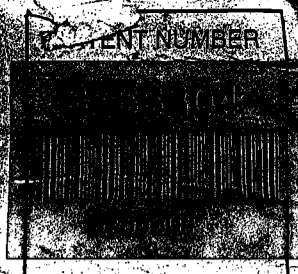
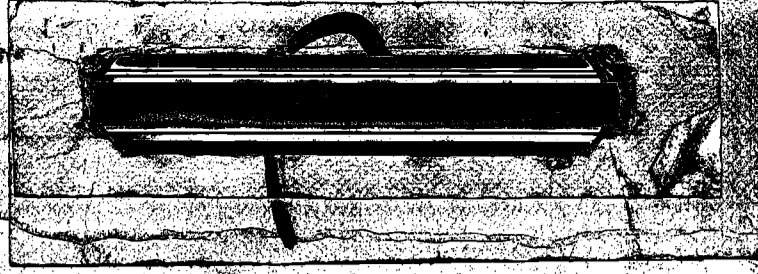


705	Class	ISSUE CLASSIFICATION
-----	-------	----------------------



U.S. UTILITY Patent Application

*RW* O.I.P.E. PATENT DATE  
 SCANNED *AS 2* Q.A. *[Signature]* JUL 20 2004

*est HKM 3 WX*

APPLICATION NO. 09/894637	CONT/PRIOR D	CLASS 705	SUBCLASS <i>37</i>	ART UNIT <i>2164</i> <del>2164</del> <i>9699</i>	EXAMINER <i>Wusberger</i>
------------------------------	-----------------	--------------	-----------------------	---	------------------------------

APPLICANTS  
 GARY W. KAMTON;  
 Jens-Uwe Schluetter  
 Harris Brumfield

TITLE  
 Click based trading with intuitive grid display of market depth

of Correction  
 NOV 16 2004  
 Certificate

PTO-2040  
12/99

ISSUING CLASSIFICATION

ORIGINAL		CROSS REFERENCE(S)					
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
<i>705</i>	<i>37</i>	<i>705</i>	<i>36</i>	<i>37</i>			
INTERNATIONAL CLASSIFICATION							
<i>G06F</i>	<i>17/10</i>						

Continued on Issue Slip Inside File Jacket

<input type="checkbox"/> <b>TERMINAL DISCLAIMER</b>	<b>DRAWINGS</b>			<b>CLAIMS ALLOWED</b>	
	Sheets Drwg. <i>6</i>	Figs. Drwg. <i>6</i>	Print Fig. <i>3</i>	Total Claims <i>40</i>	Print Claim for O.G. <i>1</i>
<input type="checkbox"/> The term of this patent subsequent to _____ (date) has been disclaimed.	_____ (Assistant Examiner)			<b>NOTICE OF ALLOWANCE MAILED</b>	
	_____ (Date)			<i>2-10-04</i>	
<input type="checkbox"/> The term of this patent shall not extend beyond the expiration date of U.S Patent. No. _____	<i>Rich Weisberger</i> <b>RICHARD WEISBERGER</b> PRIMARY EXAMINER			<b>ISSUE FEE</b>	
	<i>A.H. 3624</i> _____ (Primary Examiner)			Amount Due <i>\$1330</i>	Date Paid
<input type="checkbox"/> The terminal _____ months of this patent have been disclaimed.	_____ (Legal Instruments Examiner)			<b>ISSUE BATCH NUMBER</b>	
	_____ (Date)				

**WARNING:**  
 The information disclosed herein may be restricted. Unauthorized disclosure may be prohibited by the United States Code Title 35, Sections 122, 181 and 368. Possession outside the U.S. Patent & Trademark Office is restricted to authorized employees and contractors only.

Form PTO-436A  
(Rev. 6/99)

FILED WITH:  DISK (CRF)  FICHE  CD-ROM  
 (Attached in pocket on right inside flap)

CQG EXHIBIT 1002

09894637



09894637

34017 U.S. PTO  
09/094637  
08/27/01

INITIALS

# CONTENTS

Date Received  
(Incl. C. of M.)  
or  
Date Mailed

Date Received  
(Incl. C. of M.)  
or  
Date Mailed

1. Application <i>1/2 pre and 2</i> papers.	7/27/01	42.	
2. IRR RCP	07/26/01	43.	
3. Drawings	09-07-01	44.	
4. Petition for Take Special	9/12/01	45.	
5. IDS	9/17/01	46.	
6. Associate Patent Attorney	8/16/02	47.	
7. <i>Amend B</i>	9/27/02	48.	
8. <del>XXXXXXXXXX</del>		49.	
9. RCE	3-19-03	50.	
10. <i>allowance</i>	2/10/04	51.	
11. <i>IDS</i>	9-20-02	52.	
12. <i>IDS</i>	2-11-03-2-10-01	53.	
13. <i>IDS</i>	10/18/02	54.	
14. <i>IDS</i>	10/14/02	55.	
15. <i>IDS</i>	11/10/03	56.	
16. 15/12 QUERY	3/29/04	57.	
17. <i>Amend D</i>	3/10/03	58.	
18. Petition Granted	6/17/2004	59.	
19. <i>C off B22</i>	10-21-04	60.	
20.		61.	
21.		62.	
22.		63.	
23.		64.	
24.		65.	
25.		66.	
26.		67.	
27.		68.	
28.		69.	
29.		70.	
30.		71.	
31.		72.	
32.		73.	
33.		74.	
34.		75.	
35.		76.	
36.		77.	
37.		78.	
38.		79.	
39.		80.	
40.		81.	
		82.	

POSITION	INITIALS	ID NO.	DATE
FEE DETERMINATION	Bouakha		07-25-01
O.I.P.E. CLASSIFIER			
FORMALITY REVIEW	JA	G.C. 8111	07/25/01
RESPONSE FORMALITY REVIEW	Tequest	925	10-15-01

**INDEX OF CLAIMS**

- ✓ ..... Rejected
- = ..... Allowed
- (Through numeral)... Canceled
- ⊖ ..... Restricted
- N ..... Non-elected
- I ..... Interference
- A ..... Appeal
- O ..... Objected

Claim	Date
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

Claim	Date
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

Claim	Date
101	
102	
103	
104	
105	
106	
107	
108	
109	
110	
111	
112	
113	
114	
115	
116	
117	
118	
119	
120	
121	
122	
123	
124	
125	
126	
127	
128	
129	
130	
131	
132	
133	
134	
135	
136	
137	
138	
139	
140	
141	
142	
143	
144	
145	
146	
147	
148	
149	
150	

If more than 150 claims or 10 actions  
staple additional sheet here

(LEFT INSIDE)

135  
9/26  
858  
1/5/01



### SEARCHED

Class	Sub.	Date	Exmr.
7-5	35 36 37	9/01	n
345	814	3/03	n

### SEARCH NOTES (INCLUDING SEARCH STRATEGY)

	Date	Exmr.
Dulry Trading Tech & Services .com Eurus Exchange.com	9/01	n
Dulry	3/03	n
Wells Foreign P.A.S.	4/04	n
PAISYSTEMS.COM	1/04	n

### INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
NONE	-	9-1	n



US006766304B2

(12) **United States Patent**  
**Kemp, II et al.**

(10) **Patent No.:** **US 6,766,304 B2**  
(45) **Date of Patent:** **Jul. 20, 2004**

(54) **CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH**

5,774,877 A 6/1998 Patterson, Jr. et al.  
5,793,301 A 8/1998 Patterson, Jr. et al.

(List continued on next page.)

(75) **Inventors:** Gary Allan Kemp, II, Winnetka, IL (US); Jens-Uwe Schluetter, Evanston, IL (US); Harris Brumfield, Chicago, IL (US)

**FOREIGN PATENT DOCUMENTS**

(73) **Assignee:** Trading Technologies International, Inc., Chicago, IL (US)

WO	WO 98/49639	11/1998
WO	WO 99/19821	4/1999
WO	WO 99/30259	6/1999
WO	WO 99/53424	10/1999
WO	WO 00/52619	9/2000
WO	WO 00/62187	10/2000
WO	WO 00/65510	11/2000
WO	WO 01/16830	3/2001
WO	WO 01/16852	3/2001
WO	WO 01/22315	3/2001
WO	WO 01/88808	11/2001

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 544 days.

(21) **Appl. No.:** 09/894,637

**OTHER PUBLICATIONS**

(22) **Filed:** Jun. 27, 2001

(65) **Prior Publication Data**

US 2002/0059129 A1 May 16, 2002

**Related U.S. Application Data**

(62) Division of application No. 09/590,692, filed on Jun. 9, 2000.

Patsystems News Release, Patsystems Launches J Trader, Nov. 6, 2001.\*

www.tradingtechnologies.com/products/xtrade\_full.html (viewed May 22, 2001) <Jun. 9, 2000.

Kharouf, A trading room with a view, Futures, 27, 11—Nov. 1998.

USPTO Presentation, NASDAQ, Nov. 8, 2001, enclosed pp. 1-13.

(60) Provisional application No. 60/186,322, filed on Mar. 2, 2000.

(51) **Int. Cl.**<sup>7</sup> ..... G06F 17/60

*Primary Examiner*—Richard Weisberger

(52) **U.S. Cl.** ..... 705/37; 705/36; 705/35

(74) *Attorney, Agent, or Firm*—Foley & Lardner

(58) **Field of Search** ..... 705/35, 36, 37; 345/814

(57) **ABSTRACT**

A method and system for reducing the time it takes for a trader to place a trade when electronically trading on an exchange, thus increasing the likelihood that the trader will have orders filled at desirable prices and quantities. The "Mercury" display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

4,674,044 A	6/1987	Kalmus et al.	364/408
4,750,135 A	6/1988	Boilen	364/514
5,038,284 A	8/1991	Kramer	
5,077,665 A	12/1991	Silverman et al.	364/408
5,136,501 A	8/1992	Silverman et al.	364/408
5,270,922 A	12/1993	Higgins	364/408
5,297,031 A	3/1994	Guterman et al.	
5,297,032 A	3/1994	Trojan et al.	
5,689,651 A	11/1997	Lozman	

**40 Claims, 6 Drawing Sheets**

SYMBOL FOR DECS						INDEX	
SPN	10-40-44	BQ	AdG	Prc	LTC		
1000	L	S				104	95
1010	R	S				24	98
1011		720				23	97
1012	X	10				115	98
1013		0					
1014		10	SH			32	96
		20	SH			27	94
		1R	SH			83	93
1007			CLR			45	92
		X	10			28	91
1015						20	90
1018		-17				20	90
			COL			18	88
1008						97	88
1017			NET 0			30	87
1018						43	86
			NET REAL			110	86
1018						23	84
						31	83
1021						125	82
						21	81



US006766304B2

(12) **United States Patent**  
**Kemp, II et al.**

(10) **Patent No.:** **US 6,766,304 B2**  
(45) **Date of Patent:** **Jul. 20, 2004**

(54) **CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH**

5,774,877 A 6/1998 Patterson, Jr. et al.  
5,793,301 A 8/1998 Patterson, Jr. et al.

(List continued on next page.)

(75) **Inventors:** **Gary Allan Kemp, II**, Winnetka, IL (US); **Jens-Uwe Schluetter**, Evanston, IL (US); **Harris Brumfield**, Chicago, IL (US)

**FOREIGN PATENT DOCUMENTS**

(73) **Assignee:** **Trading Technologies International, Inc.**, Chicago, IL (US)

WO	WO 98/49639	11/1998
WO	WO 99/19821	4/1999
WO	WO 99/30259	6/1999
WO	WO 99/53424	10/1999
WO	WO 00/52619	9/2000
WO	WO 00/62187	10/2000
WO	WO 00/65510	11/2000
WO	WO 01/16830	3/2001
WO	WO 01/16852	3/2001
WO	WO 01/22315	3/2001
WO	WO 01/88808	11/2001

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 544 days.

(21) **Appl. No.:** **09/894,637**

(22) **Filed:** **Jun. 27, 2001**

(65) **Prior Publication Data**

US 2002/0059129 A1 May 16, 2002

**Related U.S. Application Data**

(62) Division of application No. 09/590,692, filed on Jun. 9, 2000.

(60) Provisional application No. 60/186,322, filed on Mar. 2, 2000.

(51) **Int. Cl.<sup>7</sup>** ..... **G06F 17/60**

(52) **U.S. Cl.** ..... **705/37; 705/36; 705/35**

(58) **Field of Search** ..... **705/35, 36, 37; 345/814**

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

4,674,044 A	6/1987	Kalmus et al.	364/408
4,750,135 A	6/1988	Boilen	364/514
5,038,284 A	8/1991	Kramer	
5,077,665 A	12/1991	Silverman et al.	364/408
5,136,501 A	8/1992	Silverman et al.	364/408
5,270,922 A	12/1993	Higgins	364/408
5,297,031 A	3/1994	Gutterman et al.	
5,297,032 A	3/1994	Trojan et al.	
5,689,651 A	11/1997	Lozman	

**OTHER PUBLICATIONS**  
Patsystems News Release, Patsystems Launches J Trader, Nov. 6, 2001.\*

[www.tradingtechnologies.com/products/xtrade\\_full.html](http://www.tradingtechnologies.com/products/xtrade_full.html) (viewed May 22, 2001) <Jun. 9, 2000.

Kharouf, A trading room with a view, *Fututes*, 27, 11—Nov. 1998.

USPTO Presentation, NASDAQ, Nov. 8, 2001, enclosed pp. 1-13.

*Primary Examiner*—Richard Weisberger

(74) *Attorney, Agent, or Firm*—Foley & Lardner

(57) **ABSTRACT**

A method and system for reducing the time it takes for a trader to place a trade when electronically trading on a exchange, thus increasing the likelihood that the trader will have orders filled at desirable prices and quantities. The "Mercury" display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently.

**40 Claims, 6 Drawing Sheets**

SYCOM FGBL DEC99					[1000]	
EW	10:48:44	BidQ	AskQ	Pric	LTO	
1008	L 3		104	99		
1010	R 5		24	98		
1011		720				
1012	X 10		33	97		
1013		0		115	96	
1014				32	95	
	10 1H			27	94	
	50 3H			63	93	
1007	1K 3H			45	92	
	CLF			28	91	
1015	X 10			20	90	
1016	-17			18	89	
1008	CXL			97	88	
1017	NET 0			30	87	
1018	NET REAL			43	86	
1019				110	85	
				31	84	
				125	82	
				21	81	

# US 6,766,304 B2

Page 2

---

## U.S. PATENT DOCUMENTS

5,797,002 A	8/1998	Patterson, Jr. et al.	6,131,087 A	10/2000	Luke et al.
5,845,266 A	12/1998	Lupien et al.	6,134,535 A	10/2000	Belzberg
5,915,245 A	6/1999	Patterson, Jr. et al.	6,195,647 B1	2/2001	Martyn et al.
5,924,082 A	7/1999	Silverman et al.	6,272,474 B1	8/2001	Garcia
5,924,083 A	7/1999	Silverman et al. .... 705/37	6,278,982 B1	8/2001	Korhammer et al.
5,963,923 A	10/1999	Garber ..... 705/37	6,282,521 B1	8/2001	Howorka
6,012,046 A	1/2000	Lupien et al.	6,408,282 B1	6/2002	Buist
6,014,643 A	1/2000	Minton ..... 705/37	2002/0023038 A1	2/2002	Fritsch et al.
6,098,051 A	8/2000	Lupien et al.	2002/0055899 A1	5/2002	Williams

\* cited by examiner

FIG. 1

CONNECTION TO MULTIPLE EXCHANGES

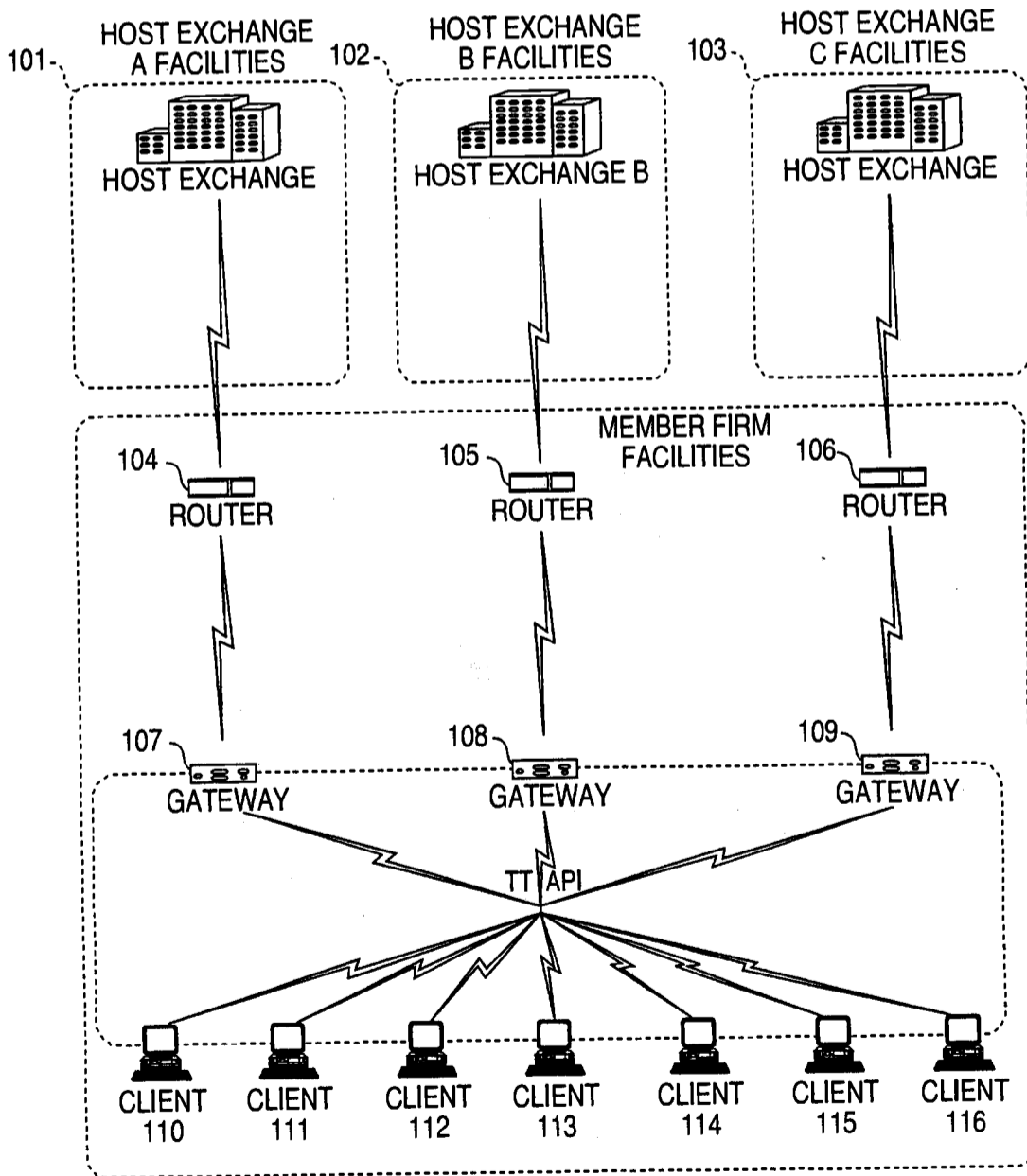




FIG. 2

	201	202	203	204	205							
	Contract	Depth	BidQty	BidPrc	AskPrc	AskQty	LastPrc	LastQty	Total			
1	CDHO	•	785	7626	7627	21	7627	489	8230			
2			626	7625	7629	815						
3			500	7624	7630	600						
4			500	7623	7631	2456						
5			200	7622	7632	800						

FIG. 3

SYCOM FGBL DEC99						-	□	×
E/W	10:48:44		BidQ	AskQ	Prc	LTQ		
1009	L	3		104	99			
1010	R	5		24	98			
1011	720			33	97			
1012	×	10		115	96			
1013	0			32	95			
1014	10	1H		27	94			
	50	3H		63	93			
1007	S 0 W 24	1K 5H		45	92			
	S 0 W 7	CLR		28	91			
1015	×	10		20	90	10	1020	
1016	17	▽		18	89			
1008	B 0 W 15	CXL	18		88			
	B 0 W 13	+ -	97		87			
1017	NET 0		30		86			
1018	B 0 W 17	NET REAL	43		85			
1019			110		84			
			23		83			
			31		82			
1021			125		81			
			21					

FIG. 4

SYCOM FGBL DEC99						<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
E/W	10:48:44		BidQ	AskQ	Prc	LTQ		
	L	3		104	99			
	R	5		24	98			
	720			33	97			
	×	10		115	96			
	0			32	95			
	10	1H		27	94			
	50	3H		63	93	10		
S 10 W 14	1K	5H		43	92		1101	
	CLR		43		91			
	×	10	125		90			
	17	▼	97		89			
B 0 W 15	CXL		18		88			
B 0 W 13	+	-	97		87			
	NET 0		30		86			
			43		85			
B 0 W 17	NET REAL		110		84			
			23		83			
			31		82			
			125		81			
			21					

FIG. 5

SYCOM FGBL DEC99						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E/W	10:48:44		BidQ	AskQ	Prc	LTQ			
	L	3		104	99				
	R	5		24	98				
	720			33	97				
	X	10		115	96				
	0			32	95				
	10	1H		27	94				
	50	3H		63	93				
S 0 W 24	1K	5H		45	92				
S 0 W 7	CLR			28	91				
	X	10		20	90	10			
	17	▼		18	89				
B 0 W 15	CXL		18		88				
B 0 W 13	<input type="checkbox"/>	<input type="checkbox"/>	97		87				
	NET 0		30		86				
			43		85				
B 0 W 17	NET REAL		110		84				
			23		83				
			31		82				
			125		81				
			21						

1206

1205

1204

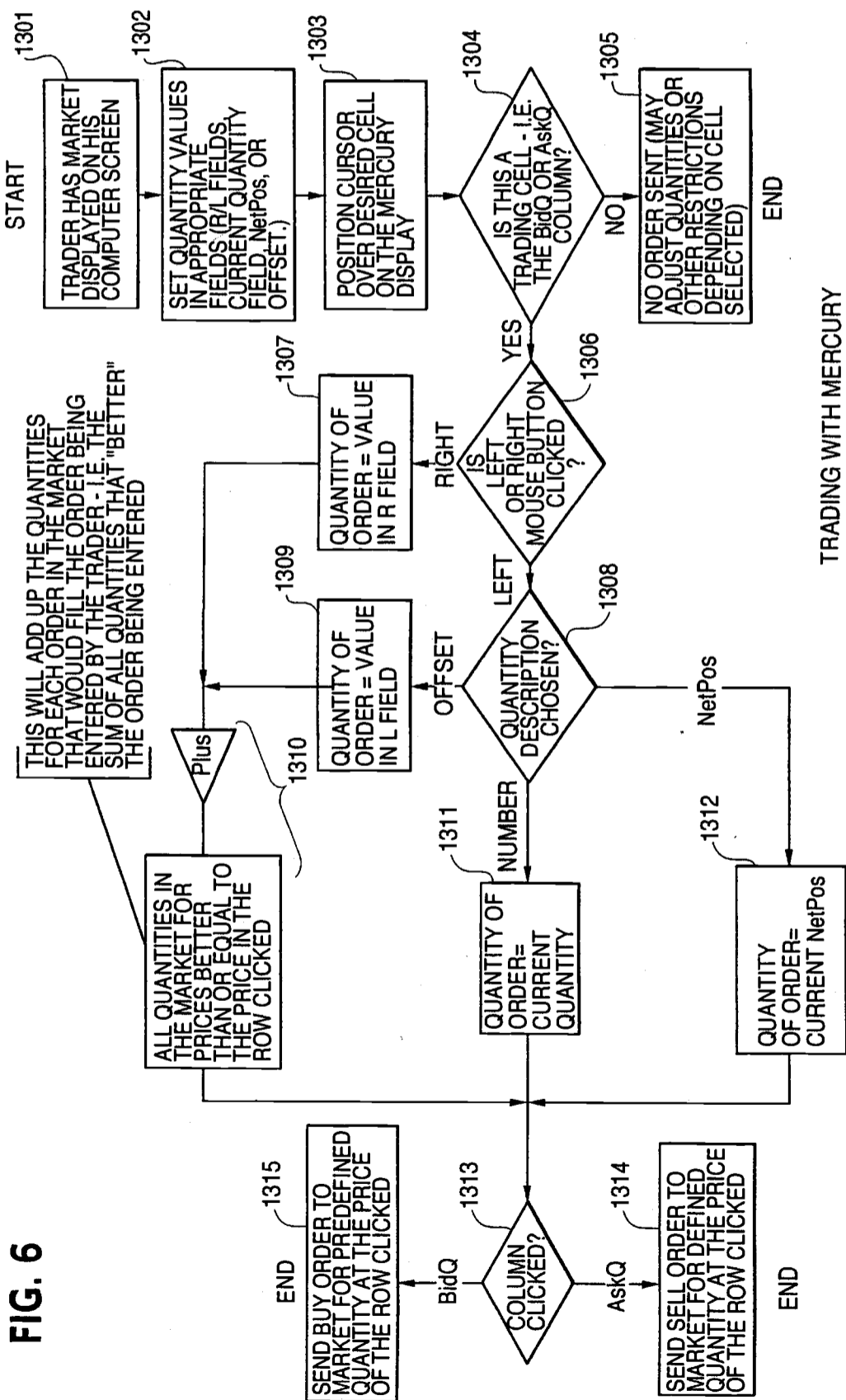
1208

1201

1202

1203

1207



TRADING WITH MERCURY

## CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

This application is a divisional application of Ser. No. 09/590,692 filed Jun. 09, 2000 which claims benefit of 60/186,322, filed Mar. 2, 2000.

### PRIORITY

The present application claims priority to a U.S. Provisional Patent Application entitled "Market Depth Display Click Based Trading and Mercury Display" filed Mar. 2, 2000, the contents of which are incorporated herein by reference.

### FIELD OF INVENTION

The present invention is directed to the electronic trading of commodities. Specifically, the invention provides a trader with a versatile and efficient tool for executing trades. It facilitates the display of and the rapid placement of trade orders within the market trading depth of a commodity, where a commodity includes anything that can be traded with quantities and/or prices.

### BACKGROUND OF THE INVENTION

At least 60 exchanges throughout the world utilize electronic trading in varying degrees to trade stocks, bonds, futures, options and other products. These electronic exchanges are based on three components: mainframe computers (host), communications servers, and the exchange participants' computers (client). The host forms the electronic heart of the fully computerized electronic trading system. The system's operations cover order-matching, maintaining order books and positions, price information, and managing and updating the database for the online trading day as well as nightly batch runs. The host is also equipped with external interfaces that maintain uninterrupted online contact to quote vendors and other price information systems.

Traders can link to the host through three types of structures: high speed data lines, high speed communications servers and the Internet. High speed data lines establish direct connections between the client and the host. Another connection can be established by configuring high speed networks or communications servers at strategic access points worldwide in locations where traders physically are located. Data is transmitted in both directions between traders and exchanges via dedicated high speed communication lines. Most exchange participants install two lines between the exchange and the client site or between the communication server and the client site as a safety measure against potential failures. An exchange's internal computer system is also often installed with backups as a redundancy measure to secure system availability. The third connection utilizes the Internet. Here, the exchange and the traders communicate back and forth through high speed data lines, which are connected to the Internet. This allows traders to be located anywhere they can establish a connection to the Internet.

Irrespective of the way in which a connection is established, the exchange participants' computers allow traders to participate in the market. They use software that creates specialized interactive trading screens on the traders' desktops. The trading screens enable traders to enter and execute orders, obtain market quotes, and monitor positions. The range and quality of features available to traders on their

screens varies according to the specific software application being run. The installation of open interfaces in the development of an exchange's electronic strategy means users can choose, depending on their trading style and internal requirements, the means by which they will access the exchange.

The world's stock, bond, futures and options exchanges have volatile products with prices that move rapidly. To profit in these markets, traders must be able to react quickly. A skilled trader with the quickest software, the fastest communications, and the most sophisticated analytics can significantly improve his own or his firm's bottom line. The slightest speed advantage can generate significant returns in a fast moving market. In today's securities markets, a trader lacking a technologically advanced interface is at a severe competitive disadvantage.

Irrespective of what interface a trader uses to enter orders in the market, each market supplies and requires the same information to and from every trader. The bids and asks in the market make up the market data and everyone logged on to trade can receive this information if the exchange provides it. Similarly, every exchange requires that certain information be included in each order. For example, traders must supply information like the name of the commodity, quantity, restrictions, price and multiple other variables. Without all of this information, the market will not accept the order. This input and output of information the same for every trader.

With these variables being constant, a competitive speed advantage must come from other aspects of the trading cycle. When analyzing the time it takes to place a trade order for a given commodity, various steps contribute in different amounts to the total time required. Approximately 8% of the total time it takes to enter an order elapses between the moment the host generates the price for the commodity and the moment the client receives the price. The time it takes for the client application to display the price to the trader amounts to approximately 4%. The time it takes for a trade order to be transmitted to the host amounts to approximately 8%. The remainder of the total time it takes to place an order, approximately 80%, is attributable to the time required for the trader to read the prices displayed and to enter a trade order. The present invention provides a significant advantage during the slowest portion of the trading cycle—while the trader manually enters his order. Traders recognize that the value of time savings in this portion may amount to millions of dollars annually.

In existing systems, multiple elements of an order must be entered prior to an order being sent to market, which is time consuming for the trader. Such elements include the commodity symbol, the desired price, the quantity and whether a buy or a sell order is desired. The more time a trader takes entering an order, the more likely the price on which he wanted to bid or offer will change or not be available in the market. The market is fluid as many traders are sending orders to the market simultaneously. In fact, successful markets strive to have such a high volume of trading that any trader who wishes to enter an order will find a match and have the order filled quickly, if not immediately. In such liquid markets, the prices of the commodities fluctuate rapidly. On a trading screen, this results in rapid changes in the price and quantity fields within the market grid. If a trader intends to enter an order at a particular price, but misses the price because the market prices moved before he could enter the order, he may lose hundreds, thousands, even millions of dollars. The faster a trader can trade, the less likely it will be that he will miss his price and the more likely he will make money.

## SUMMARY OF THE INVENTION

The inventors have developed the present invention which overcomes the drawbacks of the existing trading systems and dramatically reduces the time it takes for a trader to place a trade when electronically trading on an exchange. This, in turn, increases the likelihood that the trader will have orders filled at desirable prices and quantities.

The "Mercury" display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently.

Specifically, the present invention is directed to a graphical user interface for displaying the market depth of a commodity traded in a market, including a dynamic display for a plurality of bids and for a plurality of asks in the market for the commodity and a static display of prices corresponding to the plurality of bids and asks. In this embodiment the pluralities of bids and asks are dynamically displayed in alignment with the prices corresponding thereto. Also described herein is a method and system for placing trade orders using such displays.

These embodiments, and others described in greater detail herein, provide the trader with improved efficiency and versatility in placing, and thus executing, trade orders for commodities in an electronic exchange. Other features and advantages of the present invention will become apparent to those skilled in the art from the following detailed description. It should be understood, however, that the detailed description and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration and not limitation. Many changes and modifications within the scope of the present invention may be made without departing from the spirit thereof, and the invention includes all such modifications.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates the network connections between multiple exchanges and client sites;

FIG. 2 illustrates screen display showing the inside market and the market depth of a given commodity being traded;

FIG. 3 illustrates the Mercury display of the present invention;

FIG. 4 illustrates the Mercury display at a later time showing the movement of values when compared to FIG. 3;

FIG. 5 illustrates a Mercury display with parameters set in order to exemplify the Mercury trading method; and

FIG. 6 is a flowchart illustrating the process for Mercury display and trading.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As described with reference to the accompanying figures, the present invention provides a display and trading method to ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to place trade orders quickly and efficiently. A commodity's market depth is the current bid and ask prices and quantities in the market. The display and trading method of the invention increase the likelihood that the trader will be able to execute orders at desirable prices and quantities.

