes the value of an asset to its owners and which minimizes the loss of the ownership through the auction process. It would be desirable to have an auction format which permits the sale of a variable number of units of ownership of an asset in order to raise a fixed amount of capital.

SUMMARY OF THE INVENTION:

The present invention fulfills the aforementioned needs and provides numerous features and advantages. The method and apparatus of the present invention is to conduct an auction of a variable number of units of property to raise a fixed amount of capital. This auction method, called a "Jersey" auction, is designed to minimize the amount of property sold to raise a fixed amount of capital. When the units of property are shares of stock in a business, this auction method permits owners of the business to efficiently offer stock to the public, or groups of investors, to raise capital in a way that tends to minimize

the amount of the business sold and maximize the overall value of the business to the original owners.

The Jersey auction method includes processes for receiving, calculating and allocating. In the receiving process, bids are received at a computer, each bid having a total value and an associated price per unit. In a calculating process, the computer calculates a winning price per unit based on the fixed amount of capital, the price per unit and the total value in each of the bids. Then in the allocating process, the computer allocates a number units of the property for each bid having an associated price per unit at or above the winning price per unit based on the total value of each bid divided by the winning price per unit until the fixed amount of capital is reached.

An example of the Jersey auction method is briefly shown below. Consider that a seller desires to raise $15,000,000.00 by an auction and intends to retain 10,000 units of ownership. The seller receives the following bids for additional units of ownership to be distributed by the auction.

bidder	Total Value Bid	Price/Unit	# Units Desired	Aggregate total amount
1001	$1,000,000.00	$2500.00		$1,000,000.00
1000	$10, 000, 000.00	$2000.00		$11,000,000.00
1003	$9,000,000.00	$1500.00		$20,000,000.00
1002	$10,000,000.00	$500.00		

According to the Jersey auction, bidder 1003 is calculated to have bid the winning price per unit because, including his bid, the aggregate total amount bid exceeds the $15,000,000.00 desired to be raised by the auction. Bids 1001 and 1000 also win because they have a price per unit which exceeds the price per unit of the last winning bid. Bidder 1002 does not receive any ownership units because the Price/Unit of Bidder 2002's bid is below the winning price per unit. In the allocating step, the following allocations are made.

Bidder 1001 gets 666 units at $1,500.00, a total value of $999,000.00

Bidder 1000 gets 6,666 units at $1,500.00, a total value of $9,999,000.00

Bidder 1003 gets 2,668 units at $1,500.00, a total value of $4,002,000.00.

Bidder 1002 gets nothing.

The fixed amount of capital raised by the auction is $15,000,000.00.

The owner of the asset retained 10,000 units for himself. Therefore, his ownership is now worth 10,000 units * $1,500.00 per unit, a total value of $15,000.00. Therefore, he or she now has 50% ownership of the asset.

The asset itself has a market value of $30,000,000.00 including $15,000,000.00 raised through the Jersey auction process.

In an alternate embodiment of the invention, each bid has a number of units desired, instead of a total value, and an associated price per unit. In the calculating process of the alternate embodiments, the computer calculates a winning price per unit based on the substantially fixed amount of capital, the price per unit and the number of units in each of the bids. Then in the allocating process, the computer allocates a number of units of property at the winning price per unit for each bid having an associated price per unit at or above the winning price per unit until the substantially fixed amount of capital is reached.

Bidding according to the Jersey auction may be done in a sealed or open bidding manner. Moreover, the Jersey auction may be combined with other auction formats such as the English or Dutch, discriminatory, uniform first price or uniform second price.

An apparatus according to the present invention includes a network interface, a database and a processor. The network interface is coupled to a network. The database stores bid information from bidders. The processor, which is coupled to the network interface and the database, receives bids from the network and stores the bids in the

database. Each bid has a total value and an associated price per unit. The processor calculates a winning price per unit based on the substantially fixed amount of capital, the price per unit and the total value in each of the bids. The processor then allocates a number units of the property for each bid having an associated price per unit at or above the winning price per unit based on the total value of each bid divided by the winning price per unit until the substantially fixed amount of capital is reached.

BRIEF DESCRIPTION OF THE FIGURES:

The aforementioned features and advantages will be more fully appreciated with reference to the appended figures and detailed description.

Fig. 1 depicts an auction system according to one embodiment of the present invention.

Fig. 2 depicts an internal view of an auction controller according to one embodiment of the present invention.

Fig. 3 depicts an internal view of buyer and seller terminals according to one embodiment of the present invention.

Fig. 4 depicts one method of configuring an auction in accordance with an embodiment of the present invention.

Figs. 5A and 5B depict a method of collecting bids during an auction and awarding units of assets up for auction to winning bids according to one embodiment of the present invention.

Fig. 6 depicts a method of awarding units of assets up for auction to winning bids according to another embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION:

Fig. 1 depicts a system for conducting auctions according to one embodiment of the present invention. In an embodiment of the invention, ownership of the assets is amenable to severance into multiple, identical units of ownership. The units of ownership sold at auction. The assets may be real or personal property. In these scenarios, units of ownership may each be considered to provide a portion of ownership in joint tenancy in a single piece of real or personal property. Alternatively, when the property is severable into separate units, separate legal title to each of which may be conveyed, this may be pursued in lieu of joint tenancy. The latter scenario may be convenient when, for example, an owner desires to auction an agricultural product, such as grain, which may be sold in multiple, substantially equivalent lots. Similarly, an owner possessing a large quantity of any substantially identical items may conduct an auction to sell as few as necessary to raise a substantially fixed amount of capital according to the present invention.

The assets may also be legal entities, such as businesses. In this scenario, the units of ownership are typically shares of stock. Selling shares of stock in a business, through an auction or otherwise, is regulated by the Securities and Exchange Commission (SEC), whose rules governing issuance of stock to the public or a select group of investors, must be complied with.

Referring to Fig. 1, the auction system includes an auction controller 12, a plurality of bidder terminals 14, a data or voice network 15, a seller terminal 16 and an auction data entry center 18. The auction controller 12 is disposed in electronic communication with the buyer and seller terminals 14 and 16 over the data or voice network 15. The auction controller 12 is also disposed in electronic communication with the bid entry center 18, which in turn may be disposed in electronic communication with

the network 15. The auction controller receives requests from a seller or an agent of the seller to conduct an auction of predetermined assets at a future time. The sellers may communicate the request to the auction controller 12 directly via an electronic message or telephone call sent over the network 15. Alternatively, the sellers may send a request by mail, telephone or any other convenient manner to the auction data entry center.

The auction data entry center 18 typically maintains a staff of employees who receive requests by mail, telephone or other convenient manner. Subsequently, the employees enter data into the auction controller 12 to configure the auction controller to conduct an auction according to instructions in the request.

After the auction controller has been configured to conduct an auction, the auction controller begins the auction at a predetermined time. Subsequently, bidders at the bidder terminals may transmit bids to the auction controller. In one embodiment, this is done via an electronic message conforming to a predetermined format over the network 15. Bids may also be transmitted to the auction controller via a telephone call to the auction controller 12 or auction data entry center 18 over the network 15. Also, a bidder may mail a bid to the auction data entry center 18, depending on the format of the auction. Employees at the auction data entry center 18 may then input data from the bid into the auction controller 12.

The data or voice network 15 is a telecommunications network. The network 15 may be a voice network including a plurality of interconnected telecommunications switches. The interconnection may be accomplished in any convenient manner via including by electric, optic, or wireless transmission over one or more communications channels. A preferred voice network according to the present invention is the public switched telephone network (PSTN). However, a PBX, key telephone system or any other voice network may be used. The data network includes a plurality of server

computers, which may be interconnected in a well known manner in a local area network (LAN) or a wide area network (WAN) configuration. The data network may also be the plurality of interconnected servers, routers and backbones collectively called the Internet. The electronic messages transmitted over the network 15 may be transmitted pursuant to any convenient network protocol, illustratively including the hypertext transfer protocol (http), telnet, file transfer protocol (ftp) simple mail transfer protocol (SMTP).