In the preferred embodiment, the present invention is implemented on a computer or electronic terminal. The computer is able to communicate either directly or indirectly (using intermediate devices) with the exchange to receive and transmit market, commodity, and trading order information. It is able to interact with the trader and to generate contents and characteristics of a trade order to be sent to the exchange. It is envisioned that the system of the present invention can be implemented on any existing or future terminal or device with the processing capability to perform the functions described herein. The scope of the present invention is not limited by the type of terminal or device used. Further, the specification refers to a single click of a mouse as a means for user input and interaction with the terminal display as an example of a single action of the user. While this describes a preferred mode of interaction, the scope of the present invention is not limited to the use of a mouse as the input device or to the click of a mouse button as the user's single action. Rather, any action by a user within a short period of time, whether comprising one or more clicks of a mouse button or other input device, is considered a single action of the user for the purposes of the present invention.

The system can be configured to allow for trading in a single or in multiple exchanges simultaneously. Connection of the system of the present invention with multiple exchanges is illustrated in FIG. 1. This figure shows multiple host exchanges 101-103 connected through routers 104-106 to gateways 107-109. Multiple client terminals 110-116 for use as trading stations can then trade in the multiple exchanges through their connection to the gateways 107-109. When the system is configured to receive data from multiple exchanges, then the preferred implementation is to translate the data from various exchanges into a simple format. This "translation" function is described below with reference to FIG. 1. An applications program interface ("TT API" as depicted in the figure) translates the incoming data formats from the different exchanges to a simple preferred data format. This translation function may be disposed anywhere in the network, for example, at the gateway server, at the individual workstations or at both. In addition, the storage at gateway servers and at the client workstations, and/or other external storage cache historical data such as order books which list the client's active orders in the market; that is, those orders that have neither been filled nor cancelled. Information from different exchanges can be displayed at one or in multiple windows at the client workstation. Accordingly, while reference is made through the remainder of the specification to a single exchange to which a trading terminal is connected, the scope of the invention includes the ability to trade, in accordance with the trading methods described herein, in multiple exchanges using a single trading terminal.

The preferred embodiments of the present invention include the display of "Market Depth" and allow trader to view the market depth of a commodity and to execute trades within the market depth with a single click of a computer mouse button. Market Depth represents the order book with the current bid and ask prices and quantities in the market. In other words, Market Depth is each bid and ask that was entered into the market, subject to the limits noted below, in addition to the inside market. For a commodity being traded, the "inside market" is the highest bid price and the lowest ask price.

The exchange sends the price, order and fill information to each trader on the exchange. The present invention processes this information and maps it through simple

5

algorithms and mapping tables to positions in a theoretical grid program or any other comparable mapping technique for mapping data to a screen. The physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art. The present invention is not limited by the method used to map the data to the screen display.

How far into the market depth the present invention can display depends on how much of the market depth the exchange provides. Some exchanges supply an infinite market depth, while others provide no market depth or only a few orders away from the inside market. The user of the present invention can also chose how far into the market depth to display on his screen. FIG. 2 illustrates a screen display of an invention described in a commonly owned co-pending application entitled "Click Based Trading with Market Depth Display" Ser. No. 09/589,751, filed on Jun. 9, 2000, the contents of which are incorporated herein by reference. This display shows the inside market and the market depth of a given commodity being traded. Row 1 represents the "inside market" for the commodity being traded which is the best (highest) bid price and quantity and the best (lowest) ask price and quantity. Rows 2-5 represent the "market depth" for the commodity being traded. In the preferred embodiment of the present invention, the display of market depth (rows 2-5) lists the available next-best bids, in column 203, and asks, in column 204. The working bid and ask quantity for each price level is also displayed in columns 202 and 205 respectively (inside market-row 1). Prices and quantities for the inside market and market depth update dynamically on a real time basis as such information is relayed from the market.

In the screen display shown in FIG. 2, the commodity (contract) being traded is represented in row 1 by the character string "CDHO". The Depth column 208 will inform the trader of a status by displaying different colors. Yellow indicates that the program application is waiting for data. Red indicates that the Market Depth has failed to

6

receive the data from the server and has "timed out." Green indicates that the data has just been updated. The other column headings in this and all of the other figures, are defined as follows. BidQty (Bid Quantity): the quantity for each working bid, BidPrc (Bid Price): the price for each working bid, AskPrc (Ask Price): the price for each working ask, AskQty (Ask Quantity): the quantity for each working ask, LastPrc (Last Price): the price for the last bid and ask that were matched in the market and LastQty (Last Quantity): the quantity added at the last price. Total represents the total quantity traded of the given commodity.

The configuration of the screen display itself informs the user in a more convenient and efficient manner than existing systems. Traders gain a significant advantage by seeing the market depth because they can see trends in the orders in the market. The market depth display shows the trader the interest the market has in a given commodity at different price levels. If a large amount of bids or asks are in the market near the trader's position, he may feel he should sell or buy before the inside market reaches the morass of orders. A lack of orders above or below the inside market might prompt a trader to enter orders near the inside market. Without seeing the market depth, no such strategies could be utilized. Having the dynamic market depth, including the bid and ask quantities and prices of a traded commodity aligned with and displayed below the current inside market of the commodity conveys the information to the user in a more intuitive and easily understandable manner. Trends in the trading of, the commodity and other relevant characteristics are more easily identifiable by the user through the use of the present invention.

Various abbreviations are used in the screen displays, and specifically, in the column headings of the screen displays reproduced herein. Some abbreviations have been discussed above. A list of common abbreviations and their meanings is provided in Table 1.

TABLE I

Abbreviations.			
COLUMN	DESCRIPTION	COLUMN	DESCRIPTION
Month	Expiration Month/Year	TheoBid	Theoretical Bid Price
Bid Mbr(1)	Bid Member ID	TheoAsk	Theoretical Ask Price
WrkBuys(2)	Working Buys for entire Group ID	Qact	Quote Action (Sends individual quotes)
BidQty	Bid Quantity	BQQ	Test Bid Quote Quantity
ThrshBid(6)	Threshold Bid Price	BQP	Test Bid Quote Price
BidPrc	Bid Price	Mkt BQQ	Market Bid Quote Quantity
Bid Qty Accum	Accumulated Bid Quantity	Mkt BQP	Market Bid Quote Price
BidPrc Avg	Bid Price Average	Quote	Checkbox activates/deactivates contract for quoting
AskPrc Avg	Ask Price Average	Mkt AQQ	Market Ask Quote Quantity
AskQty Accum	Accumulated Ask Quantity	Mkt AQP	Market Ask Quote Price
AskPrc	Ask Price	AQP	Ask Quote Price
ThrshAsk(6)	Threshold Ask Price	AQQ	Ask Quote Quantity
AskQty	Ask Quantity	Imp BidQty(5)	Implied Bid Quantity
WrkSells(2)	Working Sells for entire Group ID	Imp BidPrc(5)	Implied Bid Price
Ask Mbr(1)	Ask Member ID	Imp AskQty(5)	Implied Ask Quantity
NetPos	Net Position	Imp AskPrc(5)	Implied Ask Price
FFNetPos	Fast Fill Net Position	Gamma(3)	Change in Delta given 1 pt change in underlying
LastPrc	Last Price	Delta (3)	Change in price given 1 pt change in underlying
LastQty	Last Quantity	Vol (3)	Percent volatility
Total	Total Traded Quantity	Vega (3)	Price change given 1% change in Vola
High	High Price	Rhop (3)	Price change given 1% change in interest rate



TABLE I-continued

<u>Abbreviations.</u>			
COLUMN	DESCRIPTION	COLUMN	DESCRIPTION
Low	Low Price	Theta(3)	Price change for every day that elapses
Open	Opening Price	Click Trd	Activate/deactivate click trading by contract
Close	Closing Price	S (Status)	Auction, Closed, FastMkt, Not Tradable, Pre-trading, Tradable, S = post-trading
Chng TheoPrc	Last Price-Last Close Theoretical Price	Expiry	Expiration Month/Year

15

As described herein, the display and trading method of the present invention provide the user with certain advantages over systems in which a display of market depth, as shown in FIG. 2, is used. The Mercury display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently. An example of such a Mercury display is illustrated in the screen display of FIG. 3.

The display of market depth and the manner in which traders trade within the market depth can be effected in different manners, which many traders will find materially better, faster and more accurate. In addition, some traders may find the display of market depth to be difficult to follow. In the display shown in FIG. 2, the market depth is displayed vertically so that both Bid and Ask prices descend the grid. The Bid prices descend the market grid as the prices decrease. Ask prices also descend the market grid as these prices actually increase. This combination may be considered counterintuitive and difficult to follow by some traders.

The Mercury display overcomes this problem in an innovative and logical manner. Mercury also provides an order entry system, market grid, fill window and summary of market orders in one simple window. Such a condensed display materially simplifies the trading system by entering and tracking trades in an extremely efficient manner. Mercury displays market depth in a logical, vertical fashion or horizontally or at some other convenient angle or configuration. A vertical field is shown in the figures and described for convenience, but the field could be horizontal or at an angle. In turn, Mercury further increases the speed of trading and the likelihood of entering orders at desired prices with desired quantities. In the preferred embodiment of the invention, the Mercury display is a static vertical column of prices with the bid and ask quantities displayed in vertical columns to the side of the price column and aligned with the corresponding bid and ask prices. An example of this display is shown in FIG. 3.

Bid quantities are in the column 1003 labeled BidQ and ask quantities are in column 1004 labeled AskQ. The representative ticks from prices for the given commodity are shown in column 1005. The column, does not list the whole prices (e.g. 95.89), but rather, just the last two digits (e.g. 89). In the example shown, the inside market, cells 1020, is 18 (best bid quantity) at 89 (best bid price) and 20 (best ask quantity) at 90 (best ask price). In the preferred embodiment of the invention, these three columns are shown in different colors so that the trader can quickly distinguish between them.

The values in the price column are static; that is, they do not normally change positions unless a re-centering command is received (discussed in detail later). The values in the

Bid and Ask columns however, are dynamic; that is, they move up and down (in the vertical example) to reflect the market depth for the given commodity. The LTQ column 1006 shows the last traded quantity of the commodity. The relative position of the quantity value with respect to the Price values reflects the price at which that quantity was traded. Column 1001 labeled E/W (entered/working) displays the current status of the trader's orders. The status of each order is displayed in the price row where it was entered. For example, in cells 1007, the number next to S indicates the number of the trader's ordered lots that have been sold at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled--i.e. the system is working on filling the order. Blanks in this column indicate that no orders are entered or working at that price. In cells 1008, the number next to B indicates the number of the trader's ordered lots that have been bought at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled--i.e. the system is working on filling the order.

Various parameters are set and information is provided in column 1002. For example, "10:48:44" in cell 1009 shows the actual time of day. The L and R fields in cell 1010 indicate a quantity value, which may be added to the order quantity entered. This process is explained below with respect to trading under Mercury. Below the L and R fields, in cell 1011, a number appears which represents the current market volume. This is the number of lots that have been traded for the chosen contract. Cell 1012, "X 10", displays the Net Quantity, the current position of the trader on the chosen contract. The number "10" represents the trader's buys minus sells. Cell 1013 is the "Current Quantity"; this field represents the quantity for the next order that the trader will send to market. This can be adjusted with right and left clicks (up and down) or by clicking the buttons which appear below the Current Quantity in cells 1014. These buttons increase the current quantity by the indicated amount; for example, "10" will increase it by 10; "1H" will increase it by 100; "1K" will increase it by 1000. Cell 1015 is the Clear button; clicking this button will clear the Current Quantity field. Cell 1016 is the Quantity Description; this is a pull down menu allowing the trader to choose from three Quantity Descriptions. The pull down menu is displayed when the arrow button in the window is clicked. The window includes NetPos, Offset and a field allowing the trader to enter numbers.. Placing a number in this field will set a default buy or sell quantity. Choosing "Offset" in this field will enable the L/R buttons of cell 1010. Choosing "NetPos" in this field will set the current Net Quantity (trader's net position) as the trader's quantity for his next trade. Cell 1017 are +/- buttons; these buttons will alter the size of the screen--either larger (+) or smaller (-). Cell 1018 is used to invoke Net 0; clicking this button will reset the Net Quantity

(cell 1011) to zero. Cell 1019 is used to invoke Net Real; clicking this button will reset the Net Quantity (cell 10 11) to its actual position.

The inside market and market depth ascend and descend as prices in the market increase and decrease. For example, FIG. 4 shows a screen displaying the same market as that of FIG. 3 but at a later interval where the inside market, cells 1101, has risen three ticks. Here, the inside market for the commodity is 43 (best bid quantity) at 92 (best bid price) and 63 (best ask quantity) at 93 (best ask price). In comparing FIGS. 3 and 4, it can be seen that the price column remained static, but the corresponding bids and asks rose up the price column. Market Depth similarly ascends, and descends the price column, leaving a vertical history of the market.

As the market ascends or descends the price column, the inside market, might go above or below the price column displayed on a trader's screen. Usually a trader will want to be able to see the inside market to assess future trades. The system of the present invention addresses this problem with a one click centering feature. With a single click at any point within the gray area, 1021, below the "Net Real" button, the system will re-center the inside market on the trader's screen. Also, when using a three-button mouse, a click of the middle mouse button, irrespective of the location of the mouse pointer, will re-center the inside market on the trader's screen.

The same information and features can be displayed and enabled in a horizontal fashion. Just as the market ascends and descends the vertical Mercury display shown in FIGS. 3 and 4, the market will move left and right in the horizontal Mercury display. The same data and the same information gleaned from the dynamical display of the data is provided. It is envisioned that other orientations can be used to dynamically display the data and such orientations are intended to come within the scope of the present invention.

Next, trading commodities, and specifically, the placement of trade orders using the Mercury display is described. Using the Mercury display and trading method, a trader would first designate the desired commodity and, if applicable, the default quantities. Then he can trade with single clicks of the right or left mouse button. The following equations are used by the system to generate trade orders and to determine the quantity and price to be associated with the trade order. The following abbreviations are used in these formulas: P=Price value of row clicked, R=Value in R field, L=Value in L field, Q=Current Quantity,  $Q_a$ =Total of all quantities in AskQ column at an equal or better price than P,  $Q_b$ =Total of all quantities in BidQ column at an equal or better price than P, N=Current Net Position, Bo=Buy order sent to market and So=Sell order—sent to market.

Apy order entered using right mouse button

$$Bo=(Q_a+R)P \quad (\text{Eq. 1})$$

If BidQ field clicked.

$$So=(Q_b+R)P \quad (\text{Eq. 2})$$

If AskQ field clicked.

Orders entered using the left mouse button

If "Offset" mode chosen in Quantity Description field then:

$$Bo=(Q_a+L)P \quad (\text{Eq. 3})$$

If BidQ field clicked.

$$So=(Q_b+L)P \quad (\text{Eq. 4})$$

If AskQ field clicked.

If "number" mode chosen in Quantity Description field then:

$$Bo=QP \quad (\text{Eq. 5})$$

$$So=QP \quad (\text{Eq. 6})$$

If "NetPos" mode chosen in Quantity Description field then:

$$Bo=NP \quad (\text{Eq. 7})$$

$$So=NP \quad (\text{Eq. 8})$$

Orders can also be sent to market for quantities that vary according to the quantities available in the market; quantities preset by the trader; and which mouse button the trader clicks. Using this feature, a trader can buy or sell all of the bids or asks in the market at or better than a chosen price with one click. The trader could also add or subtract a preset quantity from the quantities outstanding in the market. If the trader clicks in a trading cell—i.e. in the BidQ or AskQ column, he will enter an order in the market. The parameters of the order depend on which mouse button he clicks and what preset values he set.

Using the screen display and values from FIG. 5, the placement of trade orders using the Mercury display and trading method is now described using examples. A left click on the 18 in the BidQ column 1201 will send an order to market to buy 17 lots (quantity #chosen on the Quantity Description pull down menu cell 1204) of the commodity at a price of 89 (the corresponding price in the Prc column 1203). Similarly, a left click on the 20 in the AskQ column 1202 will send an order to market to sell 17 lots at a price of 90.

Using the right mouse button, an order would be sent to market at the price that corresponds to the row clicked for the total quantity of orders in the market that equal or better the price in that row plus the quantity in the R field 1205. Thus, a right click in the AskQ column 1202 in the 87 price row will send a sell order to market at a price of 87 and a quantity of 150. 150 is the sum of all the quantities 30, 97, 18 and 5. 30, 97 and 18 are all of the quantities in the market that would meet or better the trader's sell order price of 87. These quantities are displayed in the BidQ column 1201 because this column represents the orders outstanding in the market to purchase the commodity at each corresponding price. The quantity 5 is the quantity pre-set in the R field 1205.

Similarly, a right click in the BidQ column 1201 at the same price level of 87 would send a buy limit order to market for a quantity of 5 at a price of 87. The quantity is determined in the same manner as above. In this example, though, there are no orders in the market that equal or better the chosen price—there are no quantities in the AskQ column 1202 that equal or better this price. Therefore, the sum of the equal or better quantities is zero ("0"). The total order entered by the trader will be the value in the R field, which is 5.

An order entered with the left mouse button and the "Offset" option chosen in the quantity description field 1204

will be calculated in the same way as above, but the quantity in the L field 1206 will be added instead of the quantity in the R field 1205. Thus, a left click in the BidQ column 1201 in the 92 price row will send a buy order to market at a price of 92 and a quantity of 96. 96 is the sum of all the quantities 45, 28, 20 and 3. 45, 28 and 20 are all quantities in the market that would meet or better the trader's buy order price of 92. These quantities are displayed in the AskQ column 1202 because this column represents the orders outstanding in the market to sell the commodity at each corresponding price. The quantity 3 is the quantity pre-set in the L field 1206.

The values in the L or R fields may be negative numbers. This would effectively decrease the total quantity sent to market. In other words, in the example of a right click in the AskQ column 1202 in the 87 price row, if the R field was -5, the total quantity sent to market would be 140 (30+97+18+(-5)).

If a trader chose the "NetPos" option in the quantity description field 1204, a right click would still work as explained above. A left click would enter an order with a price corresponding to the price row clicked and a quantity equal to the current Net position of the trader. The Net position of the trader is the trader's current position on the chosen contract. In other words, if the trader has bought 10 more contracts than he has sold, this value would be 10. NetPos would not affect the quantity of an order sent with a right click.

If the trader chose a number value in the quantity description, a left click would send an order to market for the current quantity chosen by the trader. The default value of the current quantity will be the number entered in the quantity description field, but it could be changed by adjusting the figure in the current quantity field 1204.

This embodiment of the invention also allows a trader to delete all of his working trades with a single click of either the right or left mouse button anywhere in the last traded quantity (LTQ) column 1207. This allows a trader to exit the market immediately. Traders will use this feature when they are losing money and want to stop the losses from piling up. Traders may also use this feature to quickly exit the market upon making a desired profit. The invention also allows a trader to delete all of his orders from the market at a particular price level. A click with either mouse button in the Entered/Working (E/W) column 1208 will delete all working orders in the cell that was clicked. Thus, if a trader believes that previously sent orders at a particular price that have not been filled would be poor trades, he can delete these orders with a single click.

The process for placing trade orders using the Mercury display and trading method of the present invention as described above is shown in the flowchart of FIG. 6. First, in step 1301, the trader has the Mercury display on the trading terminal screen showing the market for a given commodity. In step 1302, the parameters are set in the appropriate fields, such as the L and R fields and the Current Quantity, NetPos or Offset fields from the pull down menu. In step 1303, the mouse pointer is positioned and clicked over a cell in the Mercury display by the trader. In step 1304, the system determines whether the cell clicked is a tradable cell (i.e. in the AskQ column or BidQ column). If not, then in step 1305, no trade order is created or sent and, rather, other quantities are adjusted or functions are performed based upon the cell selected. Otherwise, in step 1306, the system determines whether it was the left or the right button of the mouse that was clicked. If it was the right, then in step 1307, the system will use the quantity in the R field when it

determines the total quantity of the order in step 1310. If the left button was clicked, then in step 1308, the system determines which quantity description was chosen: Offset, NetPos or an actual number.

If Offset was chosen, then the system, in step 1309, will use the quantity in the L field when it determines the total quantity of the order in step 1310. If NetPos was chosen, then the system, in step 1312, will determine that the total quantity for the trade order will be current NetPos value, i.e. the net position of the trader in the given commodity. If an actual number was used as the quantity description, then, in step 1311, the system will determine that the total quantity for the trade order will be the current quantity entered. In step 1310, the system will determine that the total quantity for the trade order will be the value of the R field (if step 1307 was taken) or the value of the L field (if step 1309 was taken) plus all quantities in the market for prices better than or equal to the price in the row clicked. This will add up the quantities for each order in the market that will fill the order being entered by the trader (plus the L or R value).

After either steps 1310, 1311 or 1312, the system, in step 1313, determines which column was clicked, BidQ or AskQ. If AskQ was clicked, then, in step 1314, the system sends a sell limit order to the market at the price corresponding to the row for the total quantity as already determined. If BidQ was clicked, then, in-step 1315, the system sends a buy limit order to the market at the price corresponding to the row for the total quantity as already determined.

It should be understood that the above description of the invention and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration and not limitation. Many changes and modifications within the scope of the present invention may be made without departing from the spirit thereof, and the present invention includes all such changes and modifications.

We claim:

1. A method for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the method comprising:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a price level along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a price level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators moves in the bid or ask display regions relative to the common static price axis;

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input

13

- device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.
2. The method of claim 1 wherein the bid and ask display regions and the order entry region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.
3. The method of claim 1 wherein the bid and ask display regions and the order entry region are oriented vertically.
4. The method of claim 1 wherein the bid and ask display regions and the order entry region are oriented horizontally.
5. The method of claim 1 wherein one of the plurality of locations of bid display region comprises a blank region in which there is no first indicator displayed.
6. The method of claim 1 wherein one of the plurality of locations of the ask display region comprises a blank region in which there is no first indicator displayed.
7. The method of claim 1 comprising the step of displaying at least a portion of the common static price axis in a price display region.
8. The method of claim 7 wherein the bid display region, the ask display region, the order entry region and the price display region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.
9. The method of claim 7 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented vertically.
10. The method of claim 7 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented horizontally.
11. The method of claim 1 further comprising the steps of: dynamically displaying a third indicator at one of the plurality of locations in the bid display region, the third indicator representing quantity associated with at least one order to buy the commodity at a price different than the highest bid price currently available in the market; and dynamically displaying a fourth indicator at one of the plurality of locations in the ask display region, the fourth indicator representing quantity associated with at least one order to sell the commodity at a price different than the lowest ask price currently available in the market.
12. The method of claim 11 wherein a location of the plurality of locations of the bid display region comprises a blank region in which there is no first or third indicator displayed.
13. The method of claim 1 wherein a location of the plurality of locations of the ask display region comprises a blank region in which there is no second or fourth indicator displayed.
14. The method of claim 1 wherein the order entry region comprises:
- a bid order entry region comprising a plurality of locations for receiving commands to send buy orders, each location corresponding to a price level along the common static price axis; and
  - an ask order entry region comprising a plurality of locations for receiving commands to send sell orders, each location corresponding to a price level along the common static price axis.
15. The method of claim 14 wherein the bid order entry region overlaps with the bid display region and the ask order entry region overlaps with the ask display region.
16. The method of claim 1 further comprising dynamically displaying an entered order indicator in association with the price levels arranged along the common static price axis.

14

17. The method of claim 16 wherein the entered order indicator is displayed in an entered order region.
18. The method of claim 1 further comprising dynamically displaying a last trade indicator in association with the common static price axis.
19. The method of claim 18 wherein the last trade indicator is displayed in a last trade region.
20. The method of claim 1 further comprising the steps of: displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.
21. The method of claim 1 further comprising the steps of: displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.
22. The method of claim 1 further comprising the steps of: displaying the first indicator at a first location associated with a particular price level on the common static price axis; and repositioning the common static price axis such that the first indicator is displayed at a second location associated with the particular price level on the common static price axis.
23. The method of claim 1 further comprising the steps of: displaying the second indicator at a first location associated with a particular price level on the common static price axis; and repositioning the common static price axis such that the second indicator is displayed at a second location associated with the particular price level on the common static price axis.
24. The method of claim 1 wherein the bid and ask display regions are displayed in different colors.
25. The method of claim 1 wherein the first and second indicators are displayed in different colors.
26. The method of claim 1 wherein the bid and ask display regions are displayed in a window further comprising centering the display of the first and second indicators in the window upon receipt of a centering instruction.
27. A computer readable medium having program code recorded thereon for execution on a computer for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the program code causing a machine to perform the following method steps:
- dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a price level along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;
  - dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a price level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

15

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators moves in the bid or ask display regions relative to the common static price axis;

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

28. The method of claim 11 wherein the first and third indicators are displayed in locations of the bid display region that are arranged along an axis which is parallel to the common static price axis.

29. The method of claim 11 wherein the second and fourth indicators are displayed in locations of the ask display region that are arranged along an axis which is parallel to the common static price axis.

30. The method of claim 11 comprising the steps of:  
displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and

displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

31. The method of claim 30 wherein the third and fourth indicators remain in the same location in the bid and ask display regions, respectively, before and after the first indicator is displayed at the second location.

32. The method of claim 31 wherein each location of the bid display region corresponds to a different price level along the common static price axis and each location of the ask display region corresponds to a different price level along the common static price.

16

33. The method of claim 11 comprising the steps of:  
displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and

displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

34. The method of claim 33 wherein the third and fourth indicators remain in the same location in the bid and ask display regions, respectively, before and after the second indicator is displayed at the second location.

35. The method of claim 34 wherein each location of the bid display region corresponds to a different price level along the common static price axis and each location of the ask display region corresponds to a different price level along the common static price.

36. The method of claim 1 wherein the bid and ask display regions are displayed separately.

37. The method of claim 1 wherein the first and second indicators are based on an exchange order book and wherein the price levels along the common static price axis do not move in response to the addition of a price to the exchange order book, the additional price comprising a price for which there is a corresponding displayed location in at least one of the bid and ask display regions.

38. The method of claim 37 wherein the price levels along the common static price axis do not move in response to the removal of a price from the exchange order book, the removed price comprising a price for which there is a corresponding displayed location in at least one of the bid and ask display regions.

39. The method of claim 1 wherein the first and second indicators are based on an exchange order book and the price levels along the common static price axis never move in response to a price change in the exchange order book relating to a price which corresponds to a displayed location in at least one of the bid and ask display regions.

40. The method of claim 1 the plurality of parameters comprises a price and type of order.

\* \* \* \* \*

PATENT APPLICATION SERIAL NO.

*J.W.*  
09894637

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE  
FEE RECORD SHEET

09894637 00000033 09894637

355.00 OP  
9.00 OP



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
 United States Patent and Trademark Office  
 Address: COMMISSIONER FOR PATENTS  
 P.O. Box 1450  
 Alexandria, Virginia 22313-1450  
 www.uspto.gov

**\*BIBDATASHEET\***

CONFIRMATION NO. 1527

Bib Data Sheet

SERIAL NUMBER 09/894,637	FILING DATE 06/27/2001  RULE	CLASS 705	GROUP ART UNIT 3624	ATTORNEY DOCKET NO. 024051-0155
-----------------------------	---------------------------------------	--------------	------------------------	---------------------------------------

APPLICANTS

Gary Allan Kemp II, Winnetka, IL;

Jens-Uwe Schluetter, Evanston, IL;  
 Harris Brumfield, Chicago, IL;

\*\* CONTINUING DATA \*\*\*\*\*

This application is a DIV of 09/590,692 06/09/2000  
 which claims benefit of 60/186,322 03/02/2000

\*\* FOREIGN APPLICATIONS \*\*\*\*\*

IF REQUIRED, FOREIGN FILING LICENSE GRANTED

\*\* 07/25/2001

Foreign Priority claimed <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	STATE OR COUNTRY IL	SHEETS DRAWING 6	TOTAL CLAIMS 21	INDEPENDENT CLAIMS 3
35 USC 119 (a-d) conditions met <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after Allowance				
Verified and Acknowledged	Examiner's Signature	Initials		

ADDRESS

Robert C. Klinger  
 Jackson Walker L.L.P.  
 Suite 600  
 2435 North Central Expressway  
 Richardson, TX  
 75080

TITLE

CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

FILING FEE	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT	<input type="checkbox"/> All Fees
		<input type="checkbox"/> 1.16 Fees ( Filing )
		<input type="checkbox"/> 1.17 Fees ( Processing Ext. of time )

h e e e e c



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS  
 UNITED STATES PATENT AND TRADEMARK OFFICE  
 WASHINGTON, D.C. 20231  
 www.uspto.gov



Bib Data Sheet

CONFIRMATION NO. 1527

<b>SERIAL NUMBER</b> 09/894,637	<b>FILING DATE</b> 06/27/2001 <b>RULE</b>	<b>CLASS</b> 705	<b>GROUP ART UNIT</b> 2164	<b>ATTORNEY DOCKET NO.</b> 024051-0155
------------------------------------	---	---------------------	-------------------------------	---

**APPLICANTS**

Gary Allan Kemp II, Winnetka, IL;  
 Jens-Uwe Schluetter, Evanston, IL;  
 Harris Brumfield, Chicago, IL;

**\*\* CONTINUING DATA \*\*\*\*\***

THIS APPLICATION IS A DIV OF 09/590,692 06/09/2000  
 WHICH CLAIMS BENEFIT OF 60/186,322 03/02/2000

**\*\* FOREIGN APPLICATIONS \*\*\*\*\***

**IF REQUIRED, FOREIGN FILING LICENSE GRANTED \*\* SMALL ENTITY \*\***

\*\* 07/25/2001

Foreign Priority claimed <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	STATE OR COUNTRY IL	SHEETS DRAWING 6	TOTAL CLAIMS 21	INDEPENDENT CLAIMS 3
35 USC 119 (a-d) conditions met <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance				
Verified and Acknowledged	Examiner's Signature	Initials		

**ADDRESS**

Robert C. Klinger  
 Jackson Walker L.L.P.  
 Suite 600  
 2435 North Central Expressway  
 Richardson, TX 75080

**TITLE**

Click based trading with intuitive grid display of market depth

<b>FILING FEE RECEIVED</b> 364	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	<input type="checkbox"/> All Fees
		<input type="checkbox"/> 1.16 Fees ( Filing )
		<input type="checkbox"/> 1.17 Fees ( Processing Ext. of time )
		<input type="checkbox"/> 1.18 Fees ( Issue )
		<input type="checkbox"/> Other _____
		<input type="checkbox"/> Credit



06-29-01

Please type a plus sign (+) ins. 3X →  +

PTO/SB/05 (11-00)

Approved for use through 10/31/2002. OMB 0651-0032

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

# UTILITY PATENT APPLICATION TRANSMITTAL

Attorney Docket No.	120046-00003
First Inventor	Gary Allan Kemp II, et al
Title	CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH
Express Mail Label No.	EL 840961286US

(Only for new nonprovisional applications under 37 C.F.R. 1.53(b))

## APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

- Fee Transmittal Form (e.g., PTO/SB/17)  
*(Submit an original and a duplicate for fee processing)*
- Applicant claims small entity status.  
See 37 CFR 1.27.
- Specification [Total Pages  ]  
*(preferred arrangement set forth below)*
  - Descriptive title of the invention
  - Cross References to Related Applications
  - Statement Regarding Fed sponsored R & D
  - Reference to sequence listing, a table, or a computer program listing appendix
  - Background of the invention
  - Brief Summary of the invention
  - Brief Description of the Drawings (if filed)
  - Detailed Description
  - Claim(s)
  - Abstract of the Disclosure
- Drawing(s) (35 U.S.C. 113) [Total, Sheets  ]
- Oath or Declaration [Total Pages  ]
  - Newly executed (original or copy)
  - Copy from a prior application (37 CFR 1.63 (d))  
*(for a continuation/divisional with Box 18 completed)*
    - DELETION OF INVENTOR(S)**  
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
- Application Data Sheet. See 37 CFR 1.76

## ADDRESS TO:

Assistant Commissioner for Patents  
Box Patent Application  
Washington, DC 20231

## ACCOMPANYING APPLICATIONS PARTS

- CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)
- Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
  - Computer Readable Form (CRF)
  - Specification Sequence Listing on:
    - CD-ROM or CD-R (2 copies); or
    - paper
  - Statements verifying identity of above copies
- Assignment Papers (cover sheet & document(s))
- 37 C.F.R. §3.73(b) Statement  Power of Attorney  
*(when there is an assignee)*
- English Translation Document (if applicable)
- Information Disclosure Statement (IDS)/PTO-1449  Copies of IDS Citations
- Preliminary Amendment
- Return Receipt Postcard (MPEP 503)  
*(Should be specifically itemized)*
- Certified Copy of Priority Document(s)  
*(if foreign priority is claimed)*
- Request and Certification under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.
- Other:

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:

<input type="checkbox"/> Continuation	<input checked="" type="checkbox"/> Divisional	<input type="checkbox"/> Continuation-in-part (CIP)	of prior application No: <u>09 / 590,892</u>
Prior application information: Examiner <u>Rich Weisberger</u>		Group / Art Unit: <u>2164</u>	

For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

## 17. CORRESPONDENCE ADDRESS

Customer Number or Bar Code Label  or  Correspondence address below  
*(Insert Customer No. or Attach bar code label here)*

Name			
Address			
City	State	Zip Code	
Country	Telephone	Fax	

Name (Print/Type)	Robert C. Klinger	Registration No. (Attorney/Agent)	34,365
Signature		Date	June 27, 2001

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

1c962 U.S. PTO  
06/27/01

11017 U.S. PTO  
09/894637  
06/27/01

**NON-PROVISIONAL APPLICATION FOR U. S. PATENT UNDER 37 CFR 1.53(b)  
TRANSMITTAL FORM**

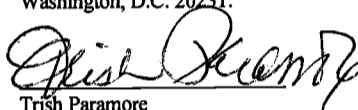
Attorney Docket No. 120046-00003

Assistant Commissioner for Patents  
Washington, D. C. 20231

Sir:

Transmitted herewith for filing is the  
patent application of:

Inventor(s): Gary Allan Kemp II, et al

<p><b>"EXPRESS MAILING"</b> Mailing Label No. <b>EL840961286US</b>. Date of Deposit: June 27, 2001. I hereby certify that this paper is being deposited with the U.S. Postal Service Express Mail Post Office to Addressee Service under 37 CFR 1.10 on the date shown above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.</p>  Trish Paramore
---

For: **CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH**

Enclosed are:

- 6 sheets of informal drawings and 32 pages of Specification (including Abstract)
- A Declaration/Power of Attorney
- X Small Entity Status claimed under 37 CFR 1.27

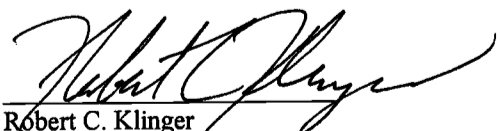
This application is a Divisional of Serial No. 09/590,692 entitled **CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH**, filed June 09, 2000.

FEE CALCULATION					FEE
	NUMBER		NUMBER EXTRA	RATE	BASIC FEE \$ 355.00
Total Claims	21	20 =	1	X \$9 =	\$ 9.00
Independent Claims	3	- 3 =		X \$40 =	
<b>Total Filing Fee</b>					<b>\$364.00</b>

A check in the amount of \$ 364.00 is enclosed.

All correspondence related to this application may be addressed to the undersigned at Jackson Walker LLP, 2435 North Central Expressway, Suite 600, Richardson, Texas 75080.

June 27, 2001  
Date

  
 Robert C. Klinger  
 Registration No. 34,365

## CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

### Priority

5

The present application claims priority to a U.S. Provisional Patent Application entitled "Market Depth Display Click Based Trading and Mercury Display" filed March 2, 2000, the contents of which are incorporated herein by reference.

### Field of Invention

The present invention is directed to the electronic trading of commodities. Specifically, the invention provides a trader with a versatile and efficient tool for executing trades. It facilitates the display of and the rapid placement of trade orders within the market trading depth of a commodity, where a commodity includes anything that can be traded with quantities and/or prices.

### Background Of The Invention

At least 60 exchanges throughout the world utilize electronic trading in varying degrees to trade stocks, bonds, futures, options and other products. These electronic exchanges are based on three components: mainframe computers (host), communications servers, and the exchange participants' computers (client). The host forms the electronic heart of the fully computerized electronic trading system. The system's operations cover order-matching, maintaining order books and positions, price information, and managing and updating the database for the online trading day as well as nightly batch runs. The host is also equipped with external interfaces that maintain uninterrupted online contact to quote vendors and other price information systems.

Traders can link to the host through three types of structures: high speed data lines, high speed communications servers and the Internet. High speed data lines establish direct connections between the client and the host. Another connection can  
5 be established by configuring high speed networks or communications servers at strategic access points worldwide in locations where traders physically are located. Data is transmitted in both directions between traders and exchanges via dedicated high speed communication lines. Most exchange participants install two lines between the exchange and the client site or between the communication server and the client site as a safety measure against potential failures. An exchange's internal computer system is Also often installed with backups as a redundant measure to secure system availability. The third connection utilizes the Internet. Here, the exchange and the traders communicate back and forth through high speed data lines, which are connected to the Internet. This allows traders to be located anywhere they can establish a connection to the Internet.

Irrespective of the way in which a connection is established, the exchange participants' computers allow traders to participate in the market. They use software that creates specialized interactive trading screens on the traders' desktops. The trading screens enable traders to enter and execute orders, obtain market quotes, and  
25 monitor positions. The range and quality of features available to traders on their screens varies according to the specific software application being run. The installation of open interfaces in the development of an exchange's electronic strategy means users can choose, depending on their trading style and internal requirements, the means by which they will access the exchange.

The world's stock, bond, futures and options exchanges have volatile products with prices that move rapidly. To profit in these markets, traders must be able to react quickly. A skilled trader with the quickest software, the fastest communications, and the most sophisticated analytics can significantly improve his own or his firm's bottom line.

5 The slightest speed advantage can generate significant returns in a fast moving market. In today's securities markets, a trader lacking a technologically advanced interface is at 4 severe competitive disadvantage.

Irrespective of what interface a trader uses to enter orders in the market, each market supplies and requires the same information to and from every trader. The bids and asks in the market make up the market data and everyone logged on to trade can receive this information if the exchange provides it. Similarly, every exchange requires that certain information be included in each order. For example, traders must supply information like the name of the commodity, quantity, restrictions, price and multiple other variables. Without all of this information, the market will not accept the order. This input and output of information the same for every trader.

With these variables being constant, a competitive speed advantage must come from other aspects of the trading cycle. When analyzing the time it takes to place a trade order for a given commodity, various steps contribute in different amounts to the total time required. Approximately 8% of the total time it takes to enter an order elapses between the moment the host generates the price for the commodity and the moment the client receives the price. The time it takes for the client application to display the price to the trader amounts to approximately 4%. The time it takes for a trade order to be transmitted to the host amounts to approximately 8%. The remainder of the total 25 time it takes to place an order, approximately 80%, is attributable to the time required for the trader to read the prices displayed and to enter a trade order. The present invention provides a significant advantage during the slowest portion of the trading

cycle -- while the trader manually enters his order. Traders recognize that the value of time savings in this portion may amount to millions of dollars annually.

5 In existing systems, multiple elements of an order must be entered prior to an order being sent to market, which is time consuming for the trader. Such elements include the commodity symbol, the desired price, the quantity and whether a buy or a sell order is desired. The more time a trader takes entering an order, the more likely the price on which he wanted to bid or offer will change or not be available in the market. The market is fluid as many traders are sending orders to the market simultaneously. In fact, successful markets strive to have such a high volume of trading that any trader who wishes to enter an order will find a match and have the order filled quickly, if not immediately. In such liquid markets, the prices of the commodities fluctuate rapidly. On a trading screen, this results in rapid changes in the price and quantity fields within the market grid. If a trader intends to enter an order at a particular price, but misses the price because the market prices moved before he could enter the order, he may lose hundreds, thousands, even millions of dollars. The faster a trader can trade, the less likely it will be that he will miss his price and the more likely he will make money.

#### Summary Of The Invention

25 The inventors have developed the present invention which overcomes the drawbacks of the existing trading systems and dramatically reduces the time it takes for a trader to place a trade when electronically trading on an exchange. This, in turn, increases the likelihood that the trader will have orders filled at desirable prices and quantities.

The "Mercury" display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal

plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently.

5 Specifically, the present invention is directed to a graphical user interface for displaying the market depth of a commodity traded in a market, including a dynamic display for a plurality of bids and for a plurality of asks in the market for the commodity and a static display of prices corresponding to the plurality of bids and asks. In this embodiment the pluralities of bids and asks are dynamically displayed in alignment with the prices corresponding thereto. Also described herein is a method and system for placing trade orders using such displays.

These embodiments, and others described in greater detail herein, provide the trader with improved efficiency and versatility in placing, and thus executing, trade orders for commodities in an electronic exchange. Other features and advantages of the present invention will become apparent to those skilled in the art from the following detailed description. It should be understood, however, that the detailed description and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration and not limitation. Many changes and modifications within the scope of the present invention may be made without departing from the spirit thereof, and the invention includes all such modifications.

#### Brief Description Of The Drawings

25 Figure 1 illustrates the network connections between multiple exchanges and client sites;

Figure 2 illustrates screen display showing the inside market and the market depth of a given commodity being traded;

Figure 3 illustrates the Mercury display of the present invention;

Figure 4 illustrates the Mercury display at a later time showing the movement of values when compared to Figure 3;

Figure 5 illustrates a Mercury display with parameters set in order to exemplify the Mercury trading method; and

5 Figure 6 is a flowchart illustrating the process for Mercury display and trading.

#### Detailed Description Of The Preferred Embodiments

As described with reference to the accompanying figures, the present invention provides a display and trading method to ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to place trade orders quickly and efficiently. A commodity's market depth is the current bid and ask prices and quantities in the market. The display and trading method of the invention increase the likelihood that the trader will be able to execute orders at desirable prices and quantities.

In the preferred embodiment, the present invention is implemented on a computer or electronic terminal. The computer is able to communicate either directly or indirectly (using intermediate devices) with the exchange to receive and transmit market, commodity, and trading order information. It is able to interact with the trader and to generate contents and characteristics of a trade order to be sent to the exchange. It is envisioned that the system of the present invention can be implemented on any existing or future terminal or device with the processing capability to perform the  
25 functions described herein. The scope of the present invention is not limited by the type of terminal or device used. Further, the specification refers to a single click of a mouse as a means for user input and interaction with the terminal display as an example of a single action of the user. While this describes a preferred mode of interaction, the



scope of the present invention is not limited to the use of a mouse as the input device or to the click of a mouse button as the user's single action. Rather, any action by a user within a short period of time, whether comprising one or more clicks of a mouse button or other input device, is considered a single action of the user for the purposes of the present invention.

5

The system can be configured to allow for trading in a single or in multiple exchanges simultaneously. Connection of the system of the present invention with multiple exchanges is illustrated in Figure 1. This figure shows multiple host exchanges 101-103 connected through routers 104-106 to gateways 107-109. Multiple client terminals 110-116 for use as trading stations can then trade in the multiple exchanges through their connection to the gateways 107-109. When the system is configured to receive data from multiple exchanges, then the preferred implementation is to translate the data from various exchanges into a simple format. This "translation" function is described below with reference to Figure 1. An applications program interface ("TT API" as depicted in the figure) translates the incoming data formats from the different exchanges to a simple preferred data format. This translation function may be disposed anywhere in the network, for example, at the gateway server, at the individual workstations or at both. In addition, the storage at gateway servers and at the client workstations, and/or other external storage cache historical data such as order books which list the client's active orders in the market; that is, those orders that have neither been filled nor cancelled. Information from different exchanges can be displayed at one or in multiple windows at the client workstation. Accordingly, while reference is made through the remainder of the specification to a single exchange to which a trading terminal is connected, the scope of the invention includes the ability to trade, in accordance with the trading methods described herein, in multiple exchanges using a single trading terminal.

25

The preferred embodiments of the present invention include the display of "Market Depth" and allow trader to view the market depth of a commodity and to execute trades within the market depth with a single click of a computer mouse button. Market Depth represents the order book with the current bid and ask prices and quantities in the market. In other words, Market Depth is each  
5 bid and ask that was entered into the market, subject to the limits noted below, in addition to the inside market. For a commodity being traded, the "inside market" is the highest bid price and the lowest ask price.

The exchange sends the price, order and fill information to each trader on the exchange. The present invention processes this information and maps it through simple algorithms and mapping tables to positions in a theoretical grid program or any other comparable mapping technique for mapping data to a screen. The physical mapping of such information to a screen grid can be done by any technique known to those skilled in the art. The present invention is not limited by the method used to map the data to the screen display.

How far into the market depth the present invention can display depends on how much of the market depth the exchange provides. Some exchanges supply an infinite market depth, while others provide no market depth or only a few orders away from the inside market. The user of the present invention can also chose how far into the market depth to display on his screen.

25 *Sub* Figure 2 illustrates a screen display of an invention described in a commonly owned co-pending application entitled "Click Based Trading with Market Depth Display" serial no. \_\_\_\_\_, filed on \_\_\_\_\_ the contents of which are incorporated herein by reference. This display shows the inside market and the market depth of a given commodity being traded. Row 1 represents the "inside market" for the commodity being

5 *BA cont* traded which is the best (highest) bid price and quantity and the best (lowest) ask price and quantity. Rows 2-5 represent the "market depth" for the commodity being traded. In the preferred embodiment of the present invention, the display of market depth (rows 2-5) lists the available next-best bids, in column 203, and asks, in column 204. The working bid and ask quantity for each price level is also displayed in columns 202 and 205 respectively (inside market - row 1). Prices and quantities for the inside market and market depth update dynamically on a real time basis as such information is relayed from the market.

In the screen display shown in Figure 2, the commodity (contract) being traded is represented in row 1 by the character string "CDHO". The Depth column 208 will inform the trader of a status by displaying different colors. Yellow indicates that the program application is waiting for data. Red indicates that the Market Depth has failed to receive the data from the server and has "timed out." Green indicates that the data has just been updated. The other column headings in this and all of the other figures, are defined as follows. BidQty (Bid Quantity): the quantity for each working bid, BidPrc (Bid Price): the price for each working bid, AskPrc (Ask Price): the price for each working ask, AskQty (Ask Quantity): the quantity for each working ask, LastPrc (Last Price): the price for the last bid and ask that were matched in the market and LastQty (Last Quantity): the quantity added at the last price. Total represents the total quantity traded of the given commodity.

25 The configuration of the screen display itself informs the user in a more convenient and efficient manner than existing systems. Traders gain a significant advantage by seeing the market depth because they can see trends in the orders in the market. The market depth display shows the trader the interest the market has in a given commodity at different price levels. If a large amount

of bids or asks are in the market near the trader's position, he may feel he should sell or buy before the inside market reaches the morass of orders. A lack of orders above or below the inside market might prompt a trader to enter orders near the inside market. Without seeing the market depth, no such strategies could be utilized. Having the  
5 dynamic market depth, including the bid and ask quantities and prices of a traded commodity aligned with and displayed below the current inside market of the commodity conveys the information to the user in a more intuitive and easily understandable manner. Trends in the trading of, the commodity and other relevant characteristics are more easily identifiable by the user through the use of the present invention.

Various abbreviations are used in the screen displays, and specifically, in the column headings of the screen displays reproduced herein. Some abbreviations have been discussed above. A list of common abbreviations and their meanings is provided in Table 1.

Table I - Abbreviations.

COLUMN	DESCRIPTION	COLUMN	DESCRIPTION
Month	Expiration Month/Year	TheoBid	Theoretical Bid Price
Bid Mbr(1)	Bid Member ID	TheoAsk	Theoretical Ask Price
WrkBuys(2)	Working Buys for entire Group ID	Qact	Quote Action (Sends individual quotes)
BidQty	Bid Quantity	BQQ	Test Bid Quote Quantity
ThrshBid(6)	Threshold Bid Price	BQP	Test Bid Quote Price
BidPrc	Bid Price	Mkt BQQ	Market Bid Quote Quantity
Bid Qty Accurn	Accumulated Bid Quantity	Mkt BQP	Market Bid Quote Price
BidPrc Avg	Bid Price Average	Quote	Checkbox activates / deactivates contract for quoting
AskPrc Avg	Ask Price Average	Mkt AQQ	Market Ask Quote Quantity
AskQty Accurn	Accumulated Ask Quantity	Mkt AQP	Market Ask Quote Price
AskPrc	Ask Price	AQP	Ask Quote Price
ThrshAsk(6)	Threshold Ask Price	AQQ	Ask Quote Quantity
AskQty	Ask Quantity	Imp BidQty(5)	Implied Bid Quantity
WrkSells(2)	Working Sells for entire Group ID	Imp BidPrc(5)	Implied Bid Price
Ask Mbr(1)	Ask Member ID	Imp AskQty(5)	Implied Ask Quantity
NetPos	Net Position	Imp AskPrc(5)	Implied Ask Price
FFNetPos	Fast Fill Net Position	Gamma(3)	Change in Delta given 1 pt change in underlying
LastPrc	Last Price	Delta (3)	Change in price given 1 pt change in underlying
LastQty	Last Quantity	Vola (3)	Percent volatility
Total	Total Traded Quantity	Vega (3)	Price change given 1% change in Vola
High	High Price	Rhop (3)	Price change given 1% change in interest rate
Low	Low Price	Theta(3)	Price change for every day that elapses
Open	Opening Price	Click Trd	Activate / deactivate click trading by contract
Close	Closing Price	S (Status)	Auction, Closed, FastMkt, Not Tradable, Pre-trading, Tradable, S = post-trading
Chng	Last Price-Last Close	Expiry	Expiration Month/Year
TheoPrc	Theoretical Price		

As described herein, the display and trading method of the present invention provide the user with certain advantages over systems in which a display of market depth, as shown in Figure 2, is used. The Mercury display and trading method of the present invention ensure fast and accurate execution of trades by displaying market  
5 depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently. An example of such a Mercury display is illustrated in the screen display of Figure 3.

The display of market depth and the manner in which traders trade within the market depth can be effected in different manners, which many traders will find materially better, faster and more accurate. In addition, some traders may find the display of market depth to be difficult to follow. In the display shown in Figure 2, the market depth is displayed vertically so that both Bid and Ask prices descend the grid. The Bid prices descend the market grid as the prices decrease. Ask prices also descend the market grid as these prices actually increase. This combination may be considered counterintuitive and difficult to follow by some traders.

The Mercury display overcomes this problem in an innovative and logical manner. Mercury also provides an order entry system, market grid, fill window and summary of market orders in one simple window. Such a condensed display materially simplifies the trading system by entering and tracking trades in an extremely efficient manner. Mercury displays market depth in a logical, vertical fashion or horizontally or at  
25 some other convenient angle or configuration. A vertical field is shown in the figures and described for convenience, but the field could be horizontal or at an angle. In turn, Mercury further increases the speed of trading and the likelihood of entering orders at desired prices with desired quantities. In the preferred embodiment of the invention, the Mercury display is a static vertical column of prices with the bid and ask quantities

displayed in vertical columns to the side of the price column and aligned with the corresponding bid and ask prices. An example of this display is shown in Figure 3.

5 Bid quantities are in the column 1003 labeled BidQ and ask quantities are in column 1004 labeled AskQ. The representative ticks from prices for the given commodity are shown in column 1005. The column, does not list the whole prices (e.g. 95.89), but rather, just the last two digits (e.g. 89). In the example shown, the inside market, cells 1020, is 18 (best bid quantity) at 89 (best bid price) and 20 (best ask quantity) at 90 (best ask price). In the preferred embodiment of the invention, these three columns are shown in different colors so that the trader can quickly distinguish between them.

*Sub B2*

The values in the price column are static; that is, they do not normally change positions unless a re-centering command is received (discussed in detail later). The values in the Bid and Ask columns however, are dynamic; that is, they move up and down (in the vertical example) to reflect the market depth for the given commodity. The LTQ column 1006 shows the last traded quantity of the commodity. The relative position of the quantity value with respect to the Price values reflects the price at which that quantity was traded. Column 1001 labeled EI W (entered/working) displays the current status of the trader's orders. The status of each order is displayed in the price row where it was entered. For example, in cells 1007, the number next to S indicates the number of the trader's ordered lots that have been sold at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled-i.e. the system is working on filling the order.

25 Blanks in this column indicate that orders are entered or working at that price. In cells 1008, the number next to B indicates the number of the trader's

B2  
Cont  
ordered lots that have been bought at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled - i.e. the system is working on filling the order.

5            Various parameters are set and information is provided in column 1002. For example, "10:48:44" in cell 1009 shows the actual time of day. The L and R fields in cell 1010 indicate a quantity value, which may be added to the order quantity entered. This process is explained below with respect to trading under Mercury. Below the L and R fields, in cell 1011, a number appears which represents the current market volume. This is the number of lots that have been traded for the chosen contract. Cell 1012, "X 10", displays the Net Quantity, the current position of the trader on the chosen contract. The number "10" represents the trader's buys minus sells. Cell 1013 is the "Current Quantity"; this field represents the quantity for the next order that the trader will send to market. This can be adjusted with right and left clicks (up and down) or by clicking the buttons which appear below the Current Quantity in cells 1014. These buttons increase the current quantity by the indicated amount; for example, "10" will increase it by 10; "1H" will increase it by 100; "1K" will increase it by 1000. Cell 1015 is the Clear button; clicking this button will clear the Current Quantity field. Cell 1016 is the Quantity Description; this is a pull down menu allowing the trader to choose from three Quantity Descriptions. The pull down menu is displayed when the arrow button in the window is clicked. The window includes NetPos, Offset and a field allowing the trader to enter numbers.. Placing a number in this field will set a default buy or sell quantity. Choosing "Offset" in this field will enable the L/R buttons of cell 1010. Choosing "NetPos" in this field will set the current Net Quantity (trader's net position) as the trader's quantity for his next trade. Cell 1017 are +/- buttons; these buttons will alter the size of the screen-either larger (+) or smaller (-). Cell 1018 is used to invoke Net 0; clicking this button will reset the Net Quantity (cell 1011) to zero. Cell 1019 is used to invoke Net Real; clicking this button will reset the Net Quantity (cell 10 11) to its actual position.

25



The inside market and market depth ascend and descend as prices in the market increase and decrease. For example, Figure 4 shows a screen displaying the same market as that of Figure 3 but at a later interval where the inside market, cells 1101, has risen three ticks. Here, the inside market for the commodity is 43 (best bid quantity) at 92 (best bid price) and 63 (best ask quantity) at 93 (best ask price). In comparing Figures 3 and 4, it can be seen that the price column remained static, but the corresponding bids and asks rose up the price column. Market Depth similarly ascends, and descends the price column, leaving a vertical history of the market.

As the market ascends or descends the price column, the inside market, might go above or below the price column displayed on a trader's screen. Usually a trader will want to be able to see the inside market to assess future trades. The system of the present invention addresses this problem with a one click centering feature. With a single click at any point within the gray area, 1021, below the "Net Real" button, the system will re-center the inside market on the trader's screen. Also, when using a three-button mouse, a click of the middle mouse button, irrespective of the location of the mouse pointer, will re-center the inside market on the trader's screen.

The same information and features can be displayed and enabled in a horizontal fashion. Just as -the market ascends and descends the vertical Mercury display shown in Figures 3 and 4, the market will move left and right in the horizontal Mercury display. The same data and the same information gleaned from the dynamical display of the data is provided. It is envisioned that other orientations can be used to dynamically display the data and such orientations are intended to come within the scope of the present invention.

Next, trading commodities, and specifically, the placement of trade orders using the Mercury display is described. Using the Mercury display and trading method, a trader would first designate the desired commodity and, if applicable, the default quantities. Then he can trade with single clicks of the right or left mouse button. The following equations are used by the system to generate trade orders and to determine the quantity and price to be associated with the trade order. The following abbreviations are used in these formulas: P = Price value of row clicked, R = Value in R field, L = Value in L field, Q = Current Quantity,  $Q_a$  = Total of all quantities in AskQ column at an equal or better price than P,  $Q_b$  = Total of all quantities in BidQ column at an equal or better price than P, N = Current Net Position, Bo = Buy order sent to market and So = Sell order -sent to market.

Apy order entered using right mouse button

Bo =  $(Q_a + R)P$  (Eq. 1) If BidQ field clicked.

So =  $(Q_b + R)P$  (Eq. 2) If AskQ field clicked.

Orders entered using the left mouse button

If "Offset" mode chosen in Quantity Description field then:

Bo =  $(Q_a + L)P$  (Eq. 3) If BidQ field clicked.

SO =  $(Q_b + L)P$  (Eq. 4) If AskQ field clicked.

If "number" mode chosen in Quantity Description field then:

Bo = QP (Eq. 5)

So = QP (Eq. 6)

If "NetPos" mode chosen in Quantity Description field then:

Bo = NP (Eq. 7)

So = NP (Eq. 8)

Orders can also be sent to market for quantities that vary according to the quantities available in the market; quantities preset by the trader; and which mouse button the trader clicks. Using this feature, a trader can buy or sell all of the bids or asks in the market at or better than a chosen price with one click. The trader could also add or subtract a preset quantity from the quantities outstanding in the market. If the trader clicks in a trading cell - i.e. in the BidQ or AskQ column, he will enter an order in the market. The parameters of the order depend on which mouse button he clicks and what preset values he set.

Using the screen display and values from Figure 5, the placement of trade orders using the Mercury display and trading method is now described using examples. A left click on the 18 in the BidQ column 1201 will send an order to market to sell 17 lots (quantity # chosen on the Quantity Description pull down menu cell 1204) of the commodity at a price of 89 (the corresponding price in the Prc column 1203). Similarly, a left click on the 20 in the AskQ column 1202 will send an order to market to buy 17 lots at a price of 90.

Using the right mouse button, an order would be sent to market at the price that corresponds to the row clicked for the total quantity of orders in the market that equal or better the price in that row plus the quantity in the R field 1205. Thus, a right click in the AskQ column 1202 in the 87 price row will send a sell order to market at a price of 87 and a quantity of 150. 150 is the sum of all the quantities 30, 97, 18 and 5. 30, 97 and 18 are all of the quantities in the market that would meet or better the trader's sell order price of 87. These quantities are displayed in the BidQ column 1201 because this column represents the orders outstanding in the market to purchase the commodity at each corresponding price. The quantity 5 is the quantity pre-set in the R field 1205.

Similarly, a right click in the BidQ column 1201 at the same price level of 87 would send a buy limit order to market for a quantity of 5 at a price of 87. The quantity is determined in the same manner as above. In this example, though, there are no orders in the market that equal or better the chosen price - there are no quantities in the AskQ column 1202 that equal or better this price. Therefore, the sum of the equal or better quantities is zero ("0"). The total order entered by the trader will be the value in the R field, which is 5.

An order entered with the left mouse button and the "Offset" option chosen in the quantity description field 1204 will be calculated in the same way as above, but the quantity in the L field 1206 will be added instead of the quantity in the R field 1205. Thus, a left click in the BidQ column 1201 in the 92 price row will send a buy order to market at a price of 92 and a quantity of 96. 96 is the sum of all the quantities 45, 28, 20 and 3. 45, 28 and 20 are all quantities in the market that would meet or better the trader's buy order price of 92. These quantities are displayed in the AskQ column 1202 because this column represents the orders outstanding in the market to sell the commodity at each corresponding price. The quantity 3 is the quantity pre-set in the L field 1206.

The values in the L or R fields may be negative numbers. This would effectively decrease the total quantity sent to market. In other words, in the example of a right click in the AskQ column 1202 in the 87 price row, if the R field was -5, the total quantity sent to market would be 140 ( $30 + 97 + 18 + (-5)$ ).

If a trader chose the "NetPos" option in the quantity description field 1204, a right click would still work as explained above. A left click would enter an order with a price corresponding to the price row clicked and a quantity equal to the current Net position of the trader. The Net position of the trader is the trader's current position on the

chosen contract. In other words, if the trader has bought 10 more contracts than he has sold, this value would be 10. NetPos would not affect the quantity of an order sent with a right click.

- 5        If the trader chose a number value in the quantity description, a left click would send an order to market for the current quantity chosen by the trader. The default value of the current quantity will be the number entered in the quantity description field, but it could be changed by adjusting the figure in the current quantity field 1204.

This embodiment of the invention also allows a trader to delete all of his working trades with a single click of either the right or left mouse button anywhere in the last traded quantity (LTQ) column 1207. This allows a trader to exit the market immediately. Traders will use this feature when they are losing money and want to stop the losses from piling up. Traders may also use this feature to quickly exit the market upon making a desired profit. The invention also allows a trader to delete all of his orders from the market at a particular price level. A click with either mouse button in the Entered/Working (E/W) column 1208 will delete all working orders in the cell that was clicked. Thus, if a trader believes that previously sent orders at a particular price that have not been filled would be poor trades, he can delete these orders with a single click.

- 25        The process for placing trade orders using the Mercury display and trading method of the present invention as described above is shown in the flowchart of Figure 6. First, in step 1301, the trader has the Mercury display on the trading terminal screen showing the market for a given commodity. In step 1302, the parameters are set in the appropriate fields, such as the L and R fields and the Current Quantity, NetPos or Offset fields from the pull down menu. In step 1303, the mouse pointer is positioned and clicked over a cell in the Mercury display by the trader. In step 1304, the system

determines whether the cell clicked is a tradable cell (i.e. in the AskQ column or BidQ column). If not, then in step 1305, no trade order is created or sent and, rather, other quantities are adjusted or functions are performed based upon the cell selected. Otherwise, in step 1306, the system determines whether it was the left or the right button of the mouse that was clicked. If it was the right, then in step 1307, the system will use the quantity in the R field when it determines the total quantity of the order in step 1310. If the left button was clicked, then in step 1308, the system determines which quantity description was chosen: Offset, NetPos or an actual number.

If Offset was chosen, then the system, in step 1309, will use the quantity in the L field when it determines the total quantity of the order in step 1310. If NetPos was chosen, then the system, in step 1312, will determine that the total quantity for the trade order will be current NetPos value, i.e. the net position of the trader in the given commodity. If an actual number was used as the quantity description, then, in step 1311, the system will determine that the total quantity for the trade order will be the current quantity entered. In step 1310, the system will determine that the total quantity for the trade order will be the value of the R field (if step 1307 was taken) or the value of the L field (if step 1309 was taken) plus all quantities in the market for prices better than or equal to the price in the row clicked. This will add up the quantities for each order in, the market that will fill the order being entered by the trader (plus the L or R value).

After either steps 1310, 1311 or 1312, the system, in step 1313, determines which column was clicked, BidQ or AskQ. If AskQ was clicked, then, in step 1314, the system sends a sell limit order to the market at the price corresponding to the row for the total quantity as already determined. If BidQ was clicked, then, in-step 1315, the system sends a buy limit order to the market at the price corresponding to the row for the total quantity as already determined.



**WE CLAIM:**

- 1. AS*  
*2. B*
1. A method of displaying, on an electronic display device, the market depth of a commodity traded in a market, said method comprising:  
dynamically displaying a plurality of bids in the market for said commodity;  
dynamically displaying of a plurality of asks in the market for said commodity;  
and  
statically displaying prices corresponding to said plurality of bids and asks;  
wherein said pluralities of bids and asks are dynamically displayed in alignment with the prices corresponding thereto.
  2. A method of displaying, on an electronic display device, the market depth of a commodity traded in a market according to claim 1, wherein said bids and asks are oriented vertically. *B*
  3. A method of displaying, on an electronic display device, the market depth of a commodity traded in a market according to claim 1, wherein said bids and asks are oriented horizontally.
  4. A method of displaying, on an electronic display device, the market depth of a commodity traded in a market according to claim 1, wherein a plurality of said displayed bids and asks in the market include bid and ask quantities of the commodity.
  5. A method of displaying, on an electronic display device, the market depth of a commodity traded in a market according to claim 1, wherein said bids and asks are displayed in different colors.