Fig. 2 depicts an internal view of the auction controller 12, which is typically a computer. In one embodiment of the invention, the auction controller includes a central processor 20 coupled over a bus to a data network interface 22, a voice network interface 24, a voice response unit 26, a memory 28, and databases 30-36. The central processor 20 may also be coupled to a display 38 and a keyboard 40.

The memory 28 may include random access memory (RAM) or read only memory (ROM) and other storage devices for storing information on and reading information from a computer useable medium. The other storage devices may illustratively include hard and floppy disk drives, tape drive and compact disk (CD) ROM and video disk drives. The memory 28 stores program instructions for commanding the central processor 20 of the auction controller 12 to conduct auctions. Instructions may be uploaded to the memory 28 through a computer usable medium, such as a floppy or CD ROM disk or via the data or voice network interface 22 or 24 respectively. During operation of the auction controller 12, the central processor 20 retrieves program instructions from the memory 28 and conducts the auction according to the instructions.

The data network interface 22 and the voice network interface 24 are coupled to the network 15. The data network interface may be a digital modem or local area network card, such as an ethernet card. The data network interface 22 exchanges digital data between the central processor 20 and other devices coupled to the bus and the

network 15. The digital data exchanged with the network 15 may be data or digitized voice data. The voice network interface is typically a modem. The voice network interface converts digital data from the bus to analog data pursuant to a communications protocol for transmission over the network 15. Similarly, the voice network interface 24 converts analog data received from the network 15 to digital data for further transmission over the bus to the central processor 20 and other devices coupled to the bus.

The voice response unit 26 is coupled to the bus and may exchange voice data with the bus. The voice response unit includes prerecorded messages for playing to a seller, a bidder, or someone interested in learning about the auction process. The voice response unit 26 becomes active upon the auction controller receiving a telephone call from the network 15. In response, the voice response unit may play one of the prerecorded messages to the caller. Furthermore, the voice response unit may prompt the caller press a button on the phone or to make an utterance corresponding to a call processing option. The voice response unit 26 permits the auction controller to receive instructions, bids and auction information from a telephone operated by sellers and bidders.

The databases 30-36 are also coupled to the bus and may transmit data to and receive data from the central processor 20 and the other devices coupled to the bus. The databases 30-36 may be single or separate databases. Moreover, the databases 30-36 may be part of the memory 28 or may be remotely located and coupled to the central processor 20 over the network 15. The information stored in each of the databases is described with reference to the flowcharts below.

The keyboard 40 is coupled to the central processor 20 and may be used to enter information relating to a future or ongoing auction. For example, the employees at the bid entry center 18 may enter information from sealed bids received through the mail via

the keyboard 40 for storage in one or more of the databases 30-36. The display 38 may be coupled directly to the processor or the bus. It may by employees at the bid entry center 18 to monitor auction information or by an auctioneer conducting an auction to monitor the progress of the auction.

Fig. 3 depicts a view of buyer and seller terminals 14 and 16 which may be used by bidders to enter bids and by sellers to enter information concerning what will be auctioned at a future time. In a simple case, both the bidder and seller terminals 14 and 16, respectively, may be telephones. In this scenario, the buyer and seller may each place telephone calls over the network 15 in a conventional manner to the auction controller 12. This engages the voice response unit 26 of the auction controller 20 which facilitates collecting and storing the bid and auction information in the appropriate database. Alternatively, each of the bidder and seller terminals 14 and 16 may be a computer, such as that depicted in Fig. 3.

Referring to Fig. 3, the terminal includes a processor 50 coupled to a modem/LAN interface 52, a memory 54, a storage device 56, a display 60 and a keyboard 62. The modem/LAN interface 52 is coupled to the network 15 and may be configured to connect directly to the auction controller through a dial-up connection or to connect indirectly, for example by establishing a connection to a universal resource locator (URL) corresponding to the auction controller 12 over the Internet. Once connected to the auction controller 12, the Modem/LAN interface 52 exchanges data between the bus at the terminal and the auction controller 12.

The memory 54 may include random access memory (RAM) or read only memory (ROM) and other storage devices 56 for storing information on and reading information from a computer useable medium. The other storage devices 56 may illustratively include hard and floppy disk drives, tape drive, compact disk (CD) ROM and video disk

drives. The memory 54 stores program instructions for commanding the processor 50 of the terminal to run programs enabling the terminal to interact with the auction controller 12. In a preferred embodiment of the invention, the programs illustratively include an operating system and an Internet browser for connecting to the Internet and displaying and editing web pages, electronic mail application, text editors and multi-media presentation applications, such as real-time audio visual players. The memory 54 and storage devices 56 also store data relating to auctions, such as bid information, information on upcoming auctions including descriptions of assets to be sold at the auction and times for the auctions. The instructions and auction information may be uploaded to the memory 54 or the storage devices 56 through a computer usable medium, such as a floppy or CD ROM disk 58 or via the Modem/LAN interface 52, respectively.

In one embodiment of the invention, sellers of an asset distribute on CD ROM 58 a prospectus for an asset which is the subject of a future auction. The prospectus may include a textual or multi-media presentation concerning the asset and details concerning a manner of participating in the auction. The CD ROM 58 may further include a program or data for uploading to the memory 54 which facilitates establishing a connection with the auction controller 12 over the network 15 automatically. The display 60 and the keyboard 62 are coupled to the processor 50 and enable bidders and sellers to monitor auction information for an on-going or future auction and to interact with the auction controller 12 via the terminal for the purpose of setting up or participating in an auction.

Fig. 4 depicts a method of configuring a Jersey auction according to the present invention. In step 100, the auction controller receives a request from a seller for an auction. The seller typically communicates the request from the seller terminal 16 to the auction controller 12 by sending an electronic message. However, the seller may also communicate the request by telephone to the voice response unit 26 or by telephone or

mail to an employee of the bid entry center 18 for subsequent entry by the employee into the auction controller 12.

The request typically includes the type of the auction desired, the seller's identity, a proposed starting time for auction and an optional ending time for the auction. The seller may provide a description of the asset for auction with or separately from the request. The asset description may be printed material sent by mail or hand or a file of textual or multimedia information describing the asset, indicating the number of units of ownership in the asset that the seller or others are retaining and the fixed amount of capital desired to be raised. The asset description is sent either electronically or on a computer usable medium. In step 102, the auction controller assigns an auction identifier to the received request and stores the request and the asset description together with the identifier in the databases 30 and 32, respectively. An example of requests stored as database entries in the auction and bid information database 30 is shown in the table below.

Auction Identifier	Auction Type	Seller	Auction Start Time	Auction End Time
00001	Jersey – Sealed Bid	Pfizer	5/3/99 8:00am	5/7/99 5:00pm
00002	Jersey - English	Boeing	5/5/99 10:00am	
00003	Jersey – Dutch	Websurf.com	6/9/99 10:00am	

In step 104, the central processor optionally stores the identity of a pool of bidders for the auction in the bidder information database 36. The pool of bidders may be communicated to the auction controller 12 by the seller. Alternatively, pool of bidders may be selected by the auction controller 12 or the auction data entry center 18 based on any convenient criteria, including: a description of the asset; a database registered users of the auction system 10; indications of interest from bidders, who may indicate interest

by sending a proxy, such as a electronic message or letter indicating an intent to participate, or by physically arriving at a place where the auction is to be conducted and providing information concerning the bidder's identity at that time.

In step 106, the auction controller 12 optionally serves information concerning auctions from the databases 30-36 to bidder terminals over the network 15. In a preferred embodiment, this is done by configuring the auction controller 12 as a server which serves webpages over the internet to the terminals. The webpages may include: information on future auctions; hypertext links to an asset description for each future auction; and interactive registration windows permitting bidders to register to participate in the future auctions.

In step 108, the auction controller 12 may optionally send auction information to potential bidders. In one embodiment of the invention, this is done by sending emails to registered uses of the auction system 10 concerning upcoming auctions. However, this may also be done by mailing auction information based on demographic or other information provided by the seller by an employee of the auction data entry center.

In step 110, bidders may be pre-qualified to participate up to a maximum bid. This may be done by employees of the auction data entry center. Subsequently, the maximum bid information may be stored for each bidder in the bidder information database 36. Once steps 100-110 have been carried out, the auction may be conducted.

Steps 200-206 depict conducting a predetermined auction according to a Jersey auction, sealed bid format. In step 200, the auction controller 12 receives bids from bidder terminals 14. The bids may be received over the network 15 or received from employees of the auction data entry center 18. According to the Jersey Auction, the bid information is as follows:

Example 1

Bidder	Total Value Bid	Price/Unit	# Units Desired
1000	$10, 000, 000.00	$2000.00	
1001	$1,000,000.00	$2500.00	
1002	$10,000,000.00	$500.00	
1003	$9,000,000.00	$1500.00	

Example 2

Bidder	Total Value Bid	Price/Unit	# Units Desired
1000		$2000.00	5000
1001		$2500.00	400
1002		$500.00	2000
1003		$1500.00	6000

According to the Jersey auction, bidders must specify the price per unit of the asset up for auction. Only one of the total value bid and the number of units desired needs to be provided in the bid. Jersey auctions may be conducted where bidders must specify the total value bid and the price per unit as shown in Example 1. Similarly, Jersey auctions may be conducted where bidders must specify the number of units desired and the price per unit as shown in Example 2.

In step 202, the auction controller 12 optionally verifies that either the bidder or the bid is authorized. When a total value is specified, the central processor 20 of the auction controller 12 may optionally perform the verification by querying the bidder information database 36 to determine whether the total value bid exceeds the maximum authorized bid for the bidder. If so, the auction controller rejects the bid. When the bid specifies a price per unit and a number of units, the central processor first forms a product between these two values to determine the value of the bid. The central processor 20 then queries the database for the maximum authorized bid for the bidder. If the value of the

bid exceeds the maximum value, then the central processor 20 rejects the bid. In step 204, if the bid is not rejected, the central processor 20 stores the bid in the auction and bid information database 30.

In step 206, the central processor 20 determines whether time remains in the Jersey auction. The central processor 20 makes this determination by querying the auction information database 30 to determine the ending time of the auction. The central processor 20 then compares the current time with the ending time of the auction. If the current time is equal to or exceeds the ending time of the auction, then step 208 begins thus initiating the process of determining the outcome of the Jersey auction. If the current time is less than the ending time of the auction, then step 200 begins again and more bids are accepted.

When step 208 begins, a sealed Jersey auction has concluded and the process of awarding units of the asset up for auction to winning bidders begins. In step 208, the central processor 20 retrieves the bids from the auction and bid information database 30. The central processor 20 then orders the bids based on the price per unit, with the highest price per unit at the top of the list. This is illustrated in Example 3 below by ordering the bids shown above in Example 2.

Example 3

Bidder	Total Value Bid	Price/Unit	# Units Desired
1001		$2500.00	400
1003		$1500.00	6000
1000		$2000.00	5000
1002		$500.00	2000

Referring to Fig. 5A, in step 210, the central processor 20 begins at the top of the list and selects the first bid as the candidate winning bid. In step 212, the central processor 20 aggregates the number of shares bid in the candidate bid and all higher bids.

In step 214, the central processor then forms a product of the aggregate shares and the price per share of the candidate bid. Then in step 216, the central processor 20 selects the candidate bid as the winning bid when the product of the aggregate shares and the price per share at the candidate bid meets or exceed the fixed amount of capital desired to be raised through the auction. In step 218, if there has not been a winning bid, then step 210 begins again with the next bid on the list being selected as the candidate bid. If there has been a winning bid, then step 220 begins.

Steps 208-210 are best illustrated by considering Example 3 in the context of an auction where the seller desires to raise $15,000,000.00 by the auction and intends to retain 10,000 units of ownership. This is presented in Example 4 below.

Example 4

Bidder	Total Value Bid	Price/Unit	# Units Desired	Aggregate Shares	Product
1001		$2500.00	400	400	$1,000,000.00
1000		$2000.00	5000	5400	$10,800,000.00
1003		$1500.00	6000	11400	$17,100,000.00
1002		$500.00	2000		

Referring to Example 4, bidder 1003 has the last winning bid because the product at this bid exceeds the $15,000,000.00 desired to be raised by the auction. Bids 1001 and 1000 also win because they have a price per unit which exceeds the price per unit of the last winning bid.

In step 220, the central processor sets the winning price per unit at the price per unit of the last winning bid, which is $1500. Then in step 222, the central processor allocates a number of owner ship units corresponding to the number of units bid for each winning bidder, beginning with the bidder having the highest price per unit. The last winning bidder may only receive a portion of the number of units desired. The portion

corresponds to that which is required for the product to substantially equal the fixed amount of capital desired to be raised. In Example 4, the following outcome is attained by the Jersey Auction:

Bidder 1001 gets 400 units at $1500.00 per unit, a total value of $600,000.00.

Bidder 1000 gets 5,000 units at $1500.00 per unit, a total value of $7,500,000,00.

Bidder 1003 gets 4,600 units at $1500.00 per unit, a total value of $6,900,000.00.

Bidder 1002 gets nothing.

A total of $15,000,000.00 has been raised through the Jersey auction.

The owner of the asset retained 10,000 units for himself. Therefore, his or her ownership is now worth 10,000 units * $1,500.00 per unit, a total value of $15,000.00. Therefore, he or she now has 50% ownership of the asset.

The asset itself has a market value of $30,000,000.00 including $15,000,000.00 raised through the Jersey auction process.

Fig. 6 depicts an alternative embodiment of the Jersey auction process where the bids include a total value bid and a price per unit. Prior to the beginning of step 300, an auction has been conducted to collect bids, preferably as described in steps 200-206 of Fig. 5A. In step 300, the central processor 20 orders the bids into a list based on the price per unit, with the highest price per unit appearing at the top. This is illustrated in Example 5 below by ordering the bids shown above in Example 1.

Example 5

Bidder	Total Value Bid	Price/Unit	# Units Desired
1001	$1,000,000.00	$2500.00	
1000	$10, 000, 000.00	$2000.00	
1003	$9,000,000.00	$1500.00	
1002	$10,000,000.00	$500.00	

In step 302, the central processor 20 begins at the top of the re-ordered list and selects a bid as the candidate bid. In step 304, the central processor 20 aggregates the total value of the candidate bid with all higher bids evaluated so far. In step 306, the central processor 20 selects the candidate bid as the last winning bid when the aggregate total amount bid is equal to or exceeds the fixed amount desired to be raised through the Jersey auction process. In step 308, the central processor determines whether the last winning bid has been received. If not, then step 302 begins again and the next bid on the list is considered as the candidate bid. If so, then step 310 begins.

Steps 300-308 are best illustrated by considering Example 5 in the context of an auction where the seller desires to raise $15,000,000.00 by the auction and intends to retain 10,000 units of ownership. This is presented in Example 6 below.

Example 6

bidder	Total Value Bid	Price/Unit	# Units Desired	Aggregate total amount
1001	$1,000,000.00	$2500.00		$1,000,000.00
1000	$10, 000, 000.00	$2000.00		$11,000,000.00
1003	$9,000,000.00	$1500.00		$20,000,000.00
1002	$10,000,000.00	$500.00		

Referring to Example 6, bidder 1003 has the last winning bid because the aggregate total amount bid exceeds the $15,000,000.00 desired to be raised by the auction. Bids 1001 and 1000 also win because they have a price per unit which exceeds the price per unit of the last winning bid.

In step 310, the central processor 20 sets the winning price per unit at the price per unit of the last winning bid, which is $1500.00 per unit. In step 312, the central processor 20 allocates a number of units to each winning bidder up to the total value bid by each bidder at the winning price per unit. The last winning bidder may only receive a portion of the amount bid, which will be the fixed amount desired to be raise through the Jersey

auction minus the aggregate value of all other winning bids. The following outcome is attained for the Jersey auction of Example 6.