6. A method of displaying, on an electronic display device, the market depth of a commodity traded in a market according to claim 1, re-centering said prices corresponding to the bids and asks about an inside market price upon receipt of a re-centering instruction.

7. A method of displaying, on an electronic display device, the market depth of a commodity traded in a market according to claim 1, further comprising dynamically displaying entered and working orders in alignment with the prices corresponding thereto.

8. A computer readable medium having program code recorded thereon for execution on a computer for displaying the market depth of a commodity traded in a market, comprising:

a first program code for dynamically displaying a plurality of bids in the market for said commodity;

a second program code for dynamically displaying of a plurality of asks in the market for said commodity; and

a third program code for statically displaying prices corresponding to said plurality of bids and asks;

wherein said pluralities of bids and asks are dynamically displayed in alignment with the prices corresponding thereto.

9. A computer readable medium having program code recorded thereon for execution on a computer for displaying the market depth of a commodity traded in a market according to claim 8, further comprising program code to ensure that said displayed bids, asks and prices are oriented vertically.

10. A computer readable medium having program code recorded thereon for execution on a computer for displaying the market depth of a commodity traded in a market according to claim 8, further comprising program code to ensure that said displayed bids, asks and prices are oriented horizontally.

11. A computer readable medium having program code recorded thereon for execution on a computer for displaying the market depth of a commodity traded in a market according to claim 8, further comprising program code to ensure that a plurality of bids and asks in the market include bid and ask quantities of the commodity.

12. A computer readable medium having program code recorded thereon for execution on a computer for displaying the market depth of a commodity traded in a market according to claim 8, further comprising program code to ensure that bids and asks are displayed in different colors.

101997-00003

101997-00003

13. A computer readable medium having program code recorded thereon for execution on a computer for displaying the market depth of a commodity traded in a market according to claim 8, further comprising program code to ensure that said displayed prices corresponding to the bids and asks are re-centered about an inside market price upon receipt of a re-centering instruction.

14. A computer readable medium having program code recorded thereon for execution on a computer for displaying the market depth of a commodity traded in a market according to claim 8, further comprising program code for dynamically displaying entered and working orders in alignment with the prices corresponding thereto.

15. A graphical user interface for displaying the market depth of a commodity traded in a market, comprising:  
a dynamic display of a plurality of bids in the market for said commodity;  
a dynamic display of a plurality of asks in the market for said commodity; and  
a static display of prices corresponding to said plurality of bids and asks;  
wherein said pluralities of bids and asks are dynamically displayed in alignment with the prices corresponding thereto.

16. A graphical user interface according to claim 15, wherein said displays are oriented vertically.

17. A graphical user interface according to claim 15, wherein said displays are oriented horizontally.

18. A graphical user interface according to claim 15, wherein said displays of the pluralities of bids and asks in the market include bid and ask quantities of the commodity.

19. A graphical user interface according to claim 15, wherein said displays are displayed in different colors.

20. A graphical user interface according to claim 15, wherein said display of prices corresponding to the bids and asks is re-centered about an inside market price upon re-centering instruction from a user.

21. A graphical user interface according to claim 15, further comprising a display of entered and working orders displayed in alignment with the prices corresponding thereto.

22. A method of placing a trade order for a commodity on an electronic exchange, using a graphical user interface and a user input device and having preset parameters for trade orders, said method comprising:

displaying the market depth of a commodity traded in a market, through a dynamic display of a plurality of bids and a plurality of asks in the market for the commodity, including the bid and ask quantities of the commodity, aligned with a static display of prices corresponding thereto; and

initiating placement of a trade order of the commodity through a single action of the user input device initiating placement of a trade order of the commodity through a single action of the user input device with a pointer of the user input device positioned over an area in said dynamic displays of bids and asks;

wherein the contents of the trade order are based in part upon the preset parameters and the position of the pointer at the time of said single action.

23. A method of placing a trade order according to claim 22, wherein said trade order is a buy order if the position of the pointer at the time of said single action is within the display of bids and wherein said trade order is a sell order if the position of the pointer at the time of said single action is within the display of asks.

24. A method of placing a trade order according to claim 23, wherein the trade order is for a pre-determined fixed quantity and for a price corresponding to the position of the pointer at the time of said single action.

25. A method of placing a trade order according to claim 23, wherein the trade order is for a quantity equal to a current net position of the user in the commodity and for a price corresponding to the position of the pointer at the time of said single action.

26. A method of placing a trade order according to claim 23, wherein the trade order is for a quantity equal to a pre-determined fixed offset plus the sum of all quantities in the market at prices better than or equal to a price corresponding to the position of the pointer at the time of said single action and for a price corresponding to said position.

27. A method of placing a trade order according to claim 26, wherein said offset is equal to a first pre-determined value if a single action of a first type is taken and said offset is equal to a second pre-determined value if a single action of a second type is taken.

28. A method of placing a trade order according to claim 22, further comprising canceling said trade order in response to a subsequent single action of the user input device.

Patent

29. A computer readable medium having program code recorded thereon, for execution on a computer having a graphical user interface and a user input device and having preset parameters for trade orders, to place a trade order for a commodity on an electronic exchange, comprising:

a first program code displaying the market depth of a commodity traded in a market, through a dynamic display of a plurality of bids and a plurality of asks in the market for the commodity, including the bid and ask quantities of the commodity, aligned with a static display of prices corresponding thereto;

a second program code for initiating placement of a trade order of the commodity through a single action of the user input device with a pointer of the user input device positioned over an area in said dynamic displays of bids and asks; and

a third program code for setting characteristics of the trade order based in part upon the preset parameters and the position of the pointer at the time of said single action.



30. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 29, further comprising program code for establishing that said trade order is a buy order if the position of the pointer at the time of said single action is within the display of bids and that said trade order is a sell order if the position of the pointer at the time of said single action is within the display of asks.

31. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 30, further comprising program code for establishing that the trade order is for a pre-determined fixed quantity and for a price corresponding to the position of the pointer at the time of said single action.

32. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 30, further comprising program code for establishing that the trade order is for a quantity equal to a current net position of the user in the commodity and for a price corresponding to the position of the pointer at the time of said single action.

33. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 30, further comprising program code for establishing that the trade order is for a quantity equal to a pre-determined fixed offset plus the sum of all quantities in the market at prices better than or equal to a price corresponding to the position of the pointer at the time of said single action and for a price corresponding to said position.

34. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 33, further comprising program code for establishing that said offset is equal to a first pre-determined value if a single action of a first type is taken and said offset is equal to a second pre-determined value if a single action of a second type is taken.

35. A client system for placing a trade order for a commodity on an electronic exchange, the system comprising:

a display device for displaying the market depth of a commodity traded in a market, through a dynamic display of a plurality of bids and a plurality of asks in the market for the commodity, including the bid and ask quantities of the commodity, aligned with a static display of prices corresponding thereto;

a user input device for positioning a pointer thereof over an area in said dynamic displays of bids and asks and for initiating placement of a trade order of the commodity through a single action of the user input device; and

a trade order characteristics setting component for setting characteristics of the trade order based in part upon preset parameters and the position of the pointer at the time of said single action.



101997-00003

36. A client system for placing a trade order for a commodity according to claim 35, wherein said trade order characteristics setting component establishes that said trade order is a buy order if the position of the pointer at the time of said single action is within the display of bids and that said trade order is a sell order if the position of the pointer at the time of said single action is within the display of asks.

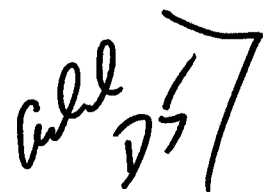
37. A client system for placing a trade order for a commodity according to claim 36, wherein said trade order characteristics setting component establishes that the trade order is for a pre-determined fixed quantity and for a price corresponding to the position of the pointer at the time of said single action.



38. A client system for placing a trade order for a commodity according to claim 36, wherein said trade order characteristics setting component establishes that the trade order is for a quantity equal to a current net position of the user in the commodity and for a price corresponding to the position of the pointer at the time of said single action.

39. A client system for placing a trade order for a commodity according to claim 36, wherein said trade order characteristics setting component establishes that the trade order is for a quantity equal to a predetermined fixed offset plus the sum of all quantities in the market at prices better than or equal to a price corresponding to the position of the pointer at the time of said single action and for a price corresponding to said position.

40. A client system for placing a trade order for a commodity according to claim 39, wherein said trade order characteristics setting component establishes that said offset is equal to a first pre-determined value if a single action of a first type is taken and said offset is equal to a second predetermined value if a single action of a second type is taken.



ABSTRACT

09894637

A method and system for reducing the time it takes for a trader to place a trade when electronically trading on an exchange, thus increasing the likelihood that the trader will have orders filled at desirable prices and quantities. The "Mercury" display and trading method of the present invention ensure fast and accurate execution of trades by displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market prices fluctuates. This allows the trader to trade quickly and efficiently.

UNITED STATES PATENT AND TRADEMARK OFFICE  
DOCUMENT CLASSIFICATION BARCODE SHEET



**Oath/Declaration, Small Entity,  
and Power of Attorney**

8

Level - 2  
Version 1.1

U.S. PATENT AND TRADEMARK OFFICE  
FORM 8-03

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I HEREBY DECLARE:

THAT my residence, post office address, and citizenship are as stated below next to my name;

THAT I believe I am the original, first, and sole inventor (if only one inventor is named below) or an original, first, and joint inventor (if plural inventors are named below or in an attached Declaration) of the subject matter which is claimed and for which a patent is sought on the invention entitled

CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

(Attorney Docket No. 024051/0135)

the specification of which (check one)

     is attached hereto.

  X   was filed on June 9, 2000 as United States Application Number or PCT International Application Number 09/590692 and was amended on      (if applicable).

THAT I do not know and do not believe that the same invention was ever known or used by others in the United States of America, or was patented or described in any printed publication in any country, before I (we) invented it;

THAT I do not know and do not believe that the same invention was patented or described in any printed publication in any country, or in public use or on sale in the United States of America, for more than one year prior to the filing date of this United States application;

THAT I do not know and do not believe that the same invention was first patented or made the subject of an inventor's certificate that issued in any country foreign to the United States of America before the filing date of this United States application if the foreign application was filed by me (us), or by my (our) legal representatives or assigns, more than twelve months (six months for design patents) prior to the filing date of this United States application;

THAT I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment specifically referred to above;

THAT I believe that the above-identified specification contains a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention, and sets forth the best mode contemplated by me of carrying out the invention; and

THAT I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I HEREBY CLAIM foreign priority benefits under Title 35, United States Code § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number	Country	Foreign Filing Date	Priority Claimed?	Certified Copy Attached?

I HEREBY CLAIM the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

U.S. Provisional Application Number	Filing Date
60/186,322	March 2, 2000

I HEREBY CLAIM the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Application Number	Parent Filing Date	Parent Patent Number

I HEREBY APPOINT the following registered attorneys and agents of the law firm of FOLEY & LARDNER to have full power to prosecute this application and any continuations, divisions, reissues, and reexaminations thereof, to receive the patent, and to transact all business in the United States Patent and Trademark Office connected therewith:

STEPHEN A. BENT	Reg. No. 29,768
DAVID A. BLUMENTHAL	Reg. No. 26,257
BETH A. BURROUS	Reg. No. 35,087
ALAN I. CANTOR	Reg. No. 28,163
WILLIAM T. ELLIS	Reg. No. 26,874
JOHN J. FELDHAUS	Reg. No. 28,822
PATRICIA D. GRANADOS	Reg. No. 33,683

Atty. Ct. No. 024051/0135

JOHN P. ISACSON	Reg. No. 33,715
MICHAEL D. KAMINSKI	Reg. No. 32,904
LYLE K. KIMMS	Reg. No. 34,079
KENNETH E. KROSIN	Reg. No. 25,735
JOHNNY A. KUMAR	Reg. No. 34,649
GLENN LAW	Reg. No. 34,371
PETER G. MACK	Reg. No. 26,001
BRIAN J. MC NAMARA	Reg. No. 32,789
SYBIL MELOY	Reg. No. 22,749
RICHARD C. PEET	Reg. No. 35,792
GEORGE E. QUILLIN	Reg. No. 32,792
COLIN G. SANDERCOCK	Reg. No. 31,298
BERNHARD D. SAXE	Reg. No. 28,665
CHARLES F. SCHILL	Reg. No. 27,590
RICHARD L. SCHWAAB	Reg. No. 25,479
ARTHUR SCHWARTZ	Reg. No. 22,115
HAROLD C. WEGNER	Reg. No. 25,258

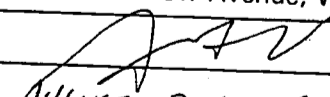
and I request that all correspondence be directed to:

William T. Ellis  
FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109

Telephone: (202) 672-5485  
Facsimile: (202) 672-5399

I UNDERSTAND AND AGREE THAT the foregoing attorneys and agents appointed by me to prosecute this application do not personally represent me or my legal interests, but instead represent the interests of the legal owner(s) of the invention described in this application.

I FURTHER DECLARE THAT all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Name of first inventor	Gary Allan Kemp II
Residence	Winnetka, IL
Citizenship	USA
Post Office Address	335 Fairview Avenue, Winnetka, IL 60093
Inventor's signature	
Date	AUGUST 24, 2000

Atty. Lt. No. 024051/0135

Name of second inventor	Jens-Uwe Schluetter
Residence	Evanston, IL
Citizenship	USA Germany <i>sch</i>
Post Office Address	2320 Grey, Evanston, IL 60201
Inventor's signature	<i>sch</i>
Date	August 125 / 2000
Name of third inventor	Harris Brumfield
Residence	Chicago, IL
Citizenship	USA
Post Office Address	1840 Cleveland, Chicago, IL 60614
Inventor's signature	<i>HBF</i>
Date	8/19/00

Please type a plus sign (+) inside this box →

PTO/SB/81 (10-00)

Approved for use through 10/31/2002. OMB 0651-0085

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>POWER OF ATTORNEY OR AUTHORIZATION OF AGENT</b>	<b>Application Number</b>	To Be Assigned
	<b>Filing Date</b>	HEREWITH
	<b>First Named Inventor</b>	Gary Alan Kemp II, et al
	<b>Group Art Unit</b>	****
	<b>Examiner Name</b>	****
	<b>Attorney Docket Number</b>	120046-00003

I hereby appoint:

Practitioners at Customer Number  → 

Place Customer Number Bar Code Label here

Practitioner(s) named below:

Name	Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

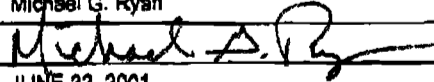
The above-mentioned Customer Number.  
OR

<input checked="" type="checkbox"/> Firm or Individual Name	Jackson Walker L.L.P.				
Address	2436 North Central Expressway				
Address	Suite 800				
City	Richardson	State	Texas	ZIP	75080
Country	United States of America				
Telephone	972-744-2905	Fax	972-744-2909		

I am the:

Applicant.  
 Assignee of record of the entire interest. See 37 CFR 3.71.  
*Certificate under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).*

**SIGNATURE of Applicant or Assignee of Record**

Name	Michael G. Ryan
Signature	
Date	JUNE 22, 2001

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

\*Total of 1 forms are submitted.

Burden Hour Statement: This form is estimated to take 3 minutes to complete. Time will vary depending upon the needs of the individual case. Any Comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



UNITED STATES PATENT AND TRADEMARK OFFICE  
DOCUMENT CLASSIFICATION BARCODE SHEET



**Drawings**

**7**

Level - 2  
Version 1.1  
Updated - 7/11/01

FORM 2000-10-2000

Connection to multiple exchange.

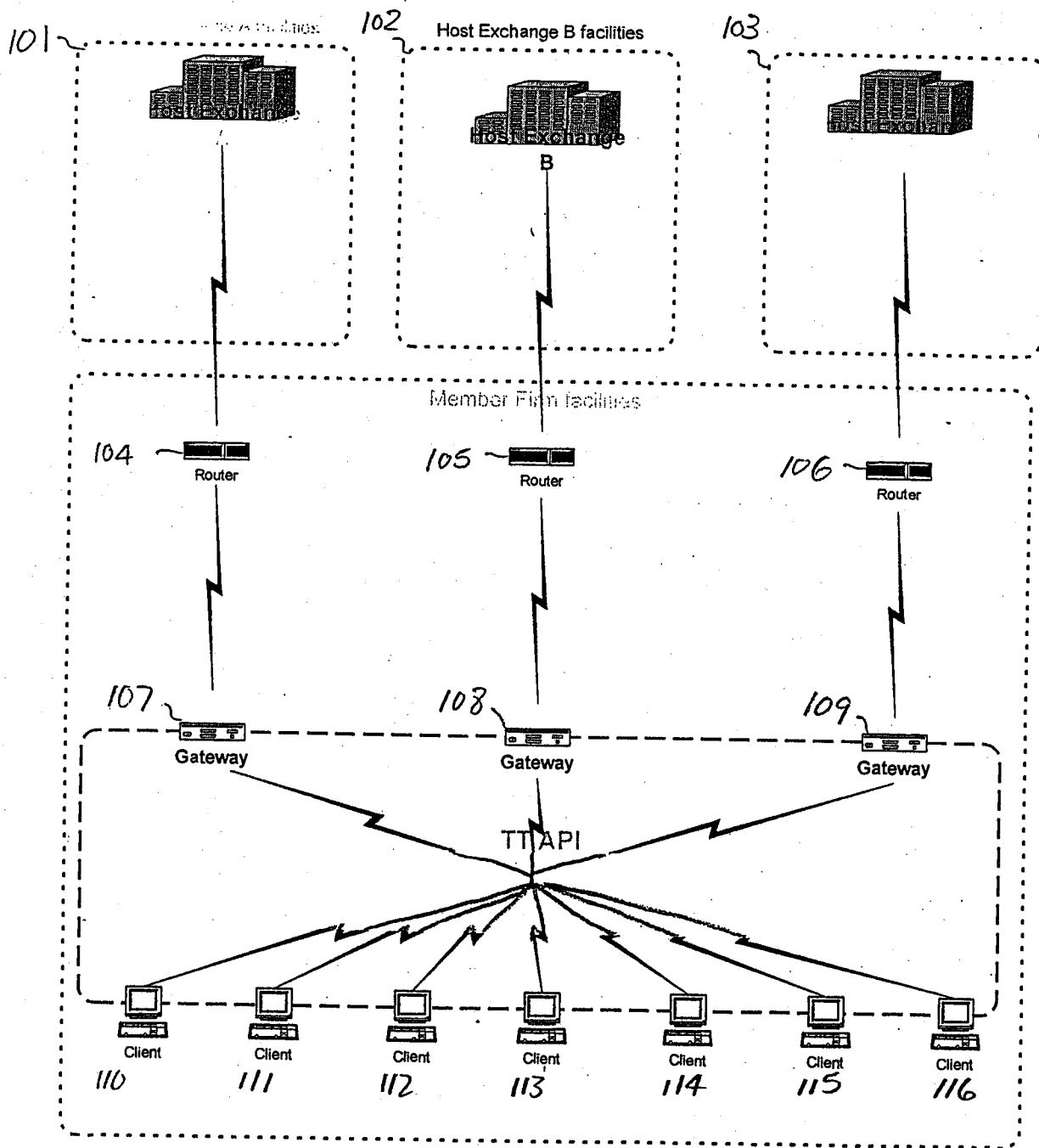


FIGURE 1

202    203    204    205

	Contract	Depth	BidQty	BidPrc	AskPrc	AskQty	LastPrc	LastQty	Total
1	GDHO	0	785	7626	7627	21	7627	469	5260
2			626	7625	7629	815			
3			500	7624	7630	600			
4			500	7623	7631	2456			
5			200	7622	7632	800			

FIGURE 2

1006 1005 1004 1003 1002 1001

SYCOM FGBL DEC99						
	EW	10:48:44	Bid	Ask	Prd	LTO
1009		L 3		104	99	
1010		R 5		94	98	
1011		720		85	97	
1012		X 10		115	96	
1013		0		32	95	
1014		10 1H		27	94	
		50 3H		85	93	
1007	S 0 W 21	1K 5H		45	92	
	S 0 W 7	CLR		25	91	
1015		X 10		30	90	10
1016		17				
1008	R 0 W 15	GXL	18		89	
	R 0 W 13	+ -	97		88	
1017		NET 0	30		87	
1018			43		86	
1019	R 0 W 17	NET REAL	110		85	
1021			23		84	
			31		83	
			125		82	
			21		81	

FIGURE 3

SYCOM FGBL DEC99					
EW	10 48 44	Bid	Ask	Pr	LTQ
	L 3		101	99	
	R 5		24	98	
	720		33	97	
	X 10		115	96	
	0		32	95	
	10 1H		27	94	
	50 3H		25	93	10
S 10 W 14	1K 5H		85	93	10
	CLR	43		92	
	X 10	125		91	
	17 E	97		90	
B 0 W 15	CXL	18		89	
B 0 W 13	3 E	97		88	
	NET 0	30		87	
B 0 W 17	NET REAL	43		86	
		110		85	
		23		84	
		31		83	
		125		82	
		21		81	

} 1101

FIGURE 4

FOR OFFICIAL USE ONLY

**SYCOM FGBL DEC99**

EMV	10 43 44	BIG	ASKO	PIC	LTO
	L 3		99		
	R 5		98		
	720		97		
	X 10		96		
	0		95		
	10 1H		94		
	50 3H		93		
B 0 W 24	1K 5H		92		
B 0 W 7	CLR		91		
	X 10		90		10
	17 15		89		
B 0 W 15	CXL	18			
B 0 W 13	NETO	97		88	
		30		87	
B 0 W 17	NET REAL	43		86	
		110		85	
		23		84	
		31		83	
		125		82	
		21		81	

1206 → (points to row with L 3)

1205 → (points to row with R 5)

1204 → (points to row with X 10)

1208      1201    1202    1203    1207

FIGURE 5

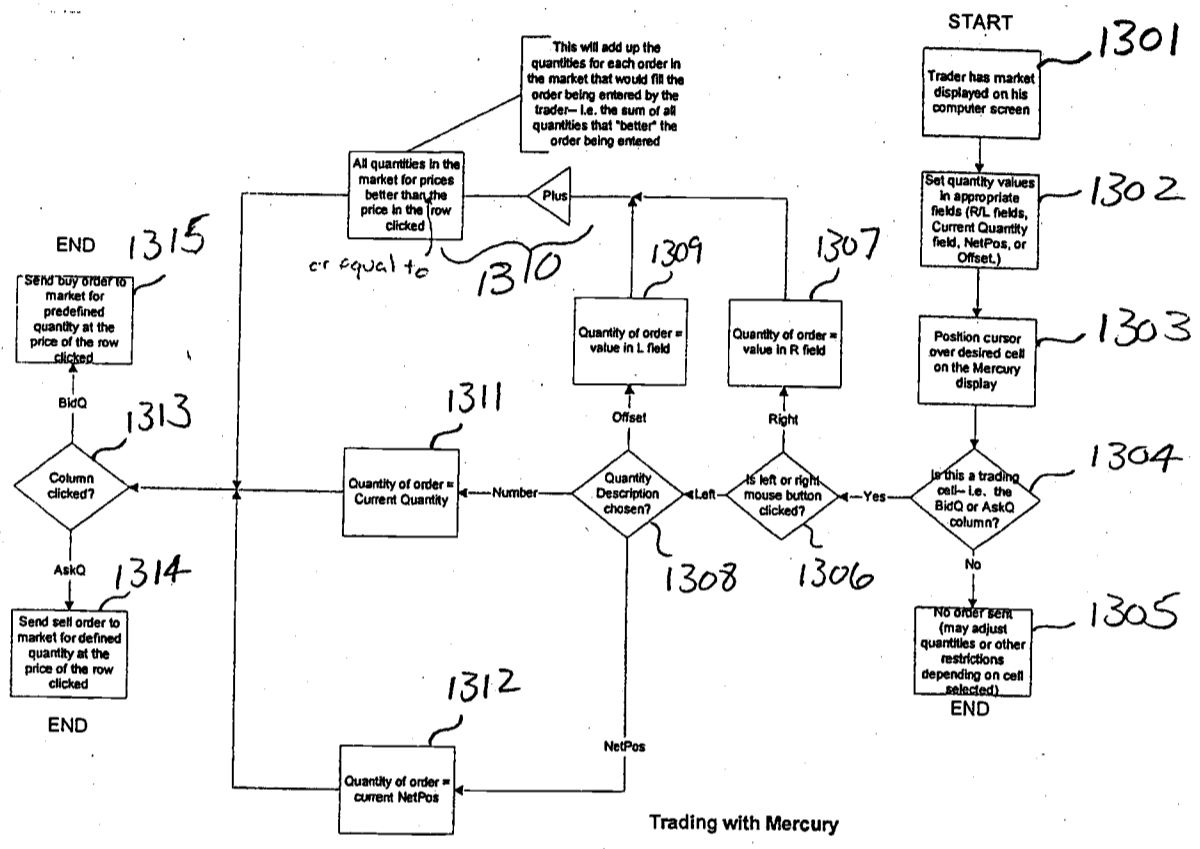


FIGURE 6

PRINT OF DRAWINGS  
AS ORIGINALLY

on to multiple exchang

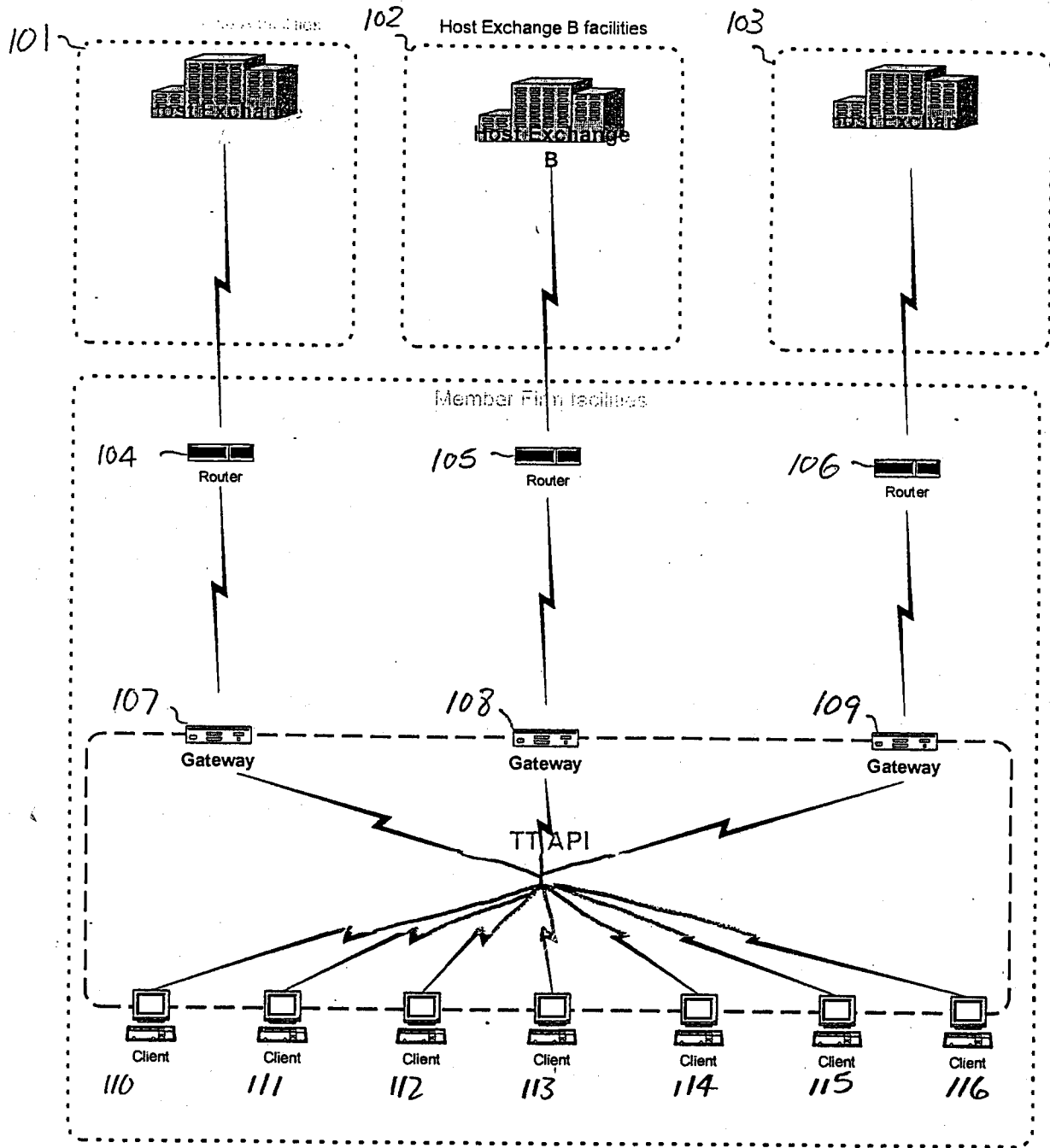


FIGURE 1



PRINT OF DRAWINGS  
AS ORIGINALLY D

.03 204 20

		LibQty	LibPfc	AskPfc	AskQty	UsePfc	UseQty	Total
1	GDHO	785	7626	7627	21	7627	489	8230
2		626	7625	7629	815			
3		500	7624	7630	600			
4		500	7623	7631	2456			
5		200	7622	7632	800			

FIGURE 2

FOR RELEASE

PRINT OF DRAWINGS  
AS ORIGINALLY

		VIUM IBL DEC99				
	EWY	10:48:44	BidQ	AskQ	Prc	LTO
1009		L 3		104	99	
1010		R 5		24	98	
1011		720		33	97	
1012		X 10		115	96	
1013		0		30	95	
1014		10 1H		27	94	
		50 3H		33	93	
1007	S 0 W 24	1K 5H		45	92	
		CLR		23	91	
1015	S 0 W 7	X 10		28	90	10
1016		17 2		18	89	
1008	B 0 W 15	CXL	18		88	
		+ E	97		87	
1017	B 0 W 13	NET 0	30		86	
1018			43		85	
1019	B 0 W 17	NET REAL	110		84	
1021			23		83	
			31		82	
			125		81	
			21			

FIGURE 3

00074

PRINT OF DRAWINGS  
AS ORIGINALLY

E/W		10:48:44	BidQ	AskQ	Prc	LTO
	L	3		100	99	
	R	5		24	98	
		720		32	97	
	X	10		115	96	
		0		32	95	
	10	1H		27	94	
	50	3H		53	93	10
B D W 11	1K	5H				
	GLR		43		92	
	X	10	125		91	
	V		97		90	
B D W 15	CXL		18		89	
B D W 13	+ -		97		88	
	NET 0		30		87	
B D W 17	NET REAL		43		86	
			110		85	
			23		84	
			31		83	
			125		82	
			21		81	

} 1101

FIGURE 4

PRINT OF DRAWING  
AS ORIGINALLY

BL DEC99

Env	BL DEC99	BIDD	ASKD	PC	LTQ
1206	L 3			99	
	R 5			98	
1205	720			97	
	X 10			96	
	0			95	
	10 1H			94	
	50 3H			93	
	1K 6H			92	
	CLR			91	
	X 10			90	10
1204	17 E			89	
	CXL	18		88	
	5 E	97		87	
	NET 0	30		86	
	NET REAL	43		85	
		110		84	
		23		83	
		31		82	
		125		81	
		21			