Bidder 1001 gets 666 units at $1,500.00, a total value of $999,000.00

Bidder 1000 gets 6,666 units at $1,500.00, a total value of $9,999,000.00

Bidder 1003 gets 2,668 units at $1,500.00, a total value of $4,002,000.00.

Bidder 1002 gets nothing.

The fixed amount of capital raised by the auction is $15,000,000.00.

The owner of the asset retained 10,000 units for himself. Therefore, his ownership is now worth 10,000 units * $1,500.00 per unit, a total value of $15,000.00. Therefore, he or she now has 50% ownership of the asset.

The asset itself has a market value of $30,000,000.00 including $15,000,000.00 raised through the Jersey auction process.

It will be noted that Examples 4 and 6 use bids having the same initial valuations. However, the outcome results in different allocations of shares to the bidders.

Figs. 5A, 5B and 6 depict a method of conducting a Jersey Auction where bids submitted are sealed and winning price per unit is set at the price of the price per unit of the last winning bid. However, the Jersey auction may just as easily be conducted without being sealed. Many additional variations may be made to these methods. For example, the winning price per unit may be set at the price per unit of the highest losing bid. In Example 6, this would be $500.00. As another example, the Jersey auction could be conducted in a discriminatory fashion, such that units may be awarded at different prices per unit to different bidders until the fixed amount of capital is reached. In still another example, the Jersey auction may be conducted with bids open to other bidders in, for example, an English or Dutch style.

In the case of a Jersey auction conducted in an English style the following variations may illustratively be made. Bids may be openly declared for one or more of an undefined number of units for auction. All new bids must be greater in price per unit than the preceding bid. As bids are made, and the price per unit increases, the number of units of ownership for sale during the Jersey auction declines. Specifically, the fixed amount of capital desired to be raised at the Jersey auction divided by the price per unit of the highest outstanding bid determines the number of shares outstanding.

In the case of a Jersey auction conducted in a Dutch style, the following variations may illustratively be made. The asking price per unit for an undefined number of units for auction is openly declared by the seller of an agent of the seller. Subsequently, the asking price per unit is lowered at predefined intervals. The number of units for sale increases as the price per unit is decreased. In a non-discriminatory case, the number of units is equal to the amount of capital desired to be raised through the Jersey auction divided by the price per unit of the outstanding bid. Bidders openly declare when they accept an asking price for one or more units. Bidding is closed when the fixed amount of capital has been raised. The Dutch auction may also be conducted in a discriminatory manner, such that units of ownership are sold at different prices to different bidders until the fixed amount of capital desired to be raised at the Jersey auction is reached.

Although specific embodiments have been shown and described, it will be understood by those having ordinary skill in the art that changes may be made to those embodiments without departing from the spirit and scope of the invention. For example, while steps 214-222 and steps 310-312 have been described where the winning price per unit is set at the price per unit of the lowest winning bid, many alternatives may be used. For example, the winning price per unit may be set at the price per unit of the highest losing bid, the second highest losing bid or any other convenient amount.

CLAIMS:

1. A method of auctioning a variable number of units of a property in an auction to raise a fixed amount of capital, comprising:

receiving bids at a computer, each bid having a total value and an associated price per unit;

calculating a winning price per unit at the computer based on the fixed amount of capital, the price per unit and the total value in each of the bids; and

allocating a plurality of units for each bid having an associated price per unit at or above the winning price per unit based on the total value of each bid divided by the winning price per unit until the fixed amount of capital is reached.

2. The method according to claim 1, wherein said calculating comprises:

creating a list of bids in order of price per unit;

beginning with the bid having the highest price per unit, repeatedly selecting a successive one of the bids on the list as a candidate winning bid;

forming an aggregate total value by aggregating the total value of each of the successive candidate bids;

selecting the candidate winning bid as the winning bid when an aggregate total value is equal to or greater than the substantially fixed amount of capital; and

setting the winning price per unit at the price per unit in the winning bid.

3. The method according to claim 1, wherein each bid is transmitted to the computer by one of a plurality bidders at terminals coupled to the computer, each bidder being authorized by the computer to participate in the auction.

4. The method according to claim 3, further comprising:

eliminating a bid from the calculating when the bid includes a total value in excess of a predetermined amount authorized for the bidder that transmitted the bid.

5. The method according to claim 1, wherein the bids are sealed.

6. The method according to claim 1, wherein the bids are open to all bidders.

7. The method according to claim 1, wherein the winning price per unit is calculated to be the highest price per unit of a bid which does not receive an allocation in the allocating.

8. The method according to claim 1, wherein the winning price per unit is calculated to be the highest price per unit of a bid which does not receive an allocation in the allocating.

9. A method of selling a variable number of units of a single property in an auction to raise a fixed amount of capital, comprising:

receiving bids at a computer, each bid having a number of units and an associated price per unit;

calculating a winning price per unit at the computer based on the substantially fixed amount of capital, the price per unit and the number of units in each of the bids; and

allocating a number units of property at the winning price per unit for each bid having an associated price per unit at or above the winning price per unit until the substantially fixed amount of capital is reached.

10. The method according to claim 9, wherein the calculating comprises:

creating a list of bids in order of price per unit;

beginning with the bid having the highest price per unit, repeatedly selecting a successive one of the bids on the list as a candidate winning bid;

forming a product between the price per unit of the candidate bid and an aggregate of the number of units in each bid on the list having an associated price per unit equal to or greater than the candidate bid;

selecting the candidate winning bid as the winning bid when the product is greater than or equal to the substantially fixed amount of capital; and

setting the winning price per unit at the price per unit of the winning bid.

11. The method according to claim 10, wherein the units are shares of stock and the single property is a corporation.

12. The method according to claim 10, further comprising:

transmitting from the computer, to a plurality of terminals disposed in communication with the computer, an announcement of the auction; and

issuing a notification to at least one of the plurality of terminals of an allocation made in the allocating.

13. The method according to claim 9, wherein the bids are sealed.

14. The method according to claim 9, wherein the bids are open to bidders.

15. The method according to claim 9, further comprising rejecting each of the bids if a value of the bid exceeds a predetermined maximum.

16. The method according to claim 9, wherein the winning price per unit is calculated to be the highest price per unit of a bid which does not receive an allocation in the allocating.

17. The method according to claim 9, wherein the winning price per unit is calculated to be the highest price per unit of a bid which does not receive an allocation in the allocating.

18. An apparatus for selling a variable number of units of a single property in an auction to raise a substantially fixed amount of capital, comprising:

a network interface, coupled to a network;

a memory device including a database for storing bid information; and

a processor, disposed in communication with said memory device and the network interface, the processor configured to (a) receive bids from the network and store the bids in the database, each bid having a total value and an associated price per unit, (b) calculate a winning price per unit based on the substantially fixed amount of capital, the price per unit and the total value in each of the bids, and (c) allocate a number units of the property for each bid having an associated price per unit at or above the winning price per unit based on the total value of each bid divided by the winning price per unit until the substantially fixed amount of capital is reached.

19. The apparatus according to claim 18, wherein each bid is transmitted to the processor by one of a plurality bidders at terminals coupled to the network, each bidder being authorized by an entry in the database to participate in the auction.

20. The apparatus according to claim 19, wherein the processor does not store a bid when the bid includes a total value in excess of a predetermined amount authorized for the bidder that transmitted the bid.

21. The apparatus according to claim 20, wherein the bids are sealed.

22. The apparatus according to claim 20, wherein the bids are open to bidders.

23. A computer program product for causing a computer to auction a variable number of units of a property in an auction to raise a substantially fixed amount of capital, comprising:

a computer useable medium having computer program logic stored therein, wherein the computer program logic comprises:

receiving means for causing the computer to receive bids, each bid having a total value and an associated price per unit;

calculating means for causing the computer to calculate a winning price per unit based on the substantially fixed amount of capital, the price per unit and the total value in each of the bids; and

allocating means for causing the computer to allocate a number units of the property for each bid having an associated price per unit at or above the winning price per unit based on the total value of each bid divided by the winning price per unit until the substantially fixed amount of capital is reached.