1208                      1201    1202    1203    1207

FIGURE 5

PRINT OF DRAWING  
AS ORIGINALLY FILED

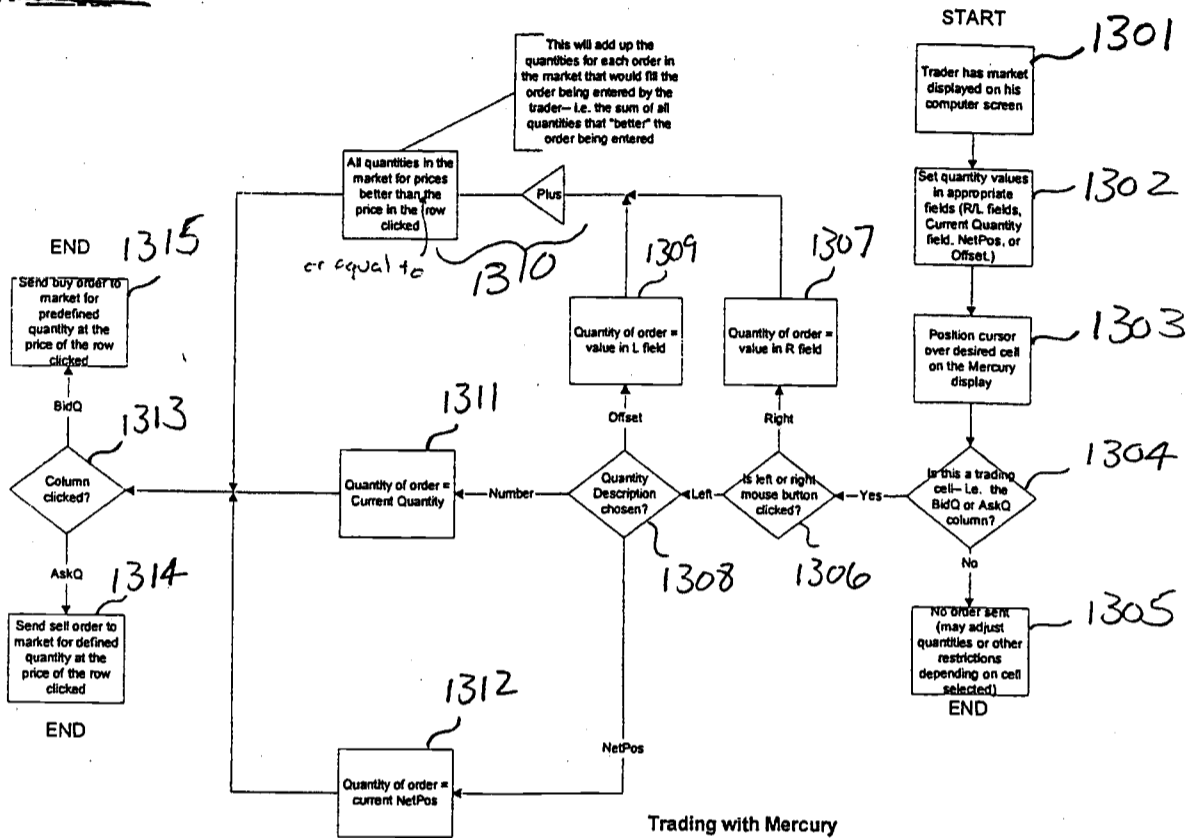


FIGURE 6

PRINT OF DRAWINGS  
AS ORIGINALLY

on to multiple exchan

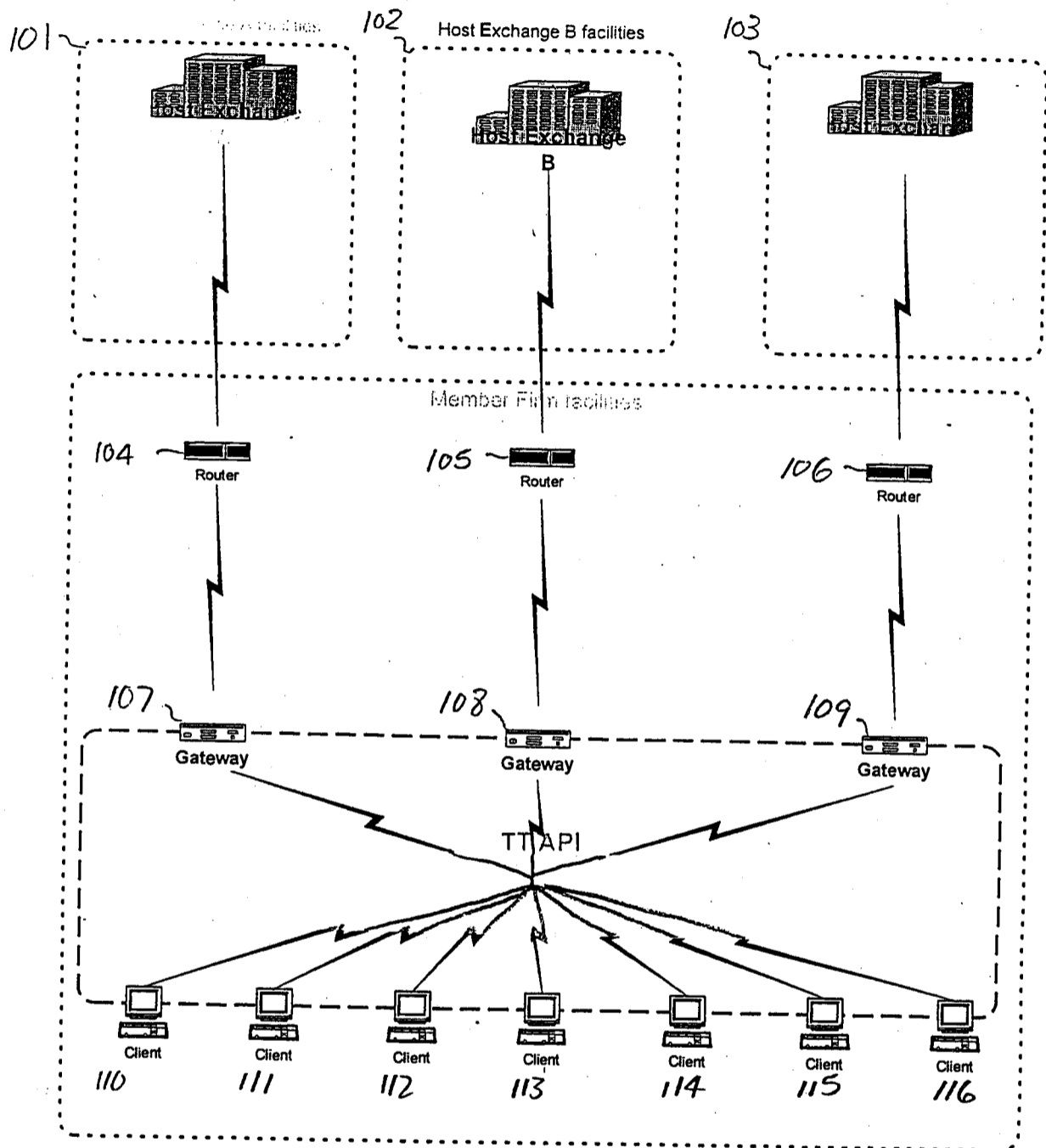


FIGURE 1

PRINT OF DRAWING  
 AS ORIGINALLY D

03 204 20

		Qty	Prc	AEK Prc	ASK Qty	Last Prc	Last Qty	Total
1	GDHO	785	7626	7627	21	7627	489	8230
2		626	7625	7629	815			
3		500	7624	7630	600			
4		500	7623	7631	2456			
5		200	7622	7632	800			

FIGURE 2

FOR 50' 42540360

PRINT OF DRAWINGS  
AS ORIGINALLY

DEC99

	EW	10:48:44	BidQ	AskQ	Prc	LTQ
1009		L 3		104	99	
1010		R 5		94	98	
1011		720		33	97	
1012		X 10		118	96	
1013		0		32	95	
1014		10 1H		27	94	
		50 3H				
1007	S-T W-24	1K 5H		83	93	
	S-T W-7	CLR		45	92	
1015		X 10		28	91	
1016		17 12		20	90	10
1008	B-D W-15	CXL	18		89	
	B-D W-15	+	97		88	
1017		NET 0	30		87	
1018			43		86	
1019	B-D W-17	NET REAL	110		85	
1021			23		84	
			31		83	
			125		82	
			21		81	

1001      1002      1003      1004      1005      1006

FIGURE 3



PRINT OF DRAWINGS  
 AS ORIGINALLY  
 ED

YIM I GBL DEC99

EW	10 48 44	BID	ASK	Prc	LTQ
	L 3		111	99	
	R 5		24	98	
	720		38	97	
	X 10		115	96	
	0		52	95	
	10 1H		37	94	
	50 3H		63	93	10
S 10 W 11	1K 5H		43	92	
	CLR	43		91	
	X 10	125		90	
	17	97		89	
B 0 W 15	CXL	18		88	
B 0 W 13	+ E	97		87	
	NETO	30		86	
B 0 W 17	NET REAL	43		85	
		110		84	
		23		83	
		31		82	
		125		81	
		21			

} 1101

44444444444444444444444444444444

FIGURE 4

PRINT OF DRAWING  
AS ORIGINALLY FILED

		L 48-44		Bids	ASKO	Prc	LTQ
1206			3			99	
			5			98	
1205			720			97	
		X	10			96	
			0			95	
		10	1H			94	
		50	3H			93	
		1K	5H			92	
			GLR			91	
		X	10			90	10
1204			17			89	
			OXL	18		88	
			ELI	97		87	
			NETO	30		86	
				43		85	
			NET REAL	110		84	
				23		83	
				31		82	
				125		81	
				21			

FIGURE 5

"FOIA(b)(7) - (C)"

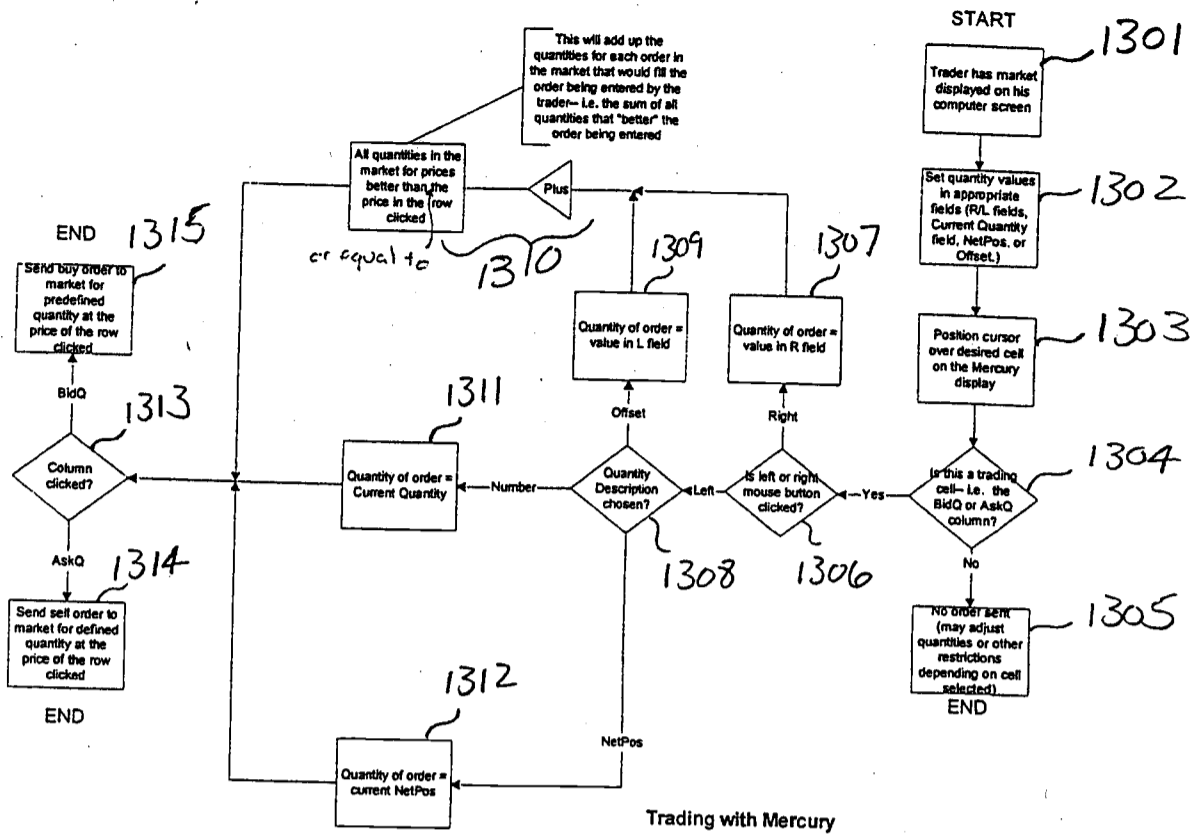


FIGURE 6

**UNITED STATES PATENT AND TRADEMARK OFFICE  
DOCUMENT CLASSIFICATION BARCODE SHEET**

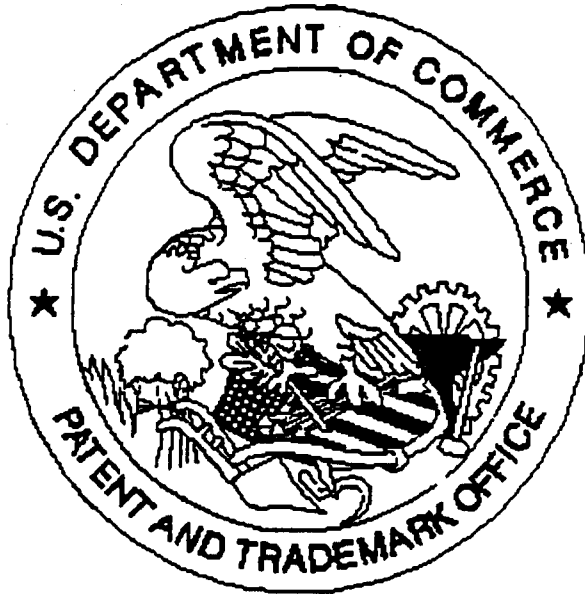


**Miscellaneous**

**10**

Level - 2  
Version 1.1  
Updated - 7/11/01

United States Patent & Trademark Office  
Office of Initial Patent Examination -- Scanning Division



Application deficiencies found during scanning:

Page(s) \_\_\_\_\_ of \_\_\_\_\_ were not present  
for scanning. (Document title)

Page(s) \_\_\_\_\_ of \_\_\_\_\_ were not present  
for scanning. (Document title)

Scanned copy is best available. *Drawings*

# CLAIMS ONLY

SERIAL NO.

09894637

FILING DATE

07.05.01

APPLICANT(S)

## CLAIMS

	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	/					
2		/				
3		/				
4		/				
5		/				
6		/				
7		/				
8	/					
9		/				
10		/				
11		/				
12		/				
13		/				
14		/				
15	/					
16		/				
17		/				
18		/				
19		/				
20		/				
21		/				
22		/				
23		/				
24		/				
25		/				
26		/				
27		/				
28		/				
29		/				
30		/				
31		/				
32		/				
33		/				
34		/				
35		/				
36		/				
37		/				
38		/				
39		/				
40		/				
41		/				
42		/				
43		/				
44		/				
45		/				
46		/				
47		/				
48		/				
49		/				
50		/				
TOTAL IND.		↓		↓		↓
TOTAL DEP.	←		←		←	
TOTAL CLAIMS						

	*		*		*	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						
73						
74						
75						
76						
77						
78						
79						
80						
81						
82						
83						
84						
85						
86						
87						
88						
89						
90						
91						
92						
93						
94						
95						
96						
97						
98						
99						
100						
TOTAL IND.		↓		↓		↓
TOTAL DEP.	←		←		←	
TOTAL CLAIMS						

\* MAY BE USED FOR ADDITIONAL CLAIMS OR ADMENDMENTS

**PATENT APPLICATION FEE DETERMINATION RECORD**  
Effective October 1, 2000

Application or Docket Number

120046-00003

**CLAIMS AS FILED - PART I**

	(Column 1)	(Column 2)
TOTAL CLAIMS	21	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	21 minus 20=	* 1
INDEPENDENT CLAIMS	3 minus 3 =	* 0
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

SMALL ENTITY TYPE

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	355.00
X\$ 9=	9
X40=	0
+135=	0
TOTAL	364

RATE	FEE
BASIC FEE	710.00
X\$18=	
X80=	
+270=	
TOTAL	

\* If the difference in column 1 is less than zero, enter "0" in column 2

**CLAIMS AS AMENDED - PART II**

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total *	Minus **	=
	Independent *	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total *	Minus **	=
	Independent *	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total *	Minus **	=
	Independent *	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

40/2 = 20  
27/3 = 9  
21 - 20 = 1  
3 - 3 = 0

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.  
\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."  
\*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."  
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE,

Applicant: Gary Allan Kemp II, et al

Serial No.: \*\*\*\*

Filing Date: HEREWITH

Docket No.: 120046-00003

*P.W.*  
*9/30/02*  
*#1/2/A*

PRELIMINARY AMENDMENT

June 27, 2001

Assistant Commissioner for Patents  
Washington, D.C. 20231

MAILING CERTIFICATE UNDER 37 C.F.R. §1.8(A)  
I hereby certify that the above correspondence is being deposited with the  
U.S. Postal Service as First Class Mail in an envelope addressed to:  
Assistant Commissioner for Patents, Washington, D.C. 20231 on  
June 27, 2001.

*Trish Paramore*  
Trish Paramore

Dear Sir:

Prior to the Examination of the above referenced Divisional patent application, please delete Claims 22-40. If there are any additional questions, please contact the undersigned attorney.

Respectfully submitted,

*Robert C. Klinger*  
Robert C. Klinger  
Reg. No. 34,365

Robert C. Klinger  
Jackson Walker L.L.P.  
2435 North Central Expressway, Suite 600  
Richardson, Texas 75080  
Phone: (972) 744-2900  
Fax: (972) 744-2909




**UNITED STATES PATENT AND TRADEMARK OFFICE**

 COMMISSIONER FOR PATENTS  
 UNITED STATES PATENT AND TRADEMARK OFFICE  
 WASHINGTON, D.C. 20231  
 www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
09/894,637	06/27/2001	Gary Allan Kemp II	120046-00003

**CONFIRMATION NO. 1527**
**FORMALITIES LETTER**


\*OC00000006348497\*

 Robert C. Klinger  
 Jackson Walker L.L.P.  
 Suite 600  
 2435 North Central Expressway  
 Richardson, TX 75080

Date Mailed: 07/26/2001

**NOTICE TO FILE CORRECTED APPLICATION PAPERS**
***Filing Date Granted***

This application has been accorded an Application Number and Filing Date. The application, however, is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given **TWO MONTHS** from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a)

The required item(s) identified below must be timely submitted to avoid abandonment:

- Substitute drawings in compliance with 37 CFR 1.84 because:
  - drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. ( 5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch);

*A copy of this notice **MUST** be returned with the reply.*

 Customer Service Center  
 Initial Patent Examination Division (703) 308-1202

PART 3 - OFFICE COPY

0300  
#3



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTORNEY DOCKET NO. 024051-0155

Applicant: Gary Alan KEMP II et al.

Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

Appl. No.: 09/894,637

Filing Date: 06/27/2001

Examiner: Unassigned

Art Unit: 2164

TRANSMITTAL OF CORRECTED APPLICATION PAPERS

Commissioner for Patents  
Washington, D.C. 20231

Attn: BOX MISSING PARTS

Sir:

In response to the Notice to File Corrected Application Papers mailed on July 26, 2001, in the above-identified application, transmitted herewith are the missing documents needed to complete the filing of the subject patent application.

Enclosed are:

- Formal Drawings (6 Sheets, Figures 1-6).
- Petition to Make Special Under 37 C.F.R. §1.102(d) and Statement by Applicant.
- Information Disclosure Statement.
- Form PTO-1449.
- Copy of Notice to File Corrected Application Papers.

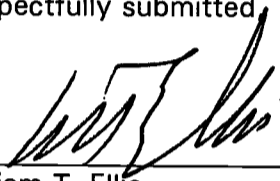
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed

000000000000000000000000

Appl. No. 09/894,637

herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,



\_\_\_\_\_  
William T. Ellis  
Attorney for Applicant  
Registration No. 26,874

September 7, 2001  
Date

FOLEY & LARDNER  
3000 K Street, N.W.  
Suite 500  
Washington, D.C. 20007-5109  
Telephone No.: (202) 672-5300

TO: 09/07/01 4:59:00 PM



# 3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTORNEY DOCKET NO. 024051-0155

Applicant: Gary Alan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY  
OF MARKET DEPTH  
Appl. No.: 09/894,637  
Filing Date: 06/27/2001  
Examiner: Unassigned  
Art Unit: 2164

**TRANSMITTAL OF FORMAL DRAWINGS**

Commissioner for Patents  
Washington, D.C. 20231

ATTENTION: DRAWING REVIEW BRANCH

Sir:

Transmitted herewith are the formal drawings (6 sheets, Figures 1-6) for the above-identified application. The Official Draftsperson is respectfully requested to approve these drawings for entry into the application.

Respectfully submitted,

William T. Ellis  
Attorney for Applicant  
Registration No. 26,874

September 7, 2001  
Date

FOLEY & LARDNER  
3000 K Street, N.W.  
Suite 500  
Washington, D.C. 20007-5109  
Telephone No.: (202) 672-5300

UNITED STATES PATENT AND TRADEMARK OFFICE  
DOCUMENT CLASSIFICATION BARCODE SHEET



**Drawings**

**7**

Level - 2  
Version 1.1  
Updated - 8/01/01

FOI(b) (7) - (C)

6766304

Title: CLICK BASED TRADING WITH  
INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Inventor(s): Gary Alan KEMP II et al.  
Appl. No.: 09/894,637

FIG. 1

CONNECTION TO MULTIPLE EXCHANGES

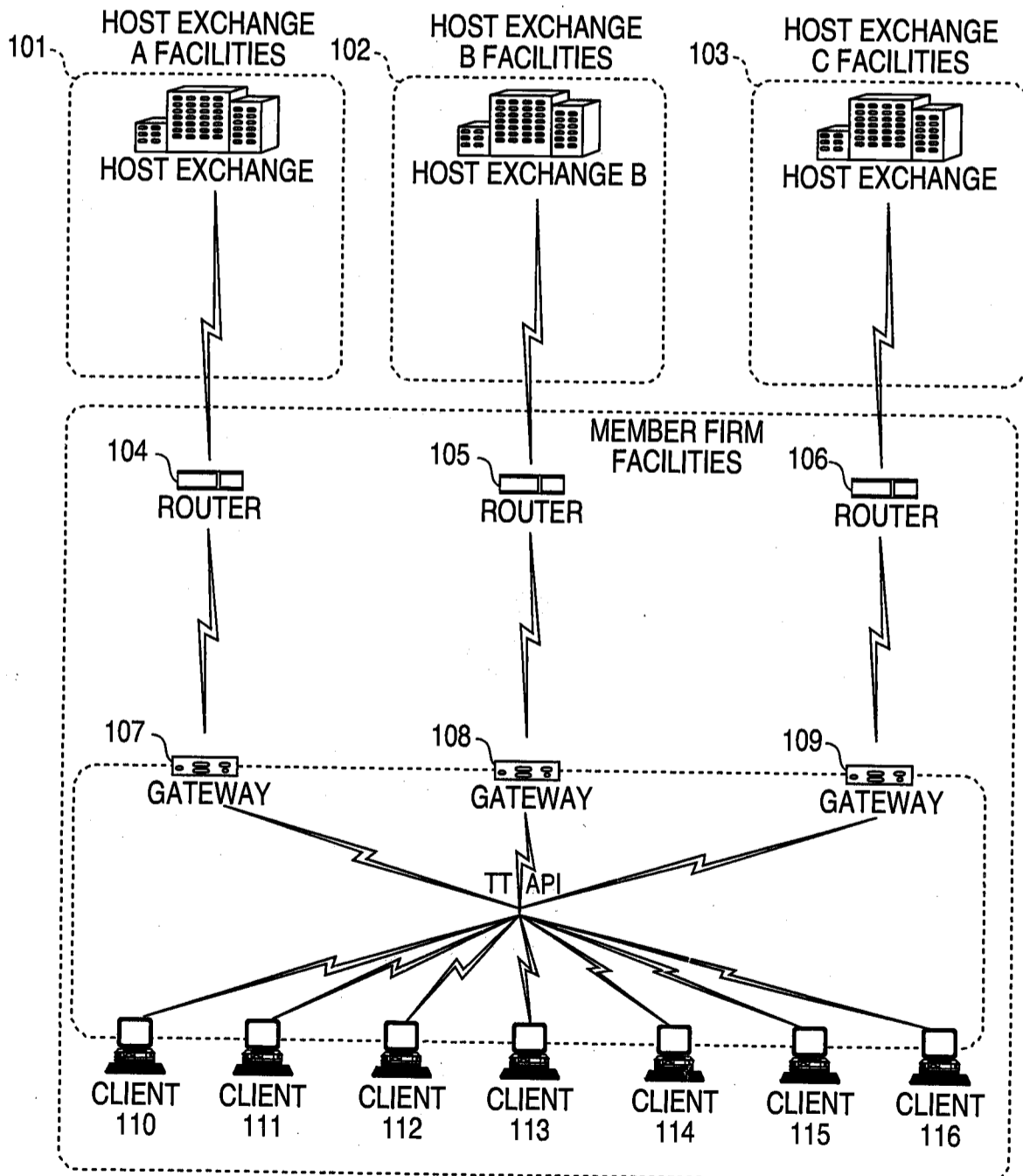


FIG. 1

TABLE 1

Title: CLICK BASED TRADING WITH  
INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Inventor(s): Gary Alan KEMP II et al.  
Appl. No.: 09/894,637

FIG. 2

	201	202	203	204	205	
	Depth	BidQty	BidPrc	AskPrc	AskQty	Total
1	•	785	7626	7627	21	8230
2		626	7625	7629	815	
3		500	7624	7630	600	
4		500	7623	7631	2456	
5		200	7622	7632	800	

Title: CLICK BASED TRADING WITH  
 INTUITIVE GRID DISPLAY OF  
 MARKET DEPTH  
 Inventor(s): Gary Alan KEMP II et al.  
 Appl. No.: 09/894,637

FIG. 3

SYCOM FGBL DEC99						-	□	×
E/W	10:48:44		BidQ	AskQ	Prc	LTD		
1009	L	3		104	99			
1010	R	5		24	98			
1011	720			33	97			
1012	×	10		115	96			
1013	0			32	95			
1014	10	1H		27	94			
	50	3H		63	93			
1007	S 0 W 24	1K 5H		45	92			
	S 0 W 7	CLR		28	91			
1015	×	10		20	90	10		
1016	17	▼		18	89		1020	
1008	B 0 W 15	CXL	18		88			
	B 0 W 13	+ -	97		87			
1017	NET 0		30		86			
1018	B 0 W 17	NET REAL	43		85			
1019			110		84			
			23		83			
			31		82			
1021			125		81			
			21					

FOOD RESOURCES



Title: CLICK BASED TRADING WITH  
 INTUITIVE GRID DISPLAY OF  
 MARKET DEPTH  
 Inventor(s): Gary Alan KEMP II et al.  
 Appl. No.: 09/894,637

**FIG. 4**

SYCOM FGBL DEC99						[-][X]	
E/W	10:48:44		BidQ	AskQ	Prc	LtQ	
	L	3		104	99		
	R	5		24	98		
	720			33	97		
	X	10		115	96		
	0			32	95		
	10	1H		27	94		
	50	3H		63	93	10	
S 10 W 14	1K	5H		43	92		
	CLR		43		91		
	X	10	125		90		
	17	▼	97		89		
B 0 W 15	CXL		18		88		
B 0 W 13	+	-	97		87		
	NET 0		30		86		
			43		85		
B 0 W 17	NET REAL		23		84		
			31		83		
			125		82		
			21		81		

1101

FIG. 4

Title: CLICK BASED TRADING WITH  
 INTUITIVE GRID DISPLAY OF  
 MARKET DEPTH  
 Inventor(s): Gary Alan KEMP II et al.  
 Appl. No.: 09/894,637

**FIG. 5**

SYCOM FGBL DEC99						[-] [ ] [X]	
E/W	10:48:44		BidQ	AskQ	Prc	LtQ	
	L	3		104	99		
	R	5		24	98		
	720			33	97		
	X	10		115	96		
	0			32	95		
	10	1H		27	94		
	50	3H		63	93		
S 0 W 24	1K	5H		45	92		
S 0 W 7	CLR			28	91		
	X	10		20	90	10	
	17	▼		18	89		
B 0 W 15	CXL			97	88		
B 0 W 13	+	-		30	87		
	NET 0			43	86		
B 0 W 17	NET REAL			110	85		
				23	84		
				31	83		
				125	82		
				21	81		