24. The computer program product according to claim 23, wherein the calculating means further comprises:

creating means for causing the computer to create a list of bids in order of price per unit;

selecting means for causing the computer to repeatedly select a successive one of the bids on the list, beginning with the bid having the highest price per unit, as a candidate winning bid;

forming means for causing the computer to form an aggregate total value by aggregating the total value of each of the successive candidate bids;

determining means for causing the computer to determine that the candidate winning bid is the winning bid when an aggregate total value is equal to or greater than the substantially fixed amount of capital; and

setting means for causing the computer to set the winning price per unit at the price per unit in the winning bid.

25. The computer program product according to claim 23, further comprising authorizing means for causing the computer to authorize each bidder to participate in the auction.

26. The computer program product according to claim 25, further comprising:

eliminating means for causing the computer to eliminate a bid from the calculating step when the bid includes a total value in excess of a predetermined amount authorized for the bidder that transmitted the bid.

27. The computer program product according to claim 26, wherein the bids are sealed.

28. The computer program product according to claim 26, wherein the bids are open to bidders.

29. The method according to claim 23, wherein the calculating means calculates the winning price per unit to be the highest price per unit of a bid which does not receive an allocation by the allocating means.

30. The method according to claim 23, wherein the calculating means calculates the winning price per unit to be the highest price per unit of a bid which does not receive an allocation by the allocating means.

31. A method of auctioning a variable number of units of a property in an auction to raise a fixed amount of capital, comprising:

receiving bids, each bid having a total value and an associated price per unit;

calculating a winning price per unit based on the fixed amount of capital, the price per unit and the total value in each of the bids; and

allocating a plurality of units for each bid having an associated price per unit at or above the winning price per unit based on the total value of each bid divided by the winning price per unit until the fixed amount of capital is reached.

32. The method according to claim 31, wherein said calculating comprises:

creating a list of bids in order of price per unit;

beginning with the bid having the highest price per unit, repeatedly selecting a successive one of the bids on the list as a candidate winning bid;

forming an aggregate total value by aggregating the total value of each of the successive candidate bids;

selecting the candidate winning bid as the winning bid when an aggregate total value is equal to or greater than the substantially fixed amount of capital; and

setting the winning price per unit at the price per unit in the winning bid.

33. The method according to claim 31, further comprising:

eliminating a bid from the calculating when the bid was made by a bidder who is not authorized.

34. The method according to claim 31, further comprising:

eliminating a bid from the calculating when the bid includes a total value in excess of a predetermined amount authorized for a bidder that transmitted the bid.

35. The method according to claim 31, wherein the bids are sealed.

36. The method according to claim 31, wherein the bids are open to all bidders.

37. The method according to claim 31, wherein the winning price per unit is calculated to be the highest price per unit of a bid which does not receive an allocation in the allocating.

38. The method according to claim 31, wherein the winning price per unit is calculated to be the highest price per unit of a bid which does not receive an allocation in the allocating.

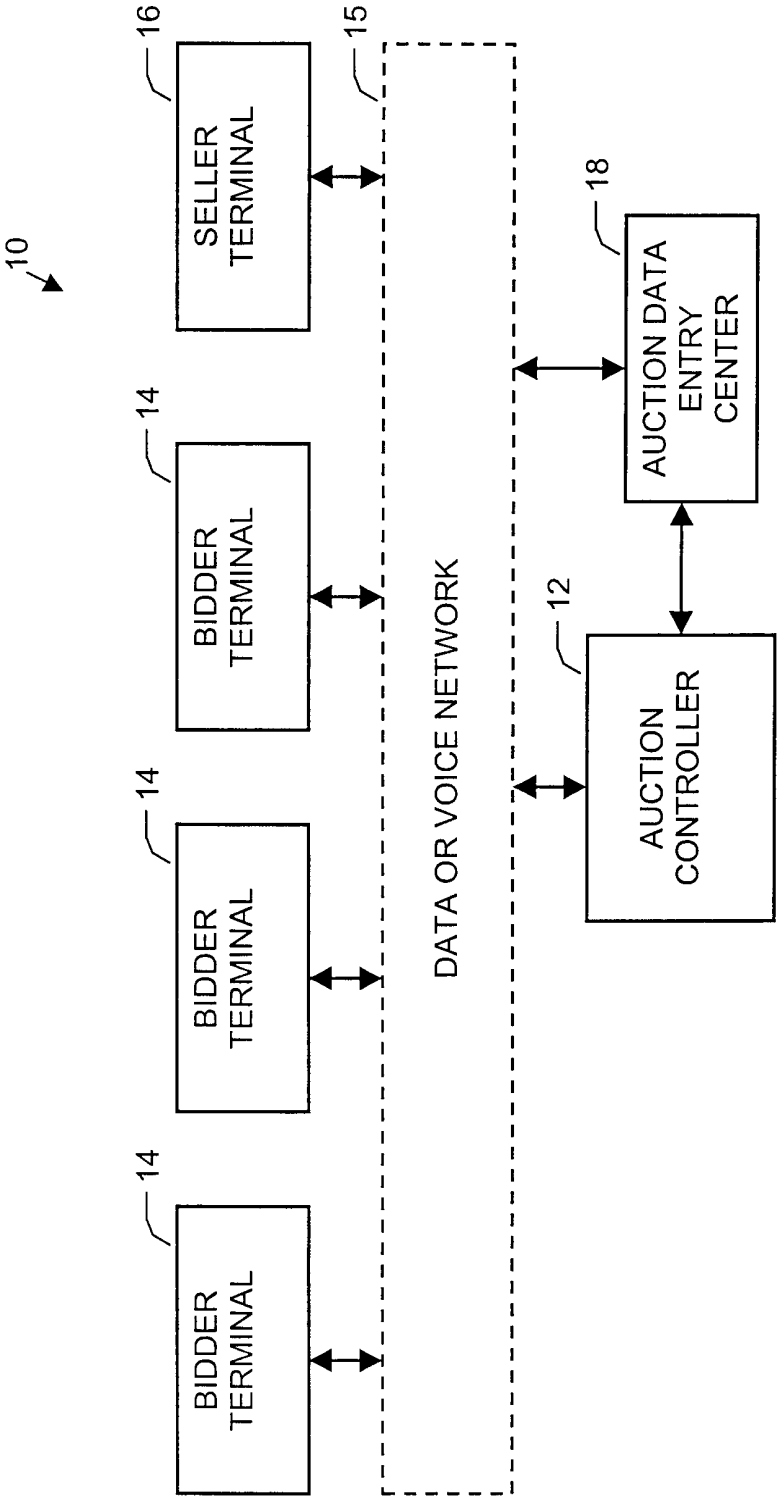

10
16
SELLER TERMINAL
15
14
BIDDER TERMINAL
14
BIDDER TERMINAL
14
BIDDER TERMINAL
DATA OR VOICE NETWORK
18
AUCTION DATA ENTRY CENTER
12
AUCTION CONTROLLER

FIG. 1

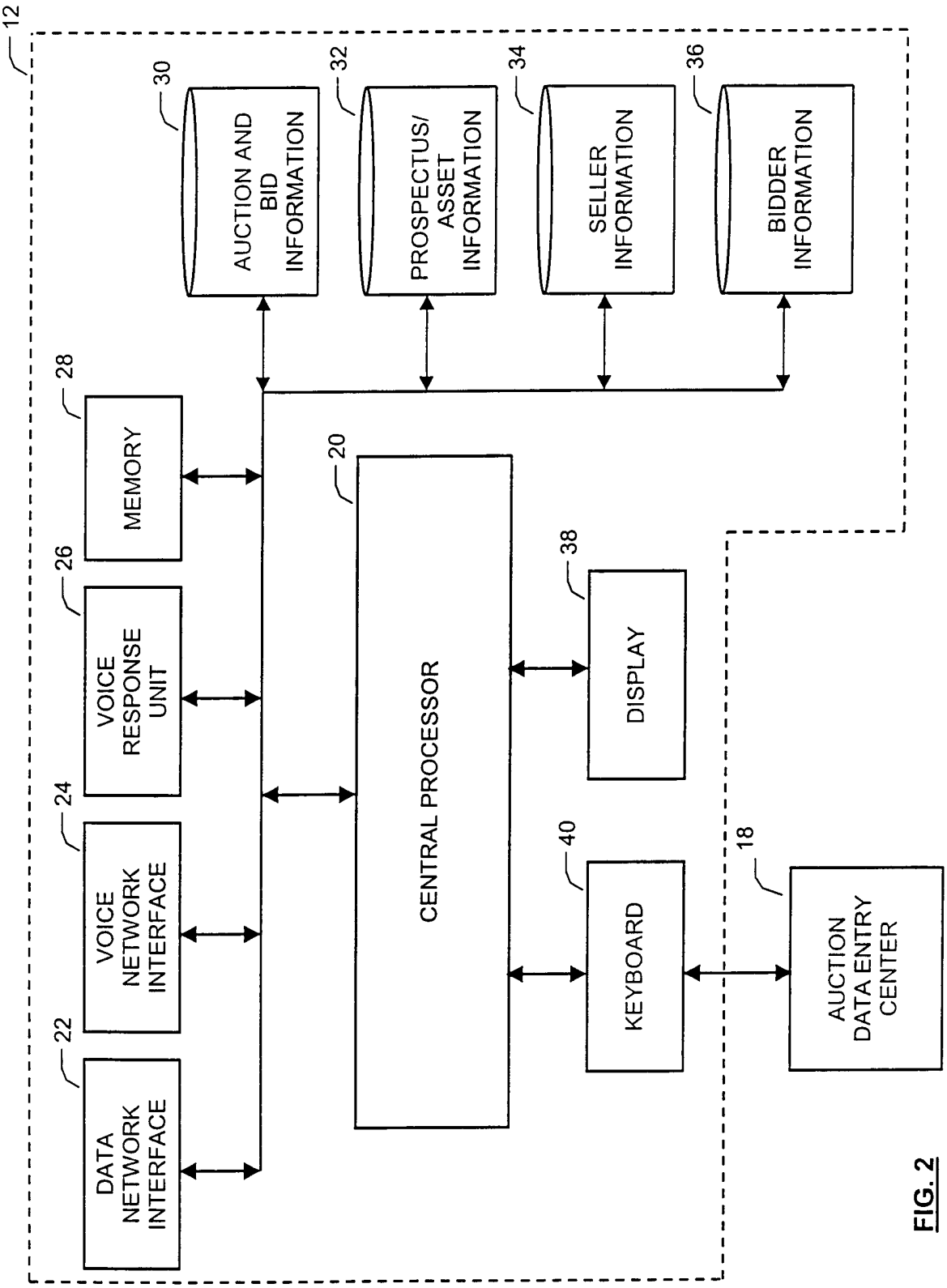

12
30
AUCTION AND BID INFORMATION
32
PROSPECTUS/ ASSET INFORMATION
34
SELLER INFORMATION
36
BIDDER INFORMATION
28
MEMORY
20
CENTRAL PROCESSOR
38
DISPLAY
26
VOICE RESPONSE UNIT
24
VOICE NETWORK INTERFACE
40
KEYBOARD
18
AUCTION DATA ENTRY CENTER
22
DATA NETWORK INTERFACE

FIG. 2

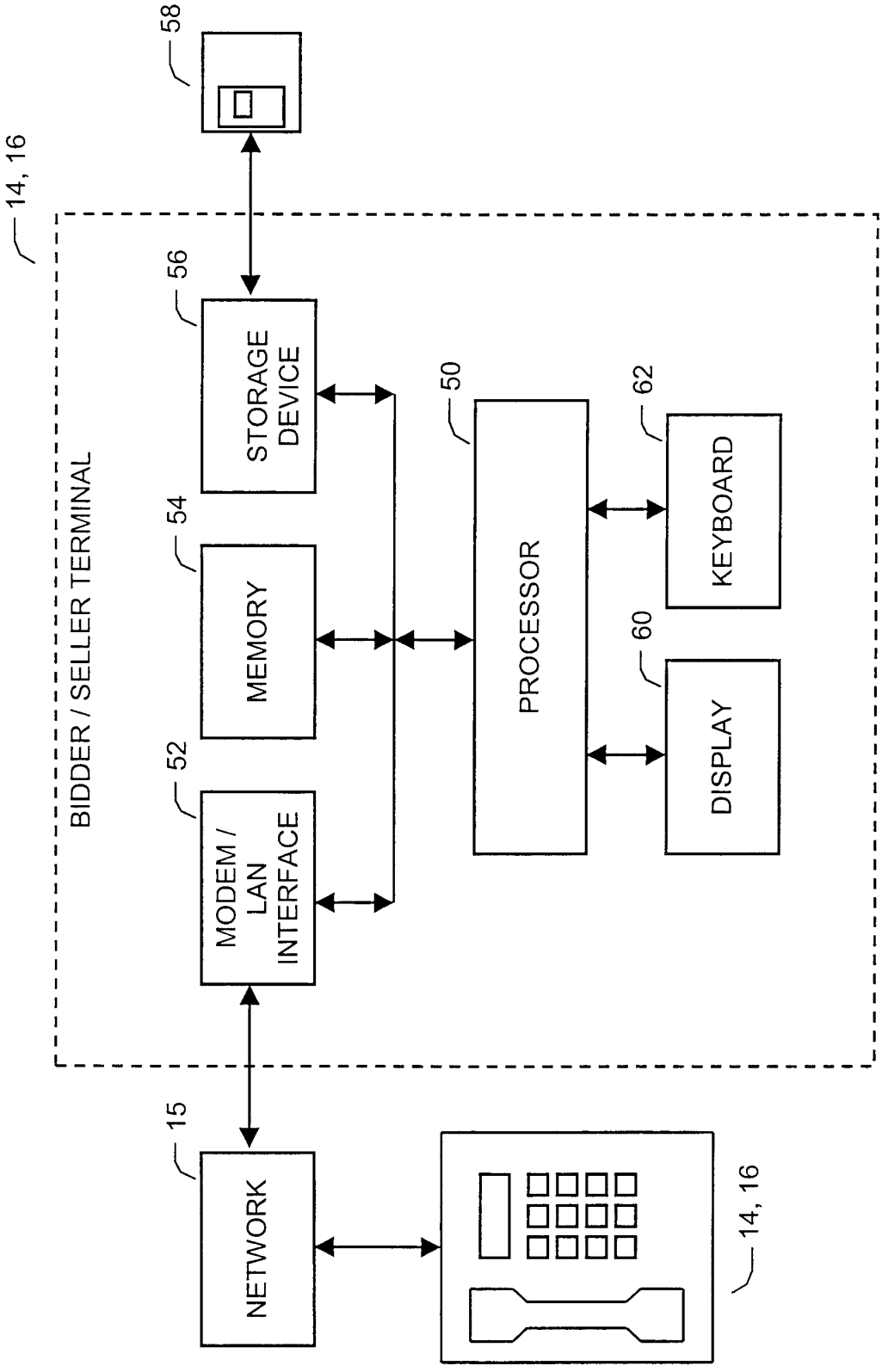

14, 16
BIDDER / SELLER TERMINAL
58
56
STORAGE DEVICE
54
MEMORY
52
MODEM / LAN INTERFACE
50
PROCESSOR
62
KEYBOARD
60
DISPLAY
15
NETWORK
14, 16