1206

1205

1204

1208

1201 1202 1203 1207

FOCUS 2000

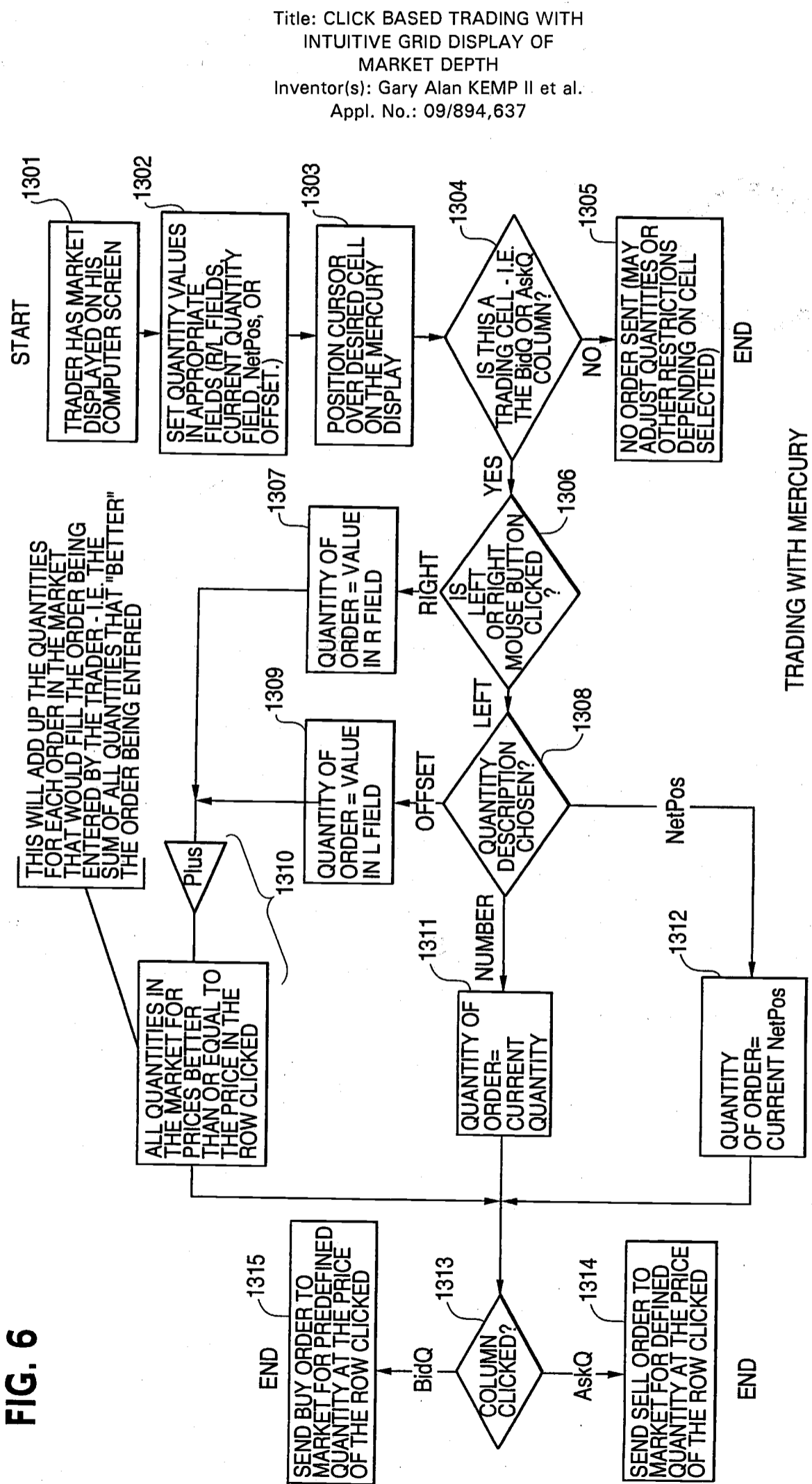
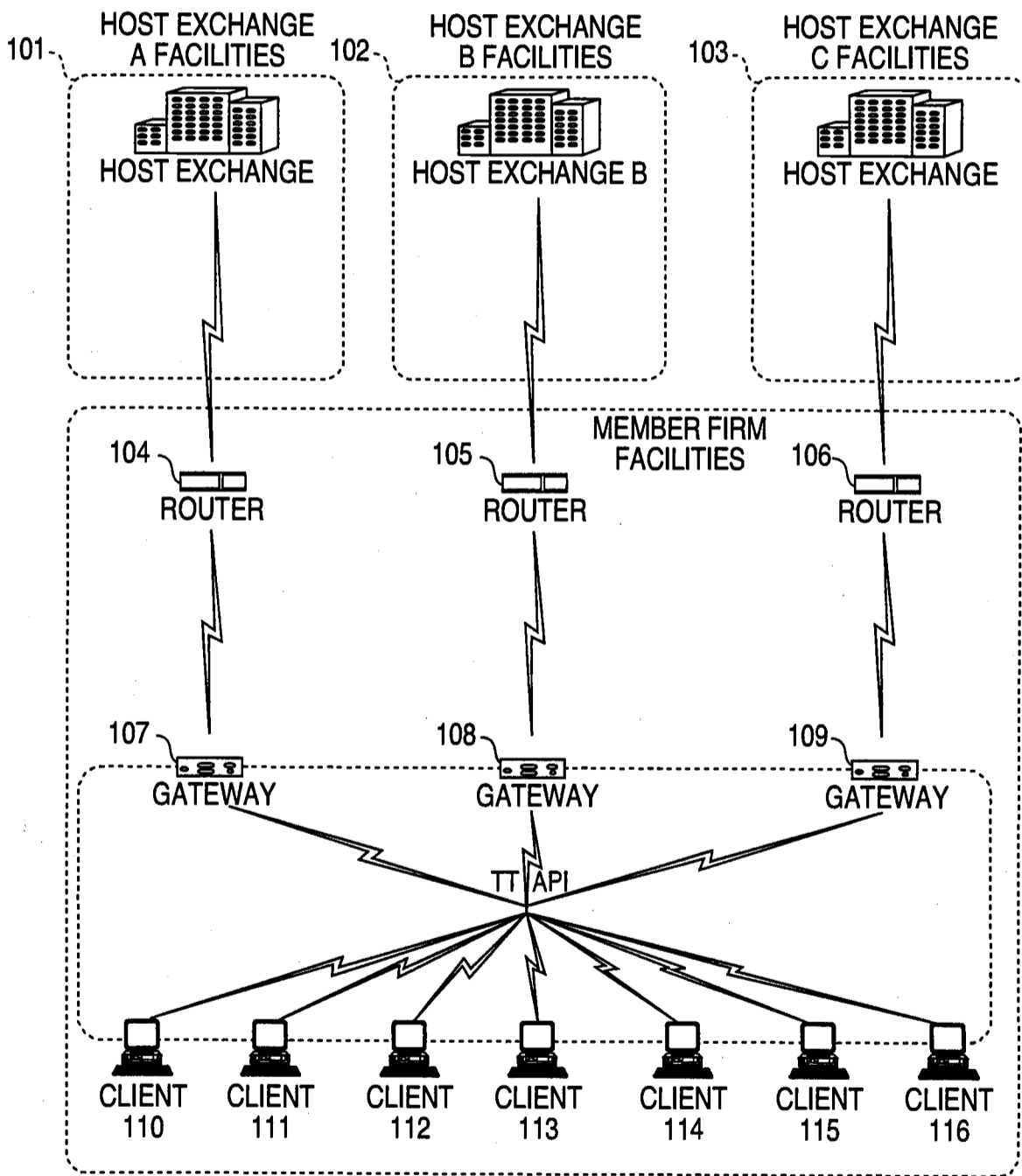


FIG. 6

Title: CLICK BASED TRADING WITH  
INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Inventor(s): Gary Alan KEMP II et al.  
Appl. No.: 09/894,637

FIG. 1

CONNECTION TO MULTIPLE EXCHANGES



FOOD RESHOP

**PRINT OF DRAWINGS  
AS ORIGINALLY**

CLICK BASED TRADING WITH  
INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Author(s): Gary Alan KEMM et al.  
Appl. No.: 09/894,637

		201	202	203	204	205					
	Contract	Depth	BidQty	BidPrc	AskPrc	AskQty	LastPrc	LastQty	Total		
1	CDHO	•	785	7626	7627	21	7627	489	8230		
2			626	7625	7629	815					
3			500	7624	7630	600					
4			500	7623	7631	2456					
5			200	7622	7632	800					

FIG. 3

SYCOM FGBL DEC99						
E/W	10:48:44		BidQ	AskQ	Prc	LtQ
	L	3		104	99	
	R	5		24	98	
	720			33	97	
	X	10		115	96	
	0					
	10	1H		32	95	
	50	3H		27	94	
S 0 W 24	1K	5H		63	93	
S 0 W 7	CLR			45	92	
	X	10		28	91	
	17	▼		20	90	10
B 0 W 15	CXL		18		89	
B 0 W 13	+	-	97		88	
	NET 0		30		87	
B 0 W 17	NET REAL		43		86	
			110		85	
			23		84	
			31		83	
			125		82	
			21		81	

FIG. 3

PRINT OF DRAWINGS  
 AS ORIGINALLY D

MARKET BASED TRADING WITH  
 FIVE GRID DISPLAY OF  
 MARKET DEPTH  
 ( ) : Gary Alan KEMP II  
 Appl. No.: 09/894,637

**FIG. 4**

SYCOM FGBL DEC99						- □ X
E/W	10:48:44		BidQ	AskQ	Prc	LTQ
	L	3		104	99	
	R	5		24	98	
	720			33	97	
	X	10		115	96	
	0			32	95	
	10	1H		27	94	
	50	3H		63	93	10
S 10 W 14	1K	5H		43	92	
	CLR			125	91	
	X	10		97	90	
	17	▼		18	89	
B 0 W 15	CXL			97	88	
B 0 W 13	+	-		30	87	
	NET 0			43	86	
B 0 W 17	NET REAL			110	85	
				23	84	
				31	83	
				125	82	
				21	81	

1101

FOOD RESOURCES

FIG. 5

SYCOM FGBL DEC99						
E/W	10:48:44		BidQ	AskQ	Prc	LtQ
	L	3		104	99	
	R	5		24	98	
	720			33	97	
	X	10		115	96	
	0			32	95	
	10	1H		27	94	
	50	3H		63	93	
S 0 W 24	1K	5H		45	92	
S 0 W 7	CLR			28	91	
	X	10		20	90	10
	17	▼		18	89	
B 0 W 15	CXL			97	88	
B 0 W 13	+	-		30	87	
	NET 0			43	86	
B 0 W 17	NET REAL			110	85	
				23	84	
				31	83	
				125	82	
				21	81	

FIG. 5

1206  
1205

1204

1208

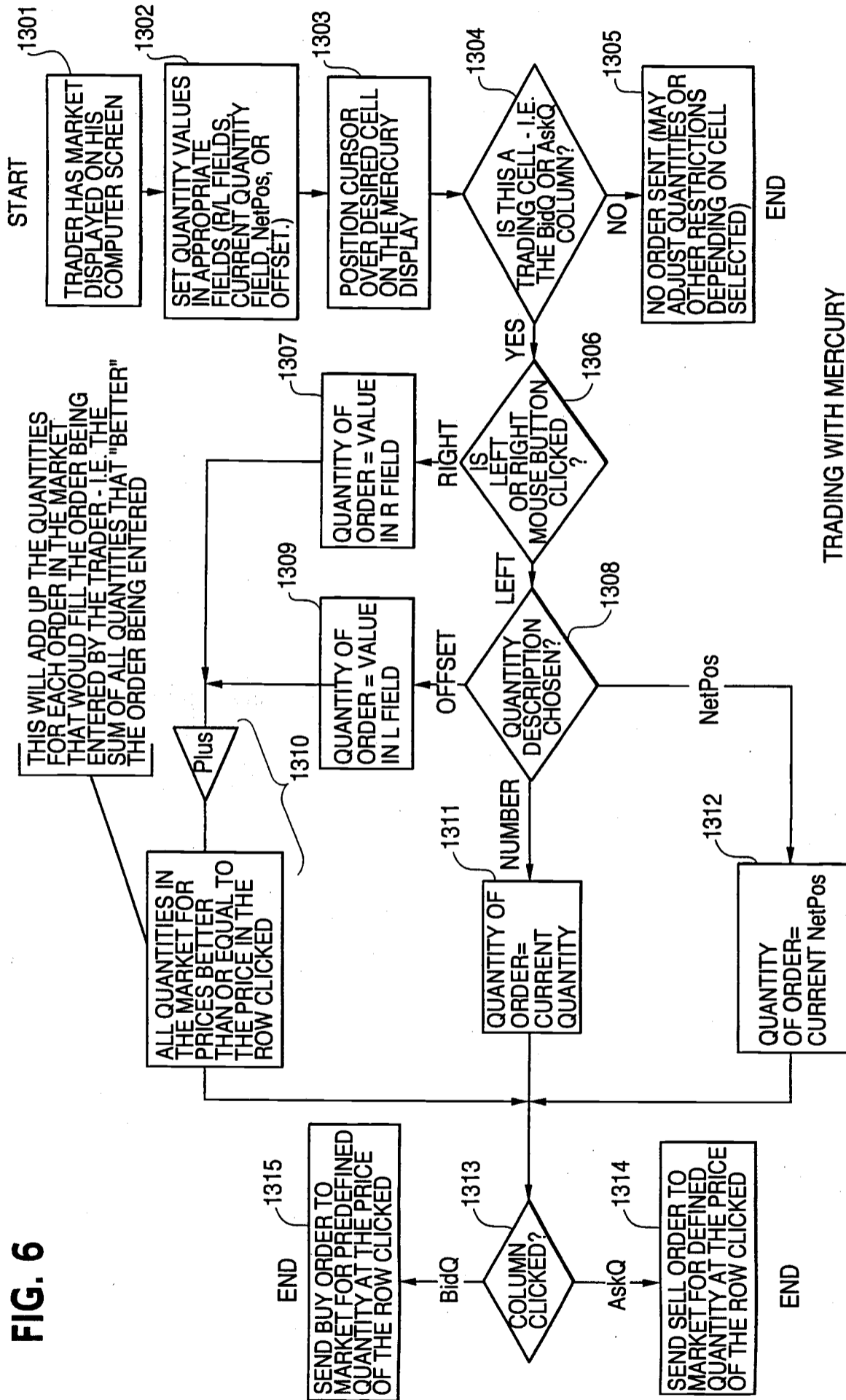
1201 1202 1203 1207



FIG. 6

PRINT OF DRAWINGS AS ORIGINALLY

COMPUTER BASED TRADING WITH  
MULTI-TILE GRID DISPLAY OF  
MARKET DEPTH  
INVENTOR: Gary Alan KEMP II  
Appl. No.: 09/894,637



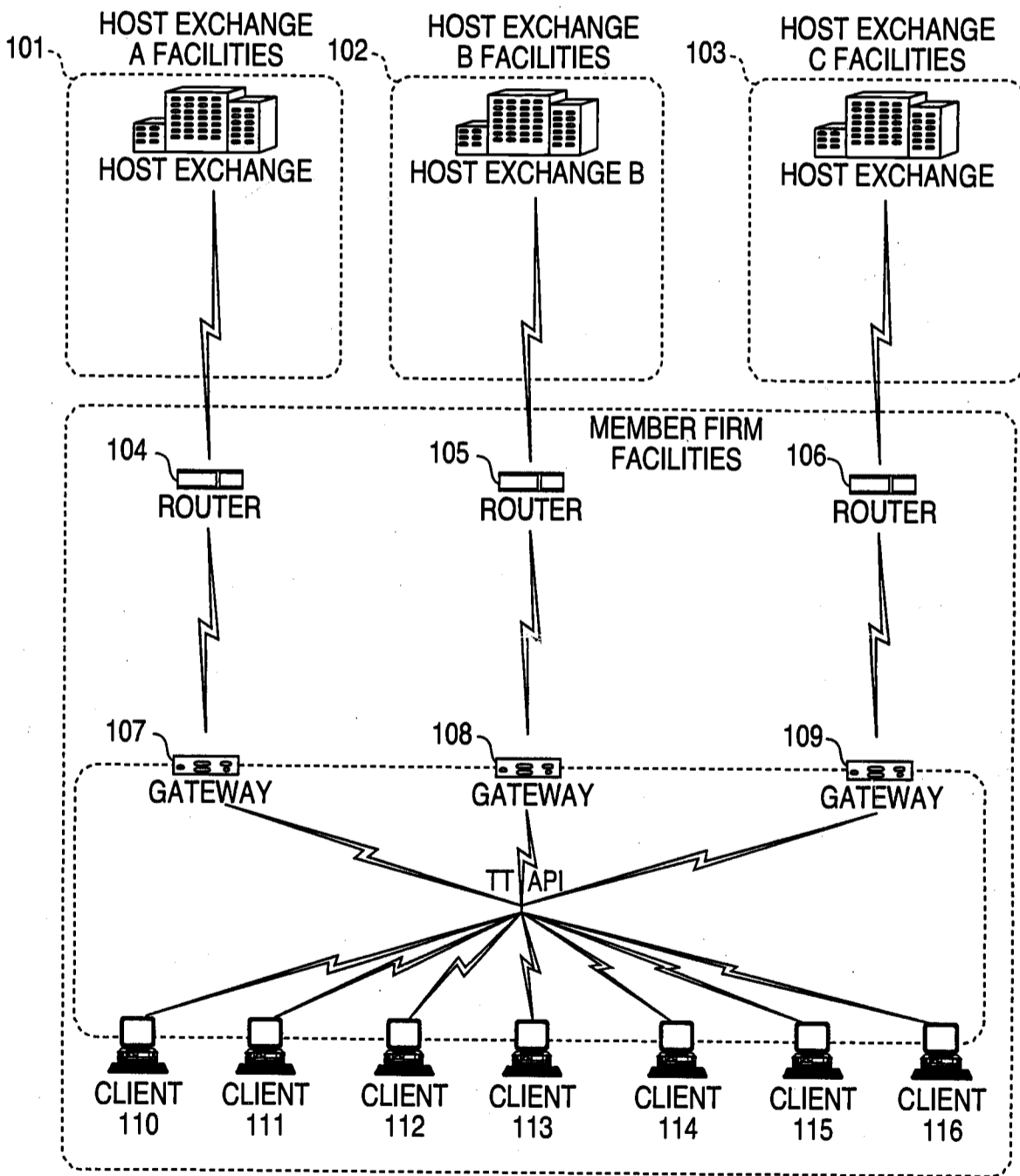
TRADING WITH MERCURY

PRINT OF DRAWING  
AS ORIGINALLY

COMPUTER-BASED TRADING WITH  
INITIATIVE GRID DISPLAY OF  
MARKET DEPTH  
INVENTOR: Barry Alan KEMP II et al.  
Appl. No.: 09/894,637

FIG. 1

CONNECTION TO MULTIPLE EXCHANGES



FOCUS 2510350

70400074E9100000

**PRINT OF DRAWINGS  
AS ORIGINALLY**

CLICK BASED TRADING WITH  
INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Operator(s): Gary Alan KEMP al.  
Appl. No.: 09/894,637

**FIG. 2**

	201	202	203	204	205	
	Depth	BidQty	BidPrc	AskPrc	AskQty	Total
1	•	785	7626	7627	21	8230
2		626	7625	7629	815	
3		500	7624	7630	600	
4		500	7623	7631	2456	
5		200	7622	7632	800	

FIG. 3

SYCOM FGBL DEC99						
E/W	10:48:44		BidQ	AskQ	Prc	LTQ
1009	L	3		104	99	
1010	R	5		24	98	
1011	720			33	97	
1012	×	10		115	96	
1013	0			32	95	
1014	10	1H		27	94	
	50	3H		63	93	
1007	S 0 W 24	1K 5H		45	92	
	S 0 W 7	CLR		28	91	
1015	×	10		20	90	10
1016	17	▼		18	89	
1008	B 0 W 15	CXL	18		88	
	B 0 W 13	+ -	97		87	
1017	NET 0		30		86	
1018	B 0 W 17	NET REAL	43		85	
1019			110		84	
			23		83	
1021			31		82	
			125		81	
			21			

FOR REFERENCE

PRINT OF DRAWINGS  
AS ORIGINALLY 2D

MARKET DEPTH BASED TRADING WITH  
INTELLIGENT GRID DISPLAY OF  
MARKET DEPTH  
Gary Alan KEMP II et al.  
Appl. No.: 09/894,637

FIG. 4

SYCOM FGBL DEC99						[-][X]	
E/W	10:48:44		BidQ	AskQ	Prc	LTQ	
	L	3		104	99		
	R	5		24	98		
	720			33	97		
	X	10		115	96		
	0			32	95		
	10	1H		27	94		
	50	3H					
S 10 W 14	1K	5H		63	93	10	} 1101
	CLR		43		92		
	X	10	125		91		
	17	▼	97		90		
B 0 W 15	CXL		18		89		
B 0 W 13	+	-	97		88		
	NET 0		30		87		
B 0 W 17	NET REAL		43		86		
			110		85		
			23		84		
			31		83		
			125		82		
			21		81		

T020607 4E9H5860

FIG. 5

SYCOM FGBL DEC99						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E/W	10:48:44		BidQ	AskQ	Prc	LTQ			
	L	3		104	99				
	R	5							
	720			24	98				
				33	97				
	X	10		115	96				
	0								
	10	1H		32	95				
	50	3H		27	94				
S 0 W 24	1K	5H		63	93				
S 0 W 7	CLR			45	92				
	X	10		28	91				
	17	▼		20	90	10			
B 0 W 15	CXL		18		89				
B 0 W 13	<input type="checkbox"/>	<input type="checkbox"/>	97		88				
	NET 0		30		87				
			43		86				
B 0 W 17	NET REAL		110		85				
			23		84				
			31		83				
			125		82				
			21		81				

1206

1205

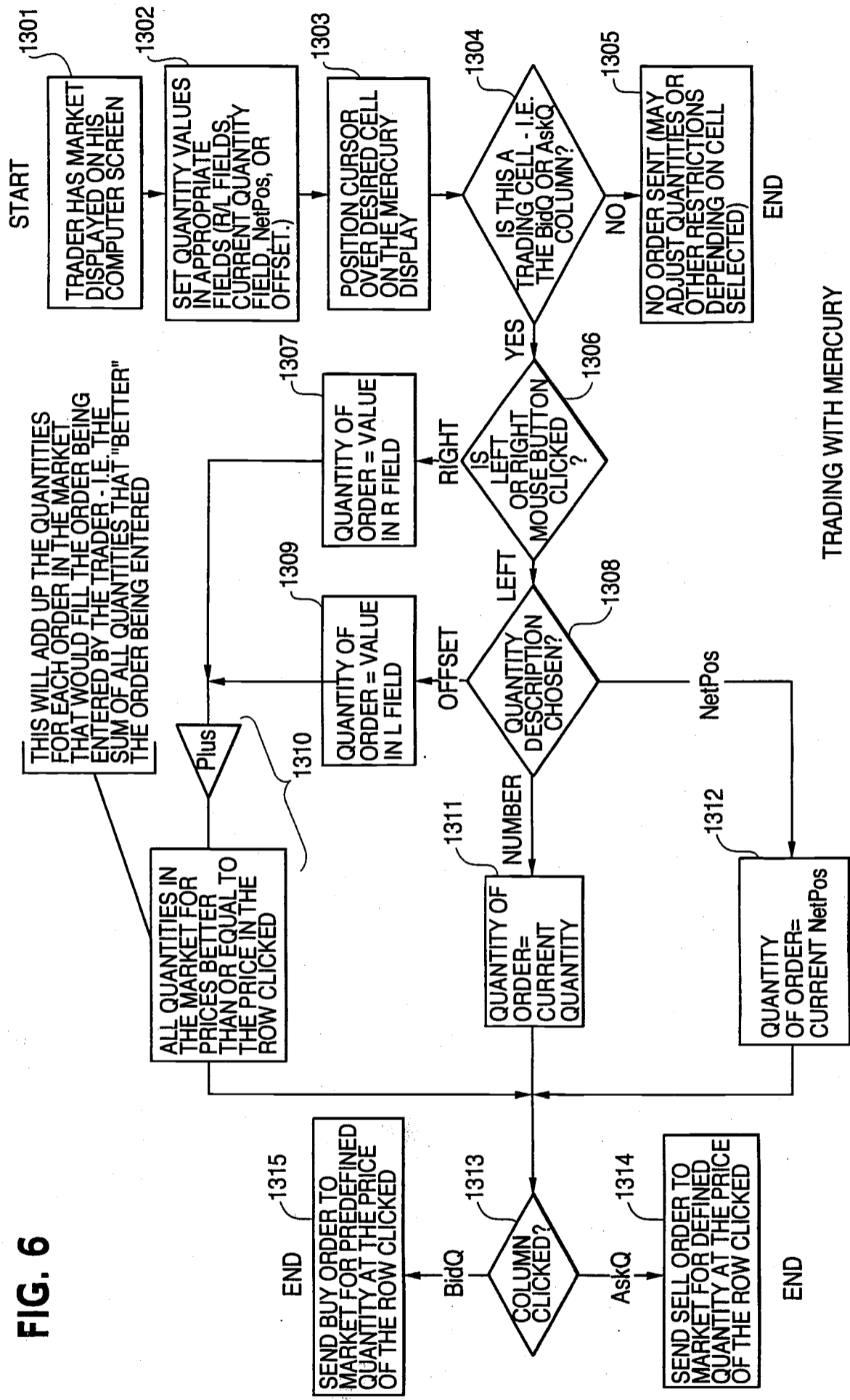
1204

1208

1201 1202 1203 1207

FOCUS 2.910500

FIG. 6





KA

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**ATTORNEY DOCKET NO. 024051-0155**

Applicant: Gary Alan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY  
OF MARKET DEPTH  
Serial No.: 09/894,637  
Filed: 06/27/2001  
Examiner: Unassigned  
Art Unit: 2164

**PETITION TO MAKE SPECIAL UNDER 37 CFR § 1.102(d) AND  
STATEMENT BY APPLICANT**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Pursuant to 37 C.F.R. §1.102 and M.P.E.P. 708.02 II (INFRINGEMENT), Applicant hereby requests that the above-captioned application be granted special status and examined expeditiously.

Special status has been granted in the parent application (09/590,692) to the present divisional application. Applicant submits, in addition to the present Petition to Make Special, the requisite fee under 37 C.F.R. §1.17(i) and a statement alleging the following under lettered headings that correspond with the lettered paragraphs of M.P.E.P. 708.02 II.

**STATEMENT BY APPLICANT**

Applicant hereby states as follows:

(A) Infringing Products on the Market

That there is an infringing device or product actually on the market or method in use.

*fee charged*



Appl. No. 09/894,637

(B) Comparison and Infringement

That Applicant has made a rigid comparison of the infringing device, product or method with the claims of the present application, and that, in its opinion, some of the claims are unquestionably infringed.

(C) Pre-Examination Search

A careful and thorough search of the prior art was conducted by a professional patent search firm. The search was conducted in the following areas of classification: Class 340, Subclass 825.27, Class 705, Subclasses 35-37. In addition, a key word search was performed on the U.S. Patent and Trademark Office Automated Patent System (APS) computer database.

Applicant has submitted, in the above-mentioned parent application, a copy of each of the references deemed most closely related to the subject matter encompassed by the claims of the present divisional application. A list of these references has also been submitted via an Information Disclosure Statement filed in the present application. Accordingly, the relevant references are already of record.

Further, Applicant hereby states that if all claims presented are not obviously directed to a single invention, that Applicant will make an election without traverse in response to an Examiner's telephone request.

Applicant's undersigned representative makes the aforementioned statement on behalf of Applicant.

Appl. No. 09/894,637

Inasmuch as all of the requirements for special status under M.P.E.P. 708.02 II have been met, it is respectfully requested that the application be granted special status, and be examined expeditiously.

Respectfully submitted,



---

William T. Ellis  
Attorney for Applicant  
Registration No. 26,874

September 7, 2001

Date

FOLEY & LARDNER  
3000 K Street, N.W.  
Suite 500  
Washington, D.C. 20007-5109  
Telephone No.: (202) 672-5300



215

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTORNEY DOCKET NO. 024051-0155

Applicant: Gary Alan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID  
DISPLAY OF MARKET DEPTH  
Serial No.: 09/894,637  
Filed: 06/27/2001  
Examiner: Unassigned  
Art Unit: 2164

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 CFR §1.56**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Applicants submit herewith on Form PTO-1449 a listing of the documents cited by or submitted to the United States Patent & Trademark Office in the parent application Serial No. 09/590,692, filed June 9, 2000. As provided in 37 CFR §1.98(d), copies of the documents are not being provided since they were previously submitted to the United States Patent & Trademark Office in the above-identified parent application.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

Appl. No. 09/894,637

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b), within three (3) months of the filing date of the application.

**RELEVANCE OF EACH DOCUMENT**

All of the documents are in English. Documents A1-A9 were submitted to the USPTO by Applicant in the parent application. Documents A10 and A11 were cited by the Examiner via form PTO-892 in the parent application and the listings are copied therefrom.

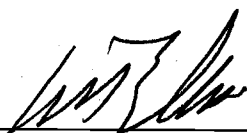
Applicants respectfully request that any listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO-1449 be returned in accordance with MPEP §609.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

September 7, 2001  
Date

FOLEY & LARDNER  
3000 K Street, N.W.  
Suite 500  
Washington, D.C. 20007-5109  
Telephone No.: (202) 672-5300

  
\_\_\_\_\_  
William T. Ellis  
Attorney for Applicant  
Registration No. 26,874  
Ankur S. Shah  
Registration No. 41,514

SEP 07 2001  
PATENT & TRADEMARK OFFICE

SHEET 1 of 1

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY DCKET NO. 024051/0155	SERIAL NO. 09/894,637
--	-------------------------------	--------------------------

LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)	APPLICANT: Gary Alan KEMP II, et al.	
Date Submitted to PTO: September 7, 2001	FILING DATE: June 27, 2001	GROUP: Unassigned

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A1	4,674,044	06/16/87	KALMUS et al.	364	408
	A2	4,750,135	06/07/88	BOILEN	364	514
	A3	5,270,922	12/14/93	HIGGINS	364	408
	A4	5,297,032	03/22/94	TROJAN et al.	364	408
	A5	5,924,083	07/13/99	SILVERMAN et al.	705	37
	A6	6,014,643	01/11/00	MINTON	705	37
	A7	5,077,665	12/31/91	SILVERMAN et al.	364	408
	A8	5,136,501	08/08/92	SILVERMAN et al.	364	408
	A9	5,963,923	10/05/99	GARBER	705	37

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO

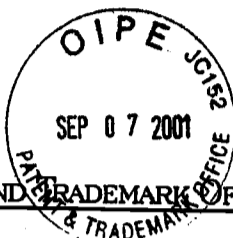
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	A10	www.tradingtechnologies.com/products/xtrade_full.html (viewed 5/22/2001) < 6/9/2000
	A11	Kharouf, A trading room with a view, Fututes, 27, 11 - 11/1998

EXAMINER	DATE CONSIDERED
----------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

3



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS  
UNITED STATES PATENT AND TRADEMARK OFFICE  
WASHINGTON, D.C. 20231  
www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
09/894,637	06/27/2001	Gary Allan Kemp II	120046-00003

CONFIRMATION NO. 1527

FORMALITIES LETTER



\*0C000000006348497\*

Robert C. Klinger  
Jackson Walker L.L.P.  
Suite 600  
2435 North Central Expressway  
Richardson, TX 75080

*Response due: Sept 26 2001*

Date Mailed: 07/26/2001

**NOTICE TO FILE CORRECTED APPLICATION PAPERS**

**Filing Date Granted**

This application has been accorded an Application Number and Filing Date. The application, however, is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given **TWO MONTHS** from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a)

The required item(s) identified below must be timely submitted to avoid abandonment:

- Substitute drawings in compliance with 37 CFR 1.84 because:
  - drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. ( 5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch);

**A copy of this notice MUST be returned with the reply.**

*[Handwritten Signature]*

Customer Service Center  
Initial Patent Examination Division (703) 308-1202

PART 1 - ATTORNEY/APPLICANT COPY

**DOCKETED**

*July 30 2001*

JUL 30 2001

000118

00000000000000000000



8/26/02  
P#  
#6

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Attorney Docket No. 024051/0155**

Applicant: Gary Alan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH  
Serial No.: 09/894,637  
Filed: June 27, 2001  
Examiner: Unassigned  
Art Unit: 2164

**RECEIVED**  
AUG 20 2002  
**GROUP 3600**

**ASSOCIATE POWER OF ATTORNEY**

Commissioner for Patents  
Washington, D.C. 20231

**RECEIVED**  
AUG 20 2002  
Technology Center 2100

Sir:

The undersigned attorney of record hereby grants

Steven F. Borsand, Reg. No. 36,752,  
Mark W. Triplett, Reg. 49,002, and  
Monika Dudek, Reg. No. 47,538

an associate power, with full powers of substitution and revocation, to prosecute the above-identified application and transact all business in the Patent and Trademark Office connected therewith.

Respectfully submitted,

*August 16, 2002*

Date

Ankur D. Shah  
Registration No. 41,514

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 024051/0155

Applicant: Gary Alan KEMP II et al.

Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

Appl. No.: 09/894,637

#7

Filing Date: 06/27/2001

Examiner: R. Weisberger

Art Unit: 3624

RECEIVED  
TECHNOLOGY CENTER 3500  
02 SEP 27 AM 10:31

AMENDMENT TRANSMITTAL

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Transmitted herewith is an amendment in the above-identified application.

Small Entity status under 37 C.F.R. § 1.9 and § 1.27 has been established by a Small Entity statement previously submitted.

Small Entity statement is enclosed.

The fee required for additional claims is calculated below:

	Claims as Amended	Previously Paid For	Extra Claims Present	Rate	Additional Claims Fee
Total Claims:	28	21	7	\$18.00	\$126.00
Independents:	2	3	0	\$84.00	\$0.00
First presentation of any Multiple Dependent Claims:				\$280.00	\$0.00
				CLAIMS FEE TOTAL:	\$126.00
				Small Entity Fees Apply (subtract ½ of above):	\$63.00
				TOTAL FEE:	\$63.00

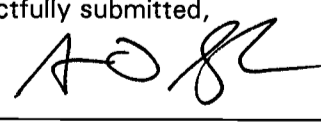
A check in the amount of \$63.00 is enclosed.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date SEPT. 26, 2002



By

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

Ankur D. Shah  
Attorney for Applicant  
Registration No. 41,514

09/26/2004 09:09:4637  
05/26/2004 SWILLIAMS 00000002 190741 00.221  
01 FC:1202 126.00 DA



Atty. Dkt. No. 024051-0155

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Gary Alan KEMP II et al.  
Title: CLICK BASED TRADING WITH  
INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Appl. No.: 09/894,637  
Filing Date: 06/27/2001  
Examiner: R. Weisberger  
Art Unit: 3624

*Serraine*  
*#7/a*  
*9/30/02*  
RECEIVED  
TECHNOLOGY CENTER 3608  
02 SEP 27 AM 10:31

**AMENDMENT**

Commissioner for Patents  
Box NON-FEE AMENDMENT  
Washington, D.C. 20231

Sir:

Please amend this application as set forth below and consider the accompanying remarks.

**In the Specification:**

Please amend the specification as follows:

Page 8, delete paragraph starting at line 24, and replace this paragraph with the following in accordance with 37 CFR § 1.121. A marked up version showing the changes in the specification is attached.

*Bv* -- Figure 2 illustrates a screen display of an invention described in a commonly owned co-pending application entitled "Click Based Trading with Market Depth Display" serial no. 09/589,751, filed on June 9, 2000, the contents of which are incorporated herein by reference. This display shows the inside market and the market depth of a given commodity being traded. Row 1 represents the "inside market" for the commodity being traded which is the best (highest) bid price and quantity and the best (lowest) ask price and quantity. Rows 2-5 represent the "market depth" for the commodity being traded. In the preferred embodiment of the present invention, the

B1  
cont

display of market depth (rows 2-5) lists the available next-best bids, in column 203, and asks, in column 204. The working bid and ask quantity for each price level is also displayed in columns 202 and 205 respectively (inside market - row 1). Prices and quantities for the inside market and market depth update dynamically on a real time basis as such information is relayed from the market.--

---

Page 13, delete paragraph starting at line 13, and replace this paragraph with the following in accordance with 37 CFR § 1.121. A marked up version showing the changes in the specification is attached.

B2

The values in the price column are static; that is, they do not normally change positions unless a re-centering command is received (discussed in detail later). The values in the Bid and Ask columns however, are dynamic; that is, they move up and down (in the vertical example) to reflect the market depth for the given commodity. The LTQ column 1006 shows the last traded quantity of the commodity. The relative position of the quantity value with respect to the Price values reflects the price at which that quantity was traded. Column 1001 labeled E/W (entered/working) displays the current status of the trader's orders. The status of each order is displayed in the price row where it was entered. For example, in cells 1007, the number next to S indicates the number of the trader's ordered lots that have been sold at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled - i.e. the system is working on filling the order. Blanks in this column indicate that no orders are entered or working at that price. In cells 1008, the number next to B indicates the number of the trader's ordered lots that have been bought at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled - i.e. the system is working on filling the order.

---

Page 17, delete paragraph starting at line 10, and replace this paragraph with the following in accordance with 37 CFR § 1.121. A marked up version showing the changes in the specification is attached.

B3  
-- Using the screen display and values from Figure 5, the placement of trade orders using the Mercury display and trading method is now described using examples. A left click on the 18 in the BidQ column 1201 will send an order to market to buy 17 lots (quantity # chosen on the Quantity Description pull down menu cell 1204) of the commodity at a price of 89 (the corresponding price in the Prc column 1203). Similarly, a left click on the 20 in the AskQ column 1202 will send an order to market to sell 17 lots at a price of 90.--

**In the Claims:**

Please cancel claims 1-21 without prejudice or disclaimer.

Please add the following new claims:

B4  
Sub 1  
1. ~~41.~~ (New) A method for displaying market information relating to a commodity being traded in a market having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the method comprising:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region in association with price levels along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region in association with the price levels along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market; and

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that the first and second indicators can move in the bid and ask display regions relative to the common static price axis when the inside market changes.

~~2~~ 42. (New) The method of claim 41 wherein the bid and ask display regions comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

~~3~~ 43. (New) The method of claim 41 wherein the bid and ask display regions are oriented vertically.

~~4~~ 44. (New) The method of claim 41 wherein the bid and ask display regions are oriented horizontally.

~~5~~ 45. (New) The method of claim 41 wherein one of the plurality of locations of the bid display region comprises a blank region in which there is no first indicator displayed.

~~6~~ 46. (New) The method of claim 41 wherein one of the plurality of locations of the ask display region comprises a blank region in which there is no first indicator displayed.

~~7~~ 47. (New) The method of claim 41 further comprising the step of displaying at least a portion of the common static price axis in a price display region.

~~8~~ 48. (New) The method of claim 47 wherein the bid display region, the ask display region, and the price display region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

~~9~~ 49. (New) The method of claim 47 wherein the bid display region, the ask display region, and the price display region are oriented vertically.

~~10~~ 50. (New) The method of claim 47 wherein the bid display region, the ask display region, and the price display region are oriented horizontally.

~~11~~ 51. (New) The method of claim 41 further comprising the steps of:

dynamically displaying a third indicator at one of the plurality of locations in the bid display region, the third indicator representing quantity associated with at least one order to buy the commodity at a price different than the highest bid price currently available in the market; and

B4  
cont

Sub  
D2

dynamically displaying a fourth indicator at one of the plurality of locations in the ask display region, the fourth indicator representing quantity associated with at least one order to sell the commodity at a price different than the lowest ask price currently available in the market.

~~12/52. (New) The method of claim 51 wherein one of the plurality of locations of the bid display region comprises a blank region in which there is no first or third indicator displayed.~~

~~13/53. (New) The method of claim 41 wherein one of the plurality of locations of the ask display region comprises a blank region in which there is no second or fourth indicator displayed.~~

~~14/54. (New) The method of claim 41 further comprising the steps of:  
displaying a bid order entry region comprising a plurality of locations for receiving commands to send buy orders; and  
displaying an ask order entry region comprising a plurality of locations for receiving commands to send sell orders.~~

~~15/55. (New) The method of claim 54 wherein the bid and ask order entry regions are displayed in association with the common static price axis such that each of the plurality of locations for receiving commands is associated with a price level on the common static price axis.~~

~~16/56. (New) The method of claim 54 wherein the bid order entry region comprises the bid display region and the ask order entry region comprises the ask display region.~~

~~17/57. (New) The method of claim 41 further comprising dynamically displaying an entered order indicator in association with the price levels arranged along the common static price axis.~~

~~18/58. (New) The method of claim 57 wherein the entered order indicator is displayed in an entered order region.~~

Sub 02  
B4 cont

~~18~~ 59. (New) The method of claim ~~41~~ further comprising dynamically displaying a last trade indicator in association with the common static price axis.

~~20~~ <sup>19</sup> 60. (New) The method of claim ~~59~~ <sup>18</sup> wherein the last trade indicator is displayed in a last trade region.

~~20~~ 61. (New) The method of claim ~~41~~ further comprising the steps of:

displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and

updating the display to display the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

*BA  
cont*

~~22~~ 62. (New) The method of claim ~~41~~ further comprising the steps of:

displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and

updating the display to display the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

*Sub  
23*

~~23~~ <sup>22</sup> 63. (New) The method of claim ~~41~~ further comprising the steps of:

displaying the first indicator at a first location associated with a particular price level on the common static price axis; and

repositioning the common static price axis such that the first indicator is displayed at a second location associated with the particular price level on the common static price axis.

~~24~~ <sup>23</sup> 64. (New) The method of claim ~~41~~ further comprising the steps of:

displaying the second indicator at a first location associated with a particular price level on the common static price axis; and

repositioning the common static price axis such that the second indicator is displayed at a second location associated with the particular price level on the common static price axis.

~~25~~ <sup>24</sup> 65. (New) The method of claim ~~41~~ <sup>1</sup> wherein the bid and ask display regions are displayed in different colors.

~~26~~ <sup>25</sup> 66. (New) The method of claim ~~41~~ <sup>1</sup> wherein the first and second indicators are displayed in different colors.

~~27~~ <sup>26</sup> 67. (New) The method of claim ~~41~~ <sup>1</sup> wherein the bid and ask display regions are displayed in a window further comprising centering the display of the first and second indicators in the window upon receipt of a centering instruction.

~~28~~ <sup>27</sup> 68. (New) A computer readable medium having program code recorded thereon for execution on a computer for displaying market information relating to a commodity being traded in a market having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the program code causing a machine to perform the following method steps:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region in association with price levels along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region in association with the price levels along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that the first and second indicators can move in the bid and ask display regions relative to the common static price axis when the inside market changes.

By  
cont  
Sub 24

**REMARKS**

Claims 1-21 were pending in the present application. By way of this amendment, claims 1-21 have been cancelled without prejudice or disclaimer and claims 41-68 have been added. These new claims are directed to a particular aspect of the invention. The specification has been amended editorially to correct typographical errors and to reiterate changes made in the parent application. No new matter has been introduced. Accordingly, claims 41-68 are pending for consideration.

Applicant appreciates the courtesies extended by the Examiner during an interview conducted on September 18, 2002 and continued in a telephone conversation on September 25, 2002. These discussions resulted in an agreement that the new claims are allowable. Accordingly, the claims are believed to be in condition for allowance and early notification of the same is earnestly solicited.

As discussed with the Examiner, the new claims are directed to a method of dynamically displaying market information relative to a static price axis. Independent claims 41 and 68 provide for the display of indicators relating to the inside market relative to a common static price axis. These claims do not require the display of indicators relating to additional market depth. Dependent claim 51 further requires the display of indicators relating to additional orders in the market (e.g., additional market depth outside of the inside market). The other dependent claims further define various embodiments of the invention.

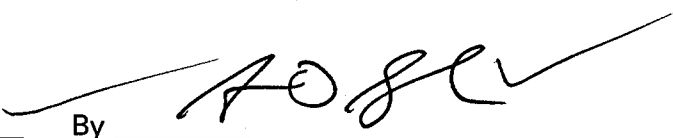
As discussed with the Examiner, Applicant intends on pursuing claims 1-21 and possibly other claims in one or more continuation applications. There has been no prior art cited that would preclude the patentability of claims 1-21. As discussed with the Examiner, Applicant cancelled these claims without prejudice and decided to pursue the new claims to expedite the allowance of this application.



Atty. Dkt. No. 024051-0155

Based on Applicant's discussions with the Examiner and in view of the foregoing amendments, Applicant believes that the present application is in condition for allowance. Favorable consideration of the application as amended is respectfully requested. Should there be any questions or concerns regarding the present application, the Examiner is invited to contact Applicant's undersigned representative by telephone.

Respectfully submitted,

Date SEPT. 26, 2002 By 

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

Ankur D. Shah  
Attorney for Applicant  
Registration No. 41,514

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 19-0741 for any such fees, and applicant(s) hereby petition for any needed extension of time.

**MARKED UP VERSION SHOWING CHANGES MADE**

Below are the marked up replacement paragraph(s):

Page 8, paragraph starting at line 24...

Figure 2 illustrates a screen display of an invention described in a commonly owned co-pending application entitled "Click Based Trading with Market Depth Display" serial no. [ ] 09/589,751, filed on [ ] June 9, 2000, the contents of which are incorporated herein by reference. This display shows the inside market and the market depth of a given commodity being traded. Row 1 represents the "inside market" for the commodity being traded which is the best (highest) bid price and quantity and the best (lowest) ask price and quantity. Rows 2-5 represent the "market depth" for the commodity being traded. In the preferred embodiment of the present invention, the display of market depth (rows 2-5) lists the available next-best bids, in column 203, and asks, in column 204. The working bid and ask quantity for each price level is also displayed in columns 202 and 205 respectively (inside market - row 1). Prices and quantities for the inside market and market depth update dynamically on a real time basis as such information is relayed from the market.

Page 13, paragraph starting at line 13...

The values in the price column are static; that is, they do not normally change positions unless a re-centering command is received (discussed in detail later). The values in the Bid and Ask columns however, are dynamic; that is, they move up and down (in the vertical example) to reflect the market depth for the given commodity. The LTQ column 1006 shows the last traded quantity of the commodity. The relative position of the quantity value with respect to the Price values reflects the price at which that quantity was traded. Column 1001 labeled E/W (entered/working) displays the current status of the trader's orders. The status of each order is displayed in the price row where it was entered. For example, in cells 1007, the number next to S indicates the number of the trader's ordered lots that have been sold at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in

the market, but have not been filled - i.e. the system is working on filling the order. Blanks in this column indicate that no orders are entered or working at that price. In cells 1008, the number next to B indicates the number of the trader's ordered lots that have been bought at the price in the specific row. The number next to W indicates the number of the trader's ordered lots that are in the market, but have not been filled - i.e. the system is working on filling the order.

Page 17, paragraph starting at line 10...

Using the screen display and values from Figure 5, the placement of trade orders using the Mercury display and trading method is now described using examples. A left click on the 18 in the BidQ column 1201 will send an order to market to [sell] buy 17 lots (quantity # chosen on the Quantity Description pull down menu cell 1204) of the commodity at a price of 89 (the corresponding price in the Prc column 1203). Similarly, a left click on the 20 in the AskQ column 1202 will send an order to market to [buy] sell 17 lots at a price of 90.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. Q24051/0155

*H9  
or  
3/21/03*

Applicant: Gary Allan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH  
Serial No.: 09/894,637  
Filed: June 27, 2001  
Examiner: R. Weisberger  
Art Unit: 3624

**REQUEST FOR CONTINUED EXAMINATION (RCE)  
TRANSMITTAL**

Commissioner for Patents  
Box RCE  
Washington, D.C. 20231

Sir:

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application. This RCE and the enclosed items listed below are being filed prior to the earliest of: (1) payment of the issue fee (unless a petition under 37 C.F.R. § 1.313 is granted); (2) abandonment of the application; or (3) the filing of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit under 35 U.S.C. §141, or the commencement of a civil action under 35 U.S.C. §145 or §146 (unless the appeal or civil action is terminated).

1. Submission required under 37 C.F.R. §1.114: (check items that apply)
- a. Previously submitted:
    - Please enter and consider the amendment/reply previously filed on \_\_\_\_\_
    - Please consider the Affidavit(s)/Declaration(s) previously filed on \_\_\_\_\_ but not considered.
    - Please consider the arguments in the Appeal Brief or Reply Brief under 37 C.F.R. § 1.116 previously filed on \_\_\_\_\_.
    - Other: Information Disclosure Statements previously filed on November 14, 2002; December 18, 2002; and February 11, 2003.
  - b. Enclosed are:
    - Amendment/Reply.
    - Affidavit(s)/Declaration(s).
    - Information Disclosure Statement.
    - Form PTO-1449 with copies of \_\_\_\_\_ listed reference(s).
    - Remarks Accompanying RCE.

Miscellaneous:

- Suspension of action of the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of \_\_\_ months.

The filing fee is calculated below:

	Claims as Amended	Previously Paid For	Extra Claims Present	Rate	Fee Totals
RCE Fee 1.17(e)				\$750.00	\$750.00
Total Claims:	28	28	0	x \$18.00	\$0.00
Independents:	2	3	0	x \$84.00	\$0.00
First presentation of any Multiple Dependent Claims:				+ \$280.00	\$0.00
				CLAIMS FEE TOTAL:	\$750.00

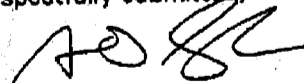
- Applicant hereby petitions for an extension of time under 37 C.F.R. § 1.136(a) for the total number of months checked below:

<input type="checkbox"/> Extension for response filed within the first month:	\$110.00	\$0.00
<input type="checkbox"/> Extension for response filed within the second month:	\$410.00	\$0.00
<input type="checkbox"/> Extension for response filed within the third month:	\$930.00	\$0.00
<input type="checkbox"/> Extension for response filed within the fourth month:	\$1,450.00	\$0.00
<input type="checkbox"/> Extension for response filed within the fifth month:	\$1,970.00	\$0.00
	EXTENSION FEE TOTAL:	\$0.00
	CLAIMS AND EXTENSION FEE TOTAL:	\$750.00
<input checked="" type="checkbox"/>	Small Entity Fees Apply (subtract 1/2 of above):	\$375.00
<input type="checkbox"/>	Suspension of action requested under 37 C.F.R. § 1.103(c)	\$0.00
	TOTAL FEE:	\$375.00

- A check in the amount of \$375.00 to cover the filing fee is enclosed.
- The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,



Ankur D. Shah  
Registration No. 41,514

MARCH 10, 2003

Date

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Attorney Docket No. 024051/0155**

Applicant: Gary Allan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Serial No.: 09/894,637  
Filed: June 27, 2001  
Examiner: R. Weisberger  
Art Unit: 3624

**REMARKS ACCOMPANYING REQUEST FOR CONTINUED EXAMINATION**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Applicant has filed concurrently herewith a Request for Continued Examination (RCE) in the subject application. Examiner Weisberger has recently indicated via telephone that prosecution in the application has been closed and that a notice of allowability has been entered. Applicant's review of data from the USPTO PAIR on-line database confirms that a notice of allowability was entered on September 30, 2002.

Believing prosecution in the present case to be closed, Applicant now submits the present RCE, per the Examiner's request, in order to ensure full consideration of the references cited in the Information Disclosure Statements previously filed on November 14, 2002, December 18, 2002 and February 11, 2003.

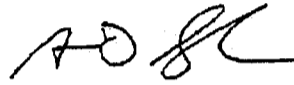
Received from < 312.476.1182 > at 3/19/03 12:22:51 PM [Eastern Standard Time]

Serial No. 09/894,637

Attorney Docket No. 024051/0155

Respectfully submitted,

MARCH 10, 2003



Date

Ankur D. Shah  
Registration No. 41,614

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 024051/0155

RCE/360 #

Applicant: Gary Allan KEMP II et al.

Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

Serial No.: 09/894,637

Filed: June 27, 2001

Examiner: R. Weisberger

Art Unit: 3624

copy

RECEIVED  
MAR 13 2003  
GROUP 3600

REQUEST FOR CONTINUED EXAMINATION (RCE)  
TRANSMITTAL

Commissioner for Patents  
Box RCE  
Washington, D.C. 20231

Sir:

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application. This RCE and the enclosed items listed below are being filed prior to the earliest of: (1) payment of the issue fee (unless a petition under 37 C.F.R. § 1.313 is granted); (2) abandonment of the application; or (3) the filing of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit under 35 U.S.C. §141, or the commencement of a civil action under 35 U.S.C. §145 or §146 (unless the appeal or civil action is terminated).

1. Submission required under 37 C.F.R. §1.114: (check items that apply)

a. Previously submitted:

- Please enter and consider the amendment/reply previously filed on
- Please consider the Affidavit(s)/Declaration(s) previously filed on \_\_\_ but not considered.
- Please consider the arguments in the Appeal Brief or Reply Brief under 37 C.F.R. § 1.116 previously filed on \_\_\_.
- Other: Information Disclosure Statements previously filed on November 14, 2002; December 18, 2002; and February 11, 2003.

b. Enclosed are:

- Amendment/Reply.
- Affidavit(s)/Declaration(s).
- Information Disclosure Statement.
- Form PTO-1449 with copies of \_\_\_ listed reference(s).
- Remarks Accompanying RCE.



Miscellaneous:

- Suspension of action of the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of \_\_\_ months.

The filing fee is calculated below:

	Claims as Amended	Previously Paid For	Extra Claims Present	Rate	Fee Totals
RCE Fee 1.17(e)				\$750.00	\$750.00
Total Claims:	28	28	0	x \$18.00	\$0.00
Independents:	2	3	0	x \$84.00	\$0.00
First presentation of any Multiple Dependent Claims:				+ \$280.00	\$0.00
CLAIMS FEE TOTAL:					\$750.00

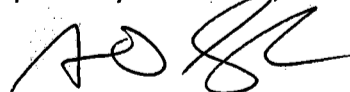
- Applicant hereby petitions for an extension of time under 37 C.F.R. § 1.136(a) for the total number of months checked below:

<input type="checkbox"/> Extension for response filed within the first month:	\$110.00	\$0.00
<input type="checkbox"/> Extension for response filed within the second month:	\$410.00	\$0.00
<input type="checkbox"/> Extension for response filed within the third month:	\$930.00	\$0.00
<input type="checkbox"/> Extension for response filed within the fourth month:	\$1,450.00	\$0.00
<input type="checkbox"/> Extension for response filed within the fifth month:	\$1,970.00	\$0.00
EXTENSION FEE TOTAL:		\$0.00
CLAIMS AND EXTENSION FEE TOTAL:		\$750.00
<input checked="" type="checkbox"/> Small Entity Fees Apply (subtract ½ of above):		\$375.00
<input type="checkbox"/> Suspension of action requested under 37 C.F.R. § 1.103(c)		\$0.00
TOTAL FEE:		\$375.00

- A check in the amount of \$375.00 to cover the filing fee is enclosed.
- The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,



Ankur D. Shah  
Registration No. 41,514

MARCH 10, 2003

Date

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399



THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 024051/0155

Applicant: Gary Allan KEMP II et al.

Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

Serial No.: 09/894,637

Filed: June 27, 2001

Examiner: R. Weisberger

Art Unit: 3624

**REMARKS ACCOMPANYING REQUEST FOR CONTINUED EXAMINATION**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Applicant has filed concurrently herewith a Request for Continued Examination (RCE) in the subject application. Examiner Weisberger has recently indicated via telephone that prosecution in the application has been closed and that a notice of allowability has been entered. Applicant's review of data from the USPTO PAIR on-line database confirms that a notice of allowability was entered on September 30, 2002.

Believing prosecution in the present case to be closed, Applicant now submits the present RCE, per the Examiner's request, in order to ensure full consideration of the references cited in the Information Disclosure Statements previously filed on November 14, 2002, December 18, 2002 and February 11, 2003.

Serial No. 09/894,637

Attorney, Docket No. 024051/0155

Respectfully submitted,

MARCH 10, 2003



---

Date

---

Ankur D. Shah  
Registration No. 41,514

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Attorney Docket No. 024051/0155**

Applicant: Gary Allan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Serial No.: 09/894,637  
Filed: June 27, 2001  
Examiner: R. Weisberger  
Art Unit: 3624

**REQUEST FOR CONTINUED EXAMINATION (RCE)**  
**TRANSMITTAL**

Commissioner for Patents  
Box RCE  
Washington, D.C. 20231

Sir:

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application. This RCE and the enclosed items listed below are being filed prior to the earliest of: (1) payment of the issue fee (unless a petition under 37 C.F.R. § 1.313 is granted); (2) abandonment of the application; or (3) the filing of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit under 35 U.S.C. §141, or the commencement of a civil action under 35 U.S.C. §145 or §146 (unless the appeal or civil action is terminated).

1. Submission required under 37 C.F.R. §1.114: (check items that apply)

a. Previously submitted:

- Please enter and consider the amendment/reply previously filed on \_\_\_\_\_.
- Please consider the Affidavit(s)/Declaration(s) previously filed on \_\_\_\_\_ but not considered.
- Please consider the arguments in the Appeal Brief or Reply Brief under 37 C.F.R. § 1.116 previously filed on \_\_\_\_\_.
- Other: Information Disclosure Statements previously filed on November 14, 2002; December 18, 2002; and February 11, 2003.

b. Enclosed are:

- Amendment/Reply.
- Affidavit(s)/Declaration(s).
- Information Disclosure Statement.
- Form PTO-1449 with copies of \_\_\_\_\_ listed reference(s).
- Remarks Accompanying RCE.

Miscellaneous:

- Suspension of action of the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of \_\_\_ months.

The filing fee is calculated below:

	Claims as Amended	Previously Paid For	Extra Claims Present	Rate	Fee Totals
RCE Fee 1.17(e)				\$750.00	\$750.00
Total Claims:	28	28	0	\$18.00	\$0.00
Independents:	2	3	0	\$84.00	\$0.00
First presentation of any Multiple Dependent Claims:				\$280.00	\$0.00
				CLAIMS FEE TOTAL:	\$750.00

- Applicant hereby petitions for an extension of time under 37 C.F.R. § 1.136(a) for the total number of months checked below:

<input type="checkbox"/> Extension for response filed within the first month:	\$110.00	\$0.00
<input type="checkbox"/> Extension for response filed within the second month:	\$410.00	\$0.00
<input type="checkbox"/> Extension for response filed within the third month:	\$930.00	\$0.00
<input type="checkbox"/> Extension for response filed within the fourth month:	\$1,450.00	\$0.00
<input type="checkbox"/> Extension for response filed within the fifth month:	\$1,970.00	\$0.00
	EXTENSION FEE TOTAL:	\$0.00
	CLAIMS AND EXTENSION FEE TOTAL:	\$750.00
<input checked="" type="checkbox"/>	Small Entity Fees Apply (subtract ½ of above):	\$375.00
<input type="checkbox"/>	Suspension of action requested under 37 C.F.R. § 1.103(c)	\$0.00
	TOTAL FEE:	\$375.00

- A check in the amount of \$375.00 to cover the filing fee is enclosed.
- The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,



Ankur D. Shah  
Registration No. 41,514

MARCH 10, 2003

Date

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Attorney Docket No. 024051/0155**

Applicant: Gary Allan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Serial No.: 09/894,637  
Filed: June 27, 2001  
Examiner: R. Weisberger  
Art Unit: 3624

**REMARKS ACCOMPANYING REQUEST FOR CONTINUED EXAMINATION**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Applicant has filed concurrently herewith a Request for Continued Examination (RCE) in the subject application. Examiner Weisberger has recently indicated via telephone that prosecution in the application has been closed and that a notice of allowability has been entered. Applicant's review of data from the USPTO PAIR on-line database confirms that a notice of allowability was entered on September 30, 2002.

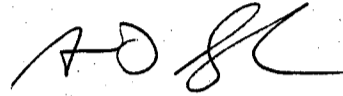
Believing prosecution in the present case to be closed, Applicant now submits the present RCE, per the Examiner's request, in order to ensure full consideration of the references cited in the Information Disclosure Statements previously filed on November 14, 2002, December 18, 2002 and February 11, 2003.

Serial No. 09/894,637

Attorney Docket No. 024051/0155

Respectfully submitted,

MARCH 10, 2003



Date

Ankur D. Shah  
Registration No. 41,514

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

---

**RAM** Fee History  
Query  
Revenue Accounting and Management

---

Name/Number: 09894637

Total Records Found: 4

Start Date: Any Date

End Date: Any Date

Accounting Date	Sequence Num.	Tran Type	Fee Code	Fee Amount	Mailroom Date	Payment Method
07/05/2001	00000069	1	<u>201</u>	\$355.00	06/27/2001	CK
07/05/2001	00000070	1	<u>203</u>	\$9.00	06/27/2001	CK
10/01/2002	00000001	1	<u>2202</u>	\$63.00	09/27/2002	CK
03/11/2003	00000086	1	<u>2801</u>	\$375.00	03/10/2003	CK



**Notice of Allowability**

Application No.	09/894,637	Applicant(s)	KEMP ET AL.
Examiner	Richard C Weisberger	Art Unit	3624 <i>RMJ</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

- 1.  This communication is responsive to amendment, terminal disclaimer, interview summary.
- 2.  The allowed claim(s) is/are 41-54 and 56-81.
- 3.  The drawings filed on 09/01 are accepted by the Examiner.
- 4.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All b)  Some\* c)  None of the:
    - 1.  Certified copies of the priority documents have been received.
    - 2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    - 3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

- 5.  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - (a)  The translation of the foreign language provisional application has been received.
- 6.  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

- 7.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
- 8.  CORRECTED DRAWINGS must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1)  hereto or 2)  to Paper No. \_\_\_\_\_.
  - (b)  including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.
  - (c)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the top margin (not the back) of each sheet. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

- 9.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- 1  Notice of References Cited (PTO-892)
- 2  Notice of Informal Patent Application (PTO-152)
- 3  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 4  Interview Summary (PTO-413), Paper No. \_\_\_\_\_
- 5  Information Disclosure Statements (PTO-1449), Paper No. \_\_\_\_\_
- 6  Examiner's Amendment/Comment
- 7  Examiner's Comment Regarding Requirement for Deposit of Biological Material
- 8  Examiner's Statement of Reasons for Allowance
- 9  Other

Application/Control Number: 09/894,637  
Art Unit: 3624

Page 2 / C

The application has been amended as follows:

To the beginning of the specification, add;

C'  
JRH  
6-23-04  
This application is a divisional application of serial number 09/590,692 filed 06/09/2000 which claims benefit of 60/186,322, filed March 2, 2000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard C Weisberger whose telephone number is 703 308 4408.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vince Millin can be reached on 703 308 1065. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard C Weisberger  
Primary Examiner  
Art Unit 3624

***Allowable Subject Matter***

1. The following is an examiner's statement of reasons for allowance: The following is an examiner's statement of reasons for allowance: This statement of reasons for allowance includes the major differences in the claims not found in the prior art of record and reasons why that differences are considered to define patentably over the prior art. The statement is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed and should not be relied upon for this purpose. Rather, this statement reflects what the examiner considers important and therefore the primary reasons for the allowance of the claims.

The primary reason for allowance is the limitation directed to the "dynamic display" of a plurality of the quantity of bids and asks aligned with a "static display" of corresponding prices. Here, unlike the prior art, the "static" display of prices is just that, static, and does not move in response to a change in the inside market. With this display of market depth, claimed in each of the independent claims, a trader places a trade order with the pointer in the area of the order entry region of the dynamic market depth region, through a single computer implemented action, see Figures 3 and 4. For example, in figure 3, a click on Bid Q 18 will send an order to the market to sell 17 lots of the commodity at a price of 89.

The closest prior art including US Patent 6,408,282, PCT WO 01/16852 and commonly owned non-patent literature "X Trader" (see, applicant's response to USPTO's request for information) all lack this feature. The PTO also inquired as to the subject matter of alleged infringement referenced in applicant's petition to make special

Application/Control Number: 09/894,637

Page 3

Art Unit: 3624

in related case SN 09/590,692. The USPTO found no evidence of public use or any printed publication of the system known as J Trader, the subject matter of potential infringement and the applicant's basis for his petition to make special, earlier than November 6, 2000. Therefore, the USPTO has concluded that the system known as J trader is not prior art to the instant application, which has a filing date of June 06, 2000.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Respectfully

By, \_\_\_\_\_

Richard Weisberger

Application/Control Number: 09/894,637  
Art Unit: 3624

Page 4

<b>Interview Summary</b>	Application No.	Applicant(s)	
	09/894,637	KEMP ET AL.	
	Examiner	Art Unit	
	Richard C. Weisberger	3624	

All participants (applicant, applicant's representative, PTO personnel):

- (1) Richard C. Weisberger. (3) \_\_\_\_\_  
 (2) Steve Borsand. (4) \_\_\_\_\_

Date of Interview: 01 September 2003.

Type: a)  Telephonic b)  Video Conference  
 c)  Personal [copy given to: 1)  applicant 2)  applicant's representative]

Exhibit shown or demonstration conducted: d)  Yes e)  No.  
 If Yes, brief description: \_\_\_\_\_

Claim(s) discussed: \_\_\_\_\_

Identification of prior art discussed: \_\_\_\_\_

Agreement with respect to the claims f)  was reached. g)  was not reached. h)  N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The PTO inquired as to the identity of the infringing system referenced in the petition to make special of related case # 09/509,692. The applicant identified the product to be "J- Trader".

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

\_\_\_\_\_  
 Examiner's signature, if required

C

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

<b>Interview Summary</b>	Application No.	Applicant(s)	
	09/894,637	KEMP ET AL.	
	Examiner	Art Unit	
	Richard C Weisberger	3624	

All participants (applicant, applicant's representative, PTO personnel):

- (1) Richard C Weisberger. (3) \_\_\_\_\_  
(2) Steve Borsand. (4) \_\_\_\_\_

Date of Interview: 01 September 2003.

Type: a)  Telephonic b)  Video Conference  
c)  Personal [copy given to: 1)  applicant 2)  applicant's representative]

Exhibit shown or demonstration conducted: d)  Yes e)  No.  
If Yes, brief description: \_\_\_\_\_.

Claim(s) discussed: \_\_\_\_\_.

Identification of prior art discussed: \_\_\_\_\_.