FIG. 3

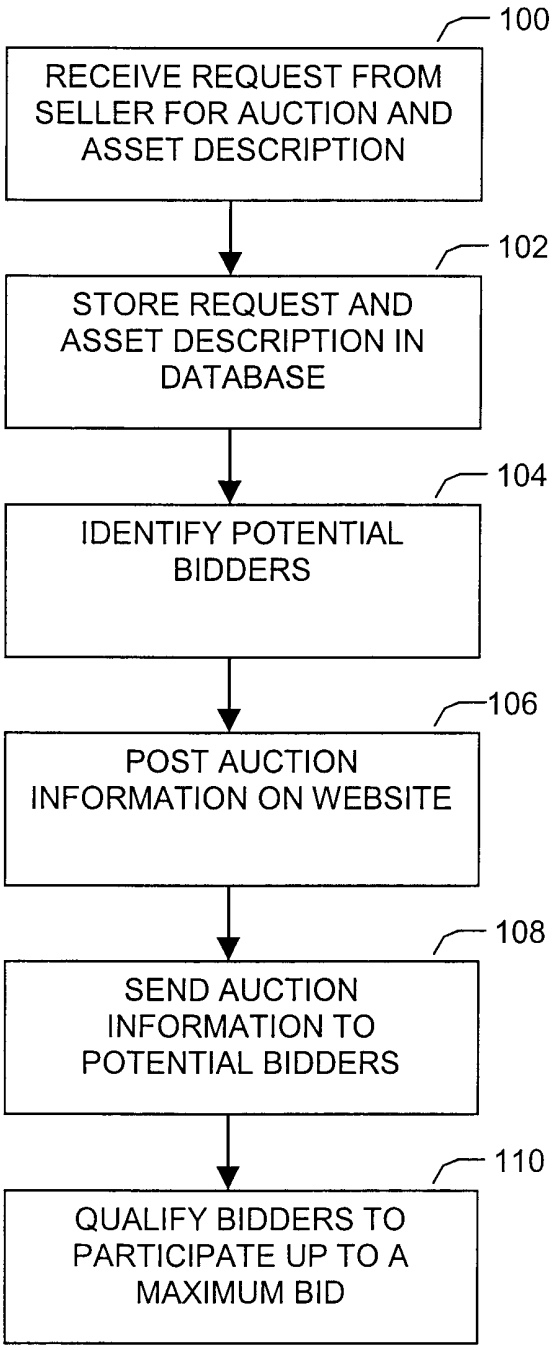

100
RECEIVE REQUEST FROM SELLER FOR AUCTION AND ASSET DESCRIPTION
102
STORE REQUEST AND ASSET DESCRIPTION IN DATABASE
104
IDENTIFY POTENTIAL BIDDERS
106
POST AUCTION INFORMATION ON WEBSITE
108
SEND AUCTION INFORMATION TO POTENTIAL BIDDERS
110
QUALIFY BIDDERS TO PARTICIPATE UP TO A MAXIMUM BID

FIG. 4

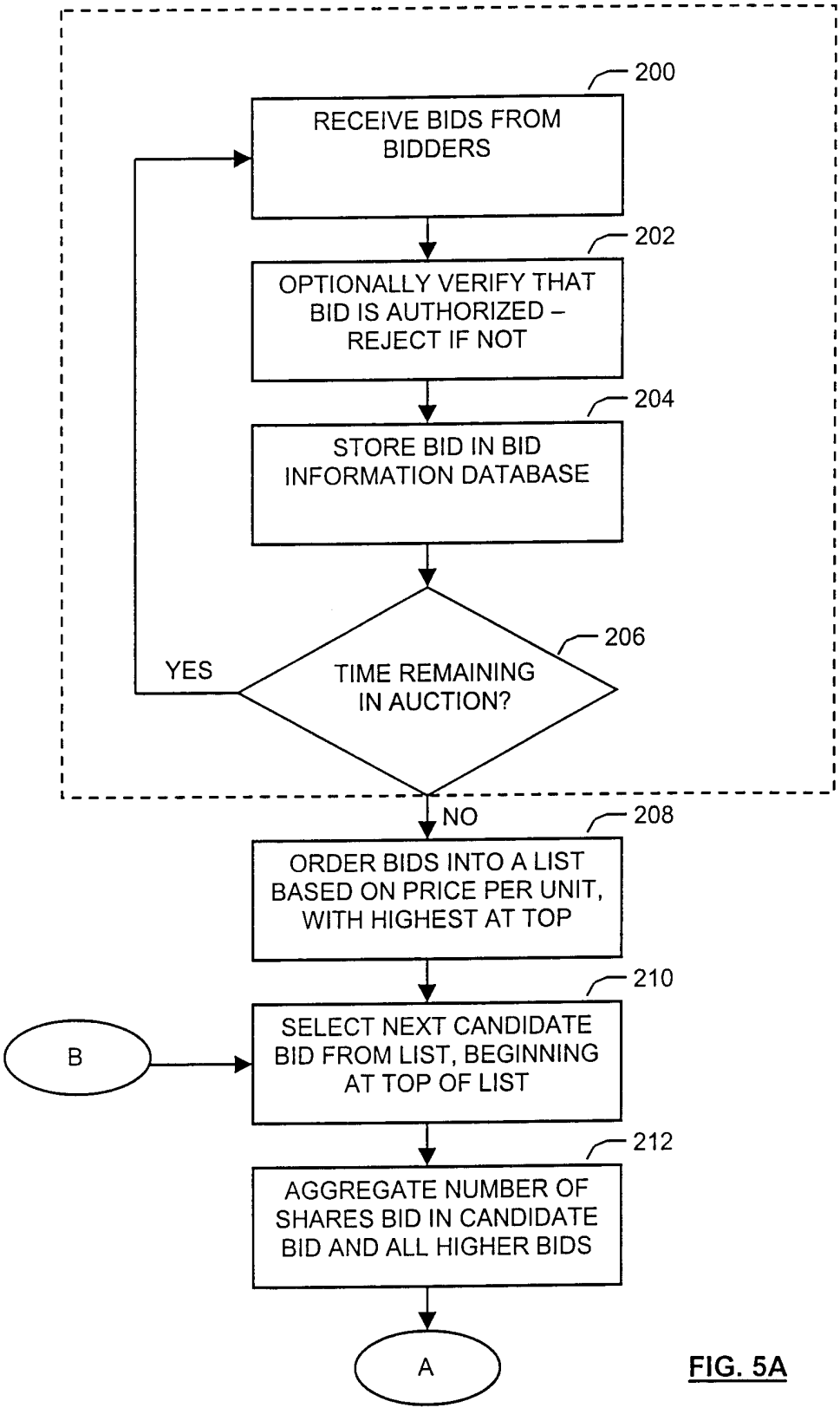

200
RECEIVE BIDS FROM BIDDERS
202
OPTIONALLY VERIFY THAT BID IS AUTHORIZED – REJECT IF NOT
204
STORE BID IN BID INFORMATION DATABASE
206
TIME REMAINING IN AUCTION?
YES
NO
208
ORDER BIDS INTO A LIST BASED ON PRICE PER UNIT, WITH HIGHEST AT TOP
210
SELECT NEXT CANDIDATE BID FROM LIST, BEGINNING AT TOP OF LIST
B
212
AGGREGATE NUMBER OF SHARES BID IN CANDIDATE BID AND ALL HIGHER BIDS
A

FIG. 5A

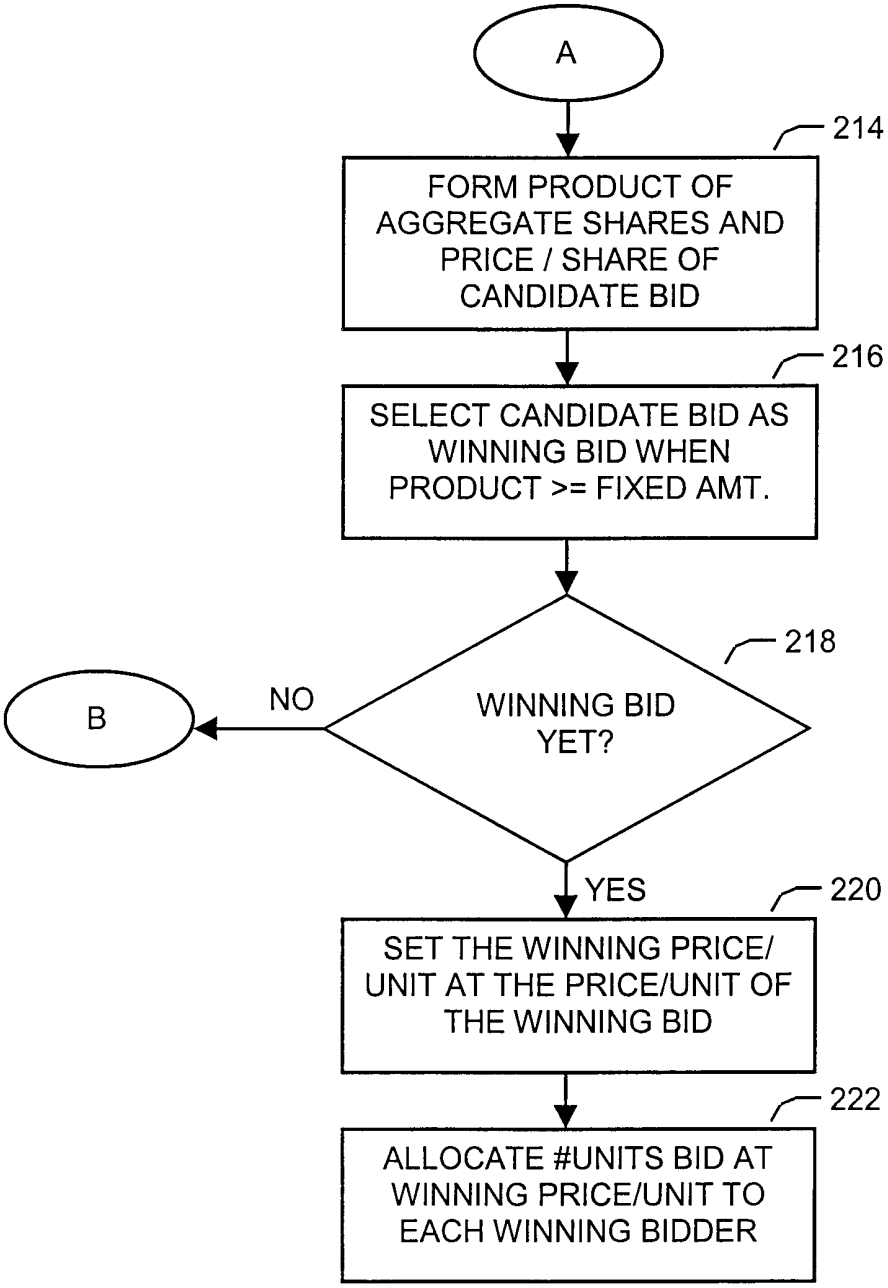

A
214
FORM PRODUCT OF AGGREGATE SHARES AND PRICE / SHARE OF CANDIDATE BID
216
SELECT CANDIDATE BID AS WINNING BID WHEN PRODUCT >= FIXED AMT.
218
WINNING BID YET?
NO
B
YES
220
SET THE WINNING PRICE/ UNIT AT THE PRICE/UNIT OF THE WINNING BID
222
ALLOCATE #UNITS BID AT WINNING PRICE/UNIT TO EACH WINNING BIDDER

FIG. 5B

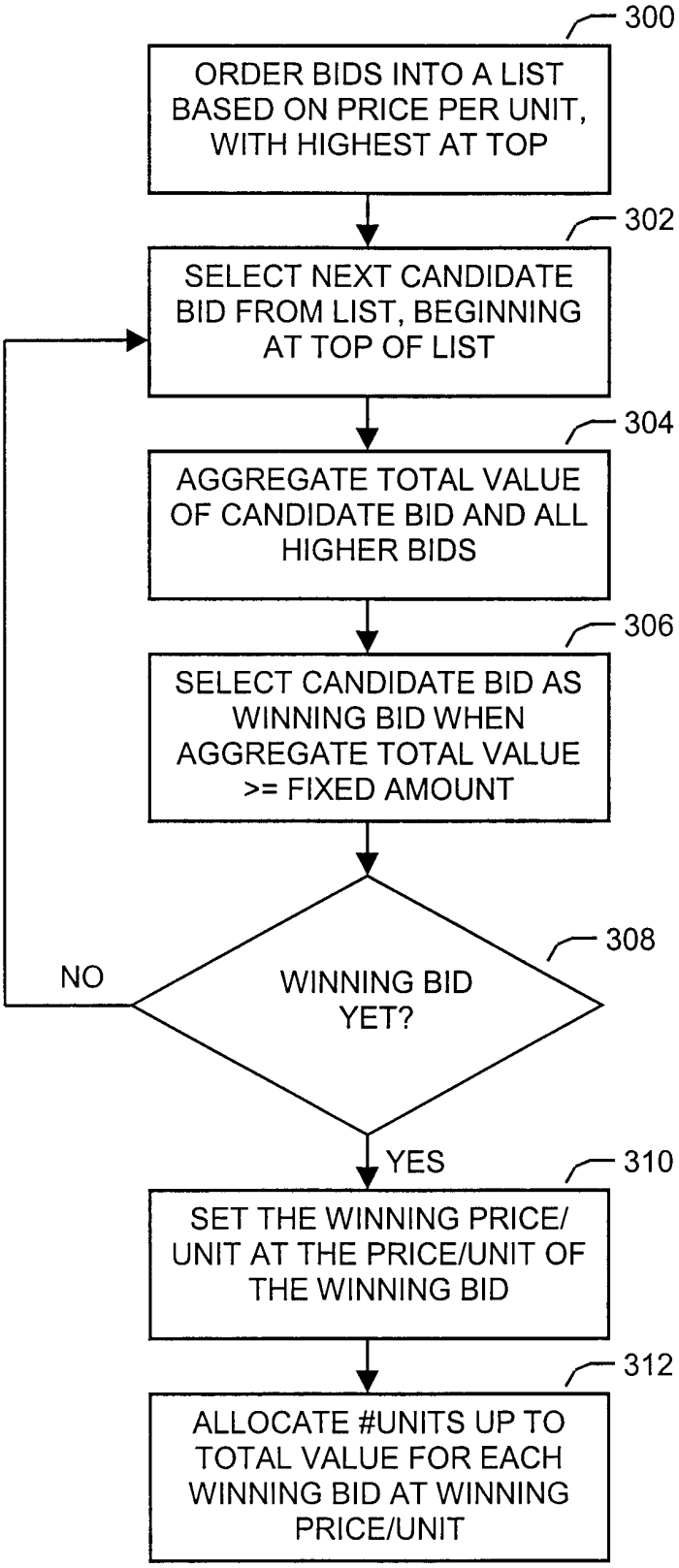

300
ORDER BIDS INTO A LIST BASED ON PRICE PER UNIT, WITH HIGHEST AT TOP
302
SELECT NEXT CANDIDATE BID FROM LIST, BEGINNING AT TOP OF LIST
304
AGGREGATE TOTAL VALUE OF CANDIDATE BID AND ALL HIGHER BIDS
306
SELECT CANDIDATE BID AS WINNING BID WHEN AGGREGATE TOTAL VALUE >= FIXED AMOUNT
308
WINNING BID YET?
NO
YES
310
SET THE WINNING PRICE/ UNIT AT THE PRICE/UNIT OF THE WINNING BID
312
ALLOCATE #UNITS UP TO TOTAL VALUE FOR EACH WINNING BID AT WINNING PRICE/UNIT

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/09828

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/60, 157:00, 3/14
US CL : 705/14, 26, 27, 35, 37, 39

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/14, 26, 27, 35, 37, 39

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

SNT, WEST
search terms: auction, bidding, matching

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	US 6,021,398 A (AUSUBEL) 01 February 2000, col. 2-40	1-38
A	US 5,835,896 A (FISHER et al) 10 November 1998, col. 6-12	1-38
A	US 5,890,138 A (GODIN et al) 30 March 1999, col. 3-8	1-38
A, P	US 6,026,383 A (AUSUBEL) 15 February 2000, col. 4-9	1-38

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
13 JULY 2000

Date of mailing of the international search report
04 AUG 2000

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