Agreement with respect to the claims f)  was reached. g)  was not reached. h)  N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The PTO inquired as to the identity of the infringing party referenced in related case S/N 09509.692. The applicant identified the system to be that known as 'J trader'.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

\_\_\_\_\_  
Examiner's signature, if required



## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of Interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

<b>Interview Summary</b>	Application No. 09/894,637	Applicant(s) KEMP ET AL.	
	Examiner Richard C Weisberger	Art Unit 3624	

All participants (applicant, applicant's representative, PTO personnel):

- (1) Richard C Weisberger. (3) \_\_\_\_\_  
(2) Steve Borsand. (4) \_\_\_\_\_

Date of Interview: 01 Septembery 2003.

Type: a)  Telephonic b)  Video Conference  
c)  Personal [copy given to: 1)  applicant 2)  applicant's representative]

Exhibit shown or demonstration conducted: d)  Yes e)  No.  
If Yes, brief description: \_\_\_\_\_.

Claim(s) discussed: \_\_\_\_\_.

Identification of prior art discussed: \_\_\_\_\_.

Agreement with respect to the claims f)  was reached. g)  was not reached. h)  N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The PTO inquired as to the identity of the Infringing party referenced in related case S/N 09509.692. The applicnat identified the system to be that known as 'J trader'.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

\_\_\_\_\_  
Examiner's signature, if required

## Summary of Record of Interview Requirement.

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

**Attachment for PTO-948 (Rev. 03/01, or earlier)  
6/18/01**

**The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.**

**INFORMATION ON HOW TO EFFECT DRAWING CHANGES**

**1. Correction of Informalities -- 37 CFR 1.85**

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability. Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

**2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.**

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

**Timing of Corrections**

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication. See 37 CFR 1.85(a).

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application.

**Notice of References Cited**

Application/Control No.  
09/894,637

Applicant(s)/Patent Under  
Reexamination  
KEMP ET AL.

Examiner  
Richard C Weisberger

Art Unit  
3624

Page 1 of 1

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Patsystems News Release, Patsystems Launches J Trader, November 06, 2001.
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

**Notice of References Cited**

Application/Control No. 09/894,637	Applicant(s)/Patent Under Reexamination KEMP ET AL.	
Examiner Richard C Weisberger	Art Unit 3624	Page 1 of 1

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Patsystems News Release, Patsystems Launches J Trader, November 06, 2001.
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

### Status: Path 1 o. \_log Information Services vi.

### Status: Initializing TCP/IP using (UseTelnetProto 1 ServiceID pto-dialog)  
Trying 3106000009999...Open

DIALOG INFORMATION SERVICES

PLEASE LOGON:

\*\*\*\*\* HHHHHHHH SSSSSSSS?

### Status: Signing onto Dialog

\*\*\*\*\*

ENTER PASSWORD:

\*\*\*\*\* HHHHHHHH SSSSSSSS? \*\*\*\*\*

Welcome to DIALOG

### Status: Connected

Dialog level 03.06.02D

Last logoff: 13dec03 19:52:44

Logon file405 13jan04 11:18:20

GURU1 is set ON as an alias for 15,16,160,148,275,621.

GURU2 is set ON as an alias for 9,623,810,624,636,813,634,20.

>>>Invalid SET option: GURU3

>>>Invalid SET option: GURU4

\* \* \* ALL NEW CURRENT YEAR RANGES HAVE BEEN \* \* \*

\* \* \* INSTALLED \* \* \*

SYSTEM:HOME

Cost is in DialUnits

Menu System II: D2 version 1.7.9 term=ASCII

\*\*\* DIALOG HOMEBASE(SM) Main Menu \*\*\*

Information:

1. Announcements (new files, reloads, etc.)
2. Database, Rates, & Command Descriptions
3. Help in Choosing Databases for Your Topic
4. Customer Services (telephone assistance, training, seminars, etc.)
5. Product Descriptions

Connections:

6. DIALOG(R) Document Delivery
7. Data Star(R)

(c) 2003 Dialog, a Thomson business.

All rights reserved.

/H = Help

/L = Logoff

/NOMENU = Command Mode

Enter an option number to view information or to connect to an online service. Enter a BEGIN command plus a file number to search a database (e.g., B1 for ERIC).

?b 411

13jan04 11:18:57 User214359 Session D167.1

\$0.00 0.160 DialUnits FileHomeBase

\$0.00 Estimated cost FileHomeBase

\$0.14 TELNET

\$0.14 Estimated cost this search

\$0.14 Estimated total session cost 0.160 DialUnits

File 411:DIALINDEX(R)

DIALINDEX(R)

(c) 2004 The Dialog Corporation plc

\*\*\* DIALINDEX search results display in an abbreviated \*\*\*

\*\*\* format unless you enter the SET DETAIL ON command. \*\*\*

?s market and depth and (price or prices) and (dynamic or moving) and display and (trade

DIALOG(R) File 20:Dialc Global Reporter  
(c) 2003 The Dialog Corp. All rts. reserv.

04334187 (THIS IS THE FULLTEXT)

**Fidelity Investments Considers Larger Presence in On-Line Trading**

Lynnley Browning

KRTBN KNIGHT-RIDDER TRIBUNE BUSINESS NEWS (BOSTON GLOBE)

February 16, 1999

JOURNAL CODE: KBGL LANGUAGE: English RECORD TYPE: FULLTEXT

WORD COUNT: 956

More of the thrills, fewer of the spills.

Seeking to tap into the growing popularity of on-line stock trading while avoiding cyberinvesting's newly tarnished image, Fidelity Investments is gearing up to offer some of the specialized services more commonly found at fast-paced Internet-only brokerages and so-called "day trading" shops.

With investors flocking to the Web to buy and sell shares, Fidelity's moves, still under wraps, are likely to shake up the on-line investing boom and spark a new wave of competition.

The new services Fidelity is eyeing might seem obscure: real-time account balance updates; free, unlimited **real-time stock** quotes; and souped-up market feeds, known as Nasdaq Level 2, that show not just live prices but also buyers' and sellers' identities and positions.

Fidelity is better known as the nation's biggest mutual fund firm than as the second biggest discount stock brokerage. As an on-line investing shop, it is less prominent.

But in a world where one in four retail stock trades is now made on line, and where on-line customers trade more frequently than those who use a traditional bricks-and-mortar brokerage, Fidelity now sees such tools as key in the battle for cyberinvestors.

What is striking is that such investing weapons are usually found not at the on-line brokerage units of full-service mutual fund firms such as Fidelity or Charles Schwab & Co., but at hundreds of smaller, Web-only shops including ETrade and Datek, a scrappy outfit more akin to a day-trading firm.

Such upstart Web brokerages are, of course, synonymous with more than advanced tools and cut-rate prices. In recent weeks, they have had embarrassing power outtages, software glitches, and price delays resulting in trades costing customers tens of thousands of extra dollars.

The turmoil has bruised the already rough-and-tumble world of on-line investing. But it has also highlighted how a new generation of shops now dominates cyberinvesting, wielding tools and services not yet offered by traditional firms such as Boston-based Fidelity.

"Fidelity is going for the high-end on-line **trader** but also the active **traders** " who often frequent Web-based brokerages, said Bill Burnham, an electronic commerce analyst at CS First Boston. "They clearly intend to build a big business."

With 1.8 million on-line brokerage accounts, Fidelity has 9.4 percent of all on-line trades, ranking fifth behind pioneer Schwab (the first-place leader, with 29 percent of the market) and Web-based firms Waterhouse Securities, ETrade, and Datek, according to Gomez Advisors Inc, a consulting firm in Concord, Mass.

Fidelity won't say exactly when it plans to launch its new services, which will be closely watched by rivals. But persons familiar with the firm's plans said Fidelity would unveil things in the coming months.

While declining to be specific, a Fidelity executive offered a glimpse into the fund behemoth's view of cyberinvesting.

"The on-line investing industry is going towards beefing up the non-price aspects of their offerings," said Matthew Sadler, a Fidelity senior vice president in charge of brokerage services. "It is clearly evident that all on-line investors are not entirely price elastic," Sadler said. "There are other elements that are critical to them, like service, reliability, tools, certain aspects of information, and customization. "

Fidelity's new services target its 36,000 most active on-line clients. Trading at least 36 times a year, that top 2 percent of Fidelity on-line customers already account for the bulk of the firm's on-line transactions.

But Fidelity also wants to cut costs by having regular brokerage



customers do business on line rather than in person at a Fidelity branch. While on-line investing constitutes less than 10 percent of Fidelity's overall revenues, according to broad estimates, getting brokerage customers to convert to cyberinvesting would give Fidelity a lead.

Since Fidelity's retail brokerage holds around 15 percent of the firm's total \$750 billion in assets, there is plenty of profit to be made in directing that business on line as well as in attracting new customers, according to Cerulli & Associates, a financial services consulting firm.

Fidelity earns a flat commission each time a client buys or sells a stock on line. Its lowest rate is \$14.95 for customers trading at least 12 times a year. (Deep-discount shops like Ameritrade charge \$8 a trade, while Schwab charges a flat \$29.95). Fidelity also earns interest on money on-line clients borrow from Fidelity to buy stocks, as well as fees from the cash clients keep in Fidelity money-market funds to finance stock purchases.

In the past 18 months, Fidelity won new on-line customers by revamping commission rates to make things cheaper for heavy **traders** and more costly for dabblers.

Now the firm increasingly views souped-up investing tools -- along with its investment research and improved, user-friendly Web site -- as the lure to getting active **traders** to buy and sell more. It recently added on-line bill payment features. Last month, it introduced "InstantBroker" two-way pagers allowing clients to make instant trades.

Still, industry analysts said Fidelity had not ruled out another pricing revamp, a move that would prompt responses from at least some competitors. Said a top Fidelity executive recently: "There are ways to change the pricing system without instituting a pricing war."

Fidelity is not courting fly-by-night day-**traders** (at Fidelity, such clients number only in the hundreds). On the other end, it is closely watching the impending foray of powerhouse firms into on-line trading, especially Merrill Lynch & Co., the nation's largest stockbroker.

But with the number of Internet brokerage accounts to grow 40 percent this year to 10.5 million, according to Gomez, Fidelity is keenly aware of the competitive threat posed by a new slew of smaller, on-line shops

"ETrade is a viable competitor of ours," said Fidelity's Sadler, a former Schwab on-line executive. "The game is very different in the discount brokerage world now."

Copyright 1999 Knight-Ridder/Tribune Business News. Source: World Reporter (Trade Mark) - Knight-Ridder Tribune Business News.

COMPANY NAMES: Fidelity Investment Bank

DESCRIPTORS: Marketing; Company News; New Products & Services

COUNTRY NAMES/CODES: United States of America (US)

REGIONS: Americas; North America; Pacific Rim

SIC CODES/DESCRIPTIONS: 6720 (Investment Offices); 6211 (Security Brokers & Dealers)

end and preset and bid ask

*File with all thoroughly searched*

Items	File
1	15: ABI/Inform(R)_1971-2003/Mar 22
1	16: Gale Group PROMT(R)_1990-2003/Mar 21
1	47: Gale Group Magazine DB(TM)_1959-2003/Mar 20
Examined 50 files	
Examined 100 files	
Examined 150 files	
1	275: Gale Group Computer DB(TM)_1983-2003/Mar 21
Examined 200 files	
9	349: PCT FULLTEXT_1979-2002/UB=20030320,UT=20030313
Examined 250 files	
1	484: Periodical Abs Plustext_1986-2003/Mar W3
Examined 300 files	
Examined 350 files	
1	660: Federal News Service_1991-2002/Jul 02
Examined 400 files	
Examined 450 files	

7 files have one or more items; file list includes 477 files.

? market and depth and (price or prices) and (dynamic or moving) and display and front and end and preset and bid and ask

>>>Unrecognizable command.

?

?s market and depth and and ask and bid and front and end and display and order and (dynamic or moving)

Your SELECT statement is:

s market and depth and and ask and bid and front and end and display and order and (dynamic or moving)

Items	File
-------	------

>>>Operator "AND" in invalid position

?s market and depth and price and ask and bid and front and end and display

Your SELECT statement is:

s market and depth and price and ask and bid and front and end and display

Items	File
-------	------

2	13: BAMP_2003/Feb W1
24	15: ABI/Inform(R)_1971-2003/Mar 22
13	16: Gale Group PROMT(R)_1990-2003/Mar 21
5	20: Dialog Global Reporter_1997-2003/Mar 22
7	47: Gale Group Magazine DB(TM)_1959-2003/Mar 20
6	75: TGG Management Contents(R)_86-2003/Mar W3
Examined 50 files	
15	88: Gale Group Business A.R.T.S. 1976-2003/Mar 21
1	98: General Sci Abs/Full-Text_1984-2003/Feb
1	101: Disclosure Database(R)_2003/Jan W3
2	122: Harvard Business Review_1971-2003/Mar
8	141: Readers Guide_1983-2003/Feb
33	148: Gale Group Trade & Industry DB_1976-2003/Mar 21
1	149: TGG Health&Wellness DB(SM)_1976-2003/Mar W2
Examined 100 files	
20	180: Federal Register_1985-2003/Mar 21
1	211: Gale Group Newsearch(TM)_2003/Mar 21
Examined 150 files	
4	262: CBCA Fulltext_1982-2003/Apr
12	275: Gale Group Computer DB(TM)_1983-2003/Mar 21
Examined 200 files	
2	348: EUROPEAN PATENTS_1978-2003/Mar W03

X 49 349: FULLTEXT\_1979-2002/UB=2003032...=2003/ 3  
 Examined 250 files  
   1 436: Humanities Abs Full Text\_1984-2003/Feb  
 J 17 484: Periodical Abs Plustext\_1986-2003/Mar W3  
   9 485: Accounting & Tax DB\_1971-2003/Mar W3  
 Examined 300 files  
   3 619: Asia Intelligence Wire\_1995-2003/Mar 21  
 Examined 350 files  
   2 635: Business Dateline(R)\_1985-2003/Mar 22  
   4 636: Gale Group Newsletter DB(TM)\_1987-2003/Mar 21  
   7 654: US PAT.FULL.\_1976-2003/Mar 18  
 K 14 660: Federal News Service\_1991-2002/Jul 02  
 Examined 400 files  
   1 727: Canadian Newspapers\_1990-2003/Mar 22  
 Examined 450 files  
   1 781: ProQuest Newsstand\_1998-2003/Mar 22  
   2 990: NewsRoom Current\_2003/Mar 22  
   7 993: NewsRoom 2002/Jan-Nov  
   3 994: NewsRoom 2001  
   5 995: NewsRoom 2000

33 files have one or more items; file list includes 477 files.

r or trading) and bid a screen  
>>>No files selected. Use SET FILES to choose at least two files; then use  
SELECT alone to reissue this SELECT statement.

?sf all

You have 485 files in your file list.

(To see banners, use SHOW FILES command)

?s market and front and end and screen and display and depth and bid and ask and (trade  
or trading)

Your SELECT statement is:

s market and front and end and screen and display and depth and bid and  
ask and (trade or trading)

Items	File
1	13: BAMP_2003/Dec W3
12	15: ABI/Inform(R)_1971-2004/Jan 10
8	16: Gale Group PROMT(R)_1990-2004/Jan 13
5	20: Dialog Global Reporter_1997-2004/Jan 13
5	47: Gale Group Magazine DB(TM)_1959-2004/Jan 05
3	75: TGG Management Contents(R)_86-2004/Jan W1
Examined 50	files
6	88: Gale Group Business A.R.T.S._1976-2004/Jan 13
1	98: General Sci Abs/Full-Text_1984-2003/Nov
5	141: Readers Guide_1983-2003/Nov
22	148: Gale Group Trade & Industry DB_1976-2004/Jan 13
Examined 100	files
11	180: Federal Register_1985-2004/Jan 12
1	211: Gale Group Newsearch(TM)_2004/Jan 12
Examined 150	files
3	262: CBCA Fulltext_1982-2004/Jan
9	275: Gale Group Computer DB(TM)_1983-2004/Jan 13
Examined 200	files
1	348: EUROPEAN PATENTS_1978-2004/Jan W01
43	349: PCT FULLTEXT_1979-2002/UB=20031225,UT=20031218
Examined 250	files
1	436: Humanities Abs Full Text_1984-2003/Nov
7	484: Periodical Abs Plustext_1986-2004/Jan W1
4	485: Accounting & Tax DB_1971-2004/Jan W1
Examined 300	files
2	619: Asia Intelligence Wire_1995-2004/Jan 12
Examined 350	files
2	636: Gale Group Newsletter DB(TM)_1987-2004/Jan 13
120	654: US Pat.Full._1976-2004/Jan 08
4	660: Federal News Service_1991-2002/Jul 02
Examined 400	files
1	727: Canadian Newspapers_1990-2004/Jan 13
1	759: Reuters Business Insight_1992-2003/Dec
Examined 450	files
1	781: ProQuest Newsstand_1998-2004/Jan 12
2	990: NewsRoom Current Oct_2004/Jan 13
2	992: NewsRoom Current_2003/Sep 30
5	993: NewsRoom 2002
1	994: NewsRoom 2001
4	995: NewsRoom 2000

31 files have one or more items; file list includes 485 files.

?save temp

Temp SearchSave "TD145" stored

?b hits

13jan04 11:31:57 User214359 Session D167.2

\$20.51 10.257 DialUnits File411

\$20.51 Estimated cost File411

\$3.02 TELNET

\$23.53 Estimated cost this search

\$23.67 Estimated total session cost 10.417 DialUnits

SYSTEM:OS - DIALOG OneSearch

File 13:BAMP 2003/Dec W3

(c) 2003 Resp. DB Svcs.

File 15:ABI/Inform(R) 1971-2004/Jan 10

(c) 2004 ProQuest Info&Learning

**\*File 15: Alert feature enhanced for multiple files, duplicate removal, customized scheduling. See HELP ALERT.**

File 16:Gale Group PROMT(R) 1990-2004/Jan 13

(c) 2004 The Gale Group

**\*File 16: Alert feature enhanced for multiple files, duplicate removal, customized scheduling. See HELP ALERT.**

File 20:Dialog Global Reporter 1997-2004/Jan 13

(c) 2004 The Dialog Corp.

File 47:Gale Group Magazine DB(TM) 1959-2004/Jan 05

(c) 2004 The Gale group

File 75:TGG Management Contents(R) 86-2004/Jan W1

(c) 2004 The Gale Group

File 88:Gale Group Business A.R.T.S. 1976-2004/Jan 13

(c) 2004 The Gale Group

File 98:General Sci Abs/Full-Text 1984-2003/Nov

(c) 2003 The HW Wilson Co.

File 141:Readers Guide 1983-2003/Nov

(c) 2003 The HW Wilson Co

File 148:Gale Group Trade & Industry DB 1976-2004/Jan 13

(c)2004 The Gale Group

**\*File 148: Alert feature enhanced for multiple files, duplicate removal, customized scheduling. See HELP ALERT.**

File 180:Federal Register 1985-2004/Jan 12

(c) 2004 format only The DIALOG Corp

File 211:Gale Group Newsearch(TM) 2004/Jan 12

(c) 2004 The Gale Group

File 262:CBCA Fulltext 1982-2004/Jan

(c) 2004 Micromedia Ltd.

File 275:Gale Group Computer DB(TM) 1983-2004/Jan 13

(c) 2004 The Gale Group

File 348:EUROPEAN PATENTS 1978-2004/Jan W01

(c) 2004 European Patent Office

File 349:PCT FULLTEXT 1979-2002/UB=20031225,UT=20031218

(c) 2003 WIPO/Univentio

File 436:Humanities Abs Full Text 1984-2003/Nov

(c) 2003 The HW Wilson Co

File 484:Periodical Abs Plustext 1986-2004/Jan W1

(c) 2004 ProQuest

**\*File 484: SELECT IMAGE AVAILABILITY FOR PROQUEST FILES**

ENTER 'HELP PROQUEST' FOR MORE

File 485:Accounting & Tax DB 1971-2004/Jan W1

(c) 2004 ProQuest Info&Learning

**\*File 485: SELECT IMAGE AVAILABILITY FOR PROQUEST FILES**

ENTER 'HELP PROQUEST' FOR MORE

File 619:Asia Intelligence Wire 1995-2004/Jan 12

(c) 2004 Fin. Times Ltd

File 636:Gale Group Newsletter DB(TM) 1987-2004/Jan 13

(c) 2004 The Gale Group

File 654:US Pat.Full. 1976-2004/Jan 08

(c) Format only 2004 The Dialog Corp.

**\*File 654: US published applications now online. See HELP NEWS 654 for details. Reassignments current through December 2, 2003.**

File 660:Federal News Service 1991-2002/Jul 02

(c) 2002 Federal News Service

**\*File 660: This file no longer updates**

File 727:Canadian Newspapers 1990-2004/Jan 13

(c) 2004 Southam Inc.

File 759:Reuters Business Insight 1992-2003/Dec

(c) 2003 Datamonitor

File 781:ProQuest Newsstand 1998-2004/Jan 12

(c) 2004 ProQu Info&Learning  
 File 990:NewsRoom Current Oct 2004/Jan 13  
 (c) 2004 The Dialog Corporation  
 File 992:NewsRoom Current 2003/Sep 30  
 (c) 2004 The Dialog Corporation  
 File 993:NewsRoom 2002 (c) 2004 The Dialog Corporation  
 File 994:NewsRoom 2001 (c) 2004 The Dialog Corporation  
 File 995:NewsRoom 2000 (c) 2004 The Dialog Corporation

Set Items Description

?exs

Executing TD145

>>>SET HILIGHT: use ON, OFF, or 1-5 characters

Processing

Processed 10 of 31 files ...

Processing

Processed 20 of 31 files ...

Processing

Processed 30 of 31 files ...

Completed processing all files

24267784 MARKET  
 8426283 FRONT  
 27030006 END  
 2827068 SCREEN  
 3360396 DISPLAY  
 2086990 DEPTH  
 4266044 BID  
 4417600 ASK  
 11509588 TRADE  
 5084739 TRADING

*tc, dk*

S1 293 MARKET AND FRONT AND END AND SCREEN AND DISPLAY AND DEPTH AND BID AND ASK AND (TRADE OR TRADING)

?s s1 and pd<2001

>>>File 15 processing for PD= : PD=2001  
 >>> started at PD=710000 stopped at PD=920123  
 >>>File 16 processing for PD= : PD=2001  
 >>> started at PD=19900101 stopped at PD=19950623  
 Processing  
 Processing  
 Processing  
 >>>File 47 processing for PD= : PD=2001  
 >>> started at PD=590100 stopped at PD=640109  
 >>>File 88 processing for PD= : PD=2001  
 >>> started at PD=760100 stopped at PD=811222  
 Processing  
 >>>File 98 processing for PD= : PD=2001  
 >>> started at PD=19790400 stopped at PD=19910809  
 >>>File 141 processing for PD= : PD=2001  
 >>> started at PD=19820300 stopped at PD=19890825  
 >>>File 148 processing for PD= : PD=2001  
 >>> started at PD=140105 stopped at PD=820807  
 Processed 10 of 31 files ...  
 >>>File 180 processing for PD= : PD=2001  
 >>> started at PD=19850102 stopped at PD=19921224  
 >>>File 262 processing for PD= : PD=2001  
 >>> started at PD=1982 stopped at PD=850730  
 >>>File 275 processing for PD= : PD=2001  
 >>> started at PD=140103 stopped at PD=871108  
 Processing  
 >>>File 348 processing for PD= : PD=2001  
 >>> started at PD=78 stopped at PD=981210  
 Processing  
 >>>File 484 processing for PD= : PD=2001  
 >>> started at PD=860000 stopped at PD=900629  
 Processing  
 >>>File 485 processing for PD= : PD=2001

```
>>> started at PD=130000 stopped at PD=910220
>>>File 619 processing for PD= : PD=2001
>>> started at PD=120501 stopped at PD=981119
Processed 20 of 31 files ...
>>>File 636 processing for PD= : PD=2001
>>> started at PD=19880101 stopped at PD=19940318
Processing
>>>File 654 processing for PD= : PD=2001
>>> started at PD=A stopped at PD=19821130
>>>File 660 processing for PD= : PD=2001
>>> started at PD=901001 stopped at PD=950713
>>>File 727 processing for PD= : PD=2001
>>> started at PD=107280 stopped at PD=940522
Processing
>>>File 781 processing for PD= : PD=2001
>>> started at PD=830806 stopped at PD=970817
Processed 30 of 31 files ...
Processing
Processing
Completed processing all files
      293 S1
39158887 PD<2001
S2      26 S1 AND PD<2001
```

*full*

L Number	Hits	Search Text	DB	Time stamp
3	5	market and stock and front and end and screen and display and depth and bid and ask and (trade and trading)	USPAT	2004/01/13 12:27
4	5	market and (stock or stocks) and front and end and screen and display and depth and bid and ask and (trade and trading)	USPAT	2004/01/13 12:27
9	4	market and stock AND DISPLAY AND TRADING AND BID AND ASK AND DEPTH.CLM.	USPAT; EPO; JPO	2004/01/13 12:32
10	24	market and stock AND DISPLAY AND TRADING AND BID AND ASK AND DEPTH	USPAT; EPO; JPO	2004/01/13 12:32

*full*





UNITED STATES PATENT AND TRADEMARK OFFICE

MY

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 02/10/2004
Robert C. Klinger
Jackson Walker L.L.P.
Suite 600
2435 North Central Expressway
Richardson, TX 75080

EXAMINER
WEISBERGER, RICHARD C

ART UNIT PAPER NUMBER
3624

DATE MAILED: 02/10/2004

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
09/894,637 06/27/2001 Gary Allan Kemp II 024051-0155 1527

TITLE OF INVENTION: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

Table with 6 columns: APPLN. TYPE, SMALL ENTITY, ISSUE FEE, PUBLICATION FEE, TOTAL FEE(S) DUE, DATE DUE
nonprovisional NO \$1330 \$300 \$1630 05/10/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

[ ] Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

**PART B - FEE(S) TRANSMITTAL**

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax (703) 746-4000**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

7590 02/10/2004  
**Robert C. Klinger**  
**Jackson Walker L.L.P.**  
**Suite 600**  
**2435 North Central Expressway**  
**Richardson, TX 75080**

**Certificate of Mailing or Transmission**  
 I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,637	06/27/2001	Gary Allan Kemp II	024051-0155	1527

TITLE OF INVENTION: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1330	\$300	\$1630	05/10/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
WEISBERGER, RICHARD C	3624	705-037000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.</p> <p>1 _____</p> <p>2 _____</p> <p>3 _____</p>
--	---

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE \_\_\_\_\_ (B) RESIDENCE: (CITY and STATE OR COUNTRY) \_\_\_\_\_

Please check the appropriate assignee category or categories (will not be printed on the patent);  individual  corporation or other private group entity  government

<p>4a. The following fee(s) are enclosed:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s):</p> <p><input type="checkbox"/> A check in the amount of the fee(s) is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
---	---

Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature) \_\_\_\_\_ (Date) \_\_\_\_\_

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMIT THIS FORM WITH FEE(S)

000170



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,637	06/27/2001	Gary Allan Kemp II	024051-0155	1527
7590	02/10/2004		EXAMINER WEISBERGER, RICHARD C	
Robert C. Klinger Jackson Walker L.L.P. Suite 600 2435 North Central Expressway Richardson, TX 75080			ART UNIT	PAPER NUMBER
			3624	

DATE MAILED: 02/10/2004

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**  
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 532 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 532 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.



#11  
9-29-03 CW

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Attorney Docket No. 024051/0155**

Applicant: Gary Allan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH  
Serial No.: 09/894,637  
Filed: June 27, 2001  
Examiner: R. Weisberger  
Art Unit: 3624

**RECEIVED**  
SEP 24 2002  
**GROUP 3600**

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 CFR §1.56**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Applicants submit herewith on Form PTO/SB/08 a listing of the documents cited by or submitted to the U.S. PTO in parent application Serial No. 09/590,692, filed 06/09/2000. As provided in 37 CFR §1.98(d), copies of the documents are not being provided since they were previously submitted to the United States Patent & Trademark Office in the above-identified parent application.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

Serial No. 09/894,657

Attorney Docket No. 024051/0155

**TIMING OF THE DISCLOSURE**

The instant Information Disclosure Statement is believed to be filed in accordance with 37 C.F.R. 1.97(b), prior to the mailing date of a first Office Action on the merits.

**RELEVANCE OF EACH DOCUMENT**

The relevance of the listed documents is described in the parent application.

Applicant respectfully requests that the listed documents be considered by the Examiner and formally be made of record in the present application and that an initialed copy of Form PTO SB/08 be returned in accordance with MPEP §609.

Respectfully submitted,

SEPTEMBER 20, 2002

Date

ADJ

Ankur D. Shah  
Registration No. 41,514

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>		Application Number	09/894,637
		Filing Date	June 27, 2001
Date Submitted: September 20, 2002 (use as many sheets as necessary)		First Named Inventor	Gary Allan Kemp II et al.
		Group Art Unit	3624
Sheet 1 of 1		Examiner Name	R. Weisberger
		Attorney Docket Number	024051/0155

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	A1	5,038,284		KRAMER	08/06/1991	
	A2	5,297,031		GUTTERMAN et al.	03/22/1994	
	A3	5,689,651		LOZMAN	11/18/1997	
	A4	5,774,877		PATTERSON, JR. et al.	06/30/1998	
	A5	5,793,301		PATTERSON, JR. et al.	08/11/1998	
	A6	5,797,002		PATTERSON, JR. et al.	08/18/1998	
	A7	5,845,266		LUPIEN et al.	12/01/1998	
	A8	5,915,245		PATTERSON, JR. et al.	06/22/1999	
	A9	5,924,082		SILVERMAN et al.	07/13/1999	
	A10	6,012,046		LUPIEN et al.	01/04/2000	
	A11	6,014,643		MINTON	01/11/2000	
	A12	6,098,051		LUPIEN et al.	08/01/2000	
	A13	6,131,087		LUKE et al.	10/10/2000	
	A14	6,134,535		BELZBERG	10/17/2000	
	A15	6,195,647		MARTYN et al.	02/27/2001	
	A16	6,272,474		GARCIA	08/07/2001	
	A17	6,278,982		KORHAMMER et al.	08/21/2001	
	A18	6,282,521		HOWORKA	08/28/2001	

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	A19	WO	99/30259		NIPPON STEEL CORPORATION	06/17/1999		

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>
	A20	USPTO Presentation, NASDAQ, November 8, 2001, enclosed pages 1-13.	

Examiner Signature		Date Considered	7/18
-----------------------	---	--------------------	------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, D.C. 20231.



#12  
9-2903CW

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Attorney Docket No. 024051/0155**

Applicant: Gary Allan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH  
Serial No.: 09/894,637  
Filed: June 27, 2001  
Examiner: R. Weisberger  
Art Unit: 3624

**RECEIVED**

FEB 14 2003

**GROUP 3600**

**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 CFR §1.56 and 37 CFR §1.97**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Submitted herewith on Form PTO-SB/08 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR 1.56. A copy of each listed document is being submitted to comply with the provisions of 37 CFR 1.97 and 1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a prima facie prior art reference against the claims of the present application.

Serial No. 09/894,637

Attorney Docket No. 024051/0155

**TIMING OF THE DISCLOSURE**

The instant Information Disclosure Statement is believed to be filed in accordance with 37 C.F.R. 1.97(b), prior to the mailing date of a first Office Action on the merits.

**RELEVANCE OF EACH DOCUMENT**

Documents A1-A6 were listed in a Search Report for a counterpart British application. A copy of the Search Report is also being provided herewith.

Applicant respectfully requests that the listed documents be considered by the Examiner and formally be made of record in the present application and that an initialed copy of Form PTO SB/08 be returned in accordance with MPEP §609.

Respectfully submitted,

FEBRUARY 13, 2003

Date



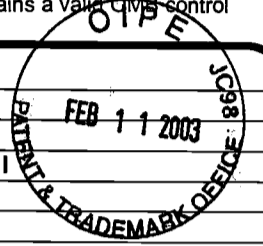
Ankur D. Shah  
Registration No. 41,514

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 19-0741 for any such fees; and applicant(s) hereby petition for any needed extension of time.



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.



Substitute for form 1449B/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>		<b>Application Number</b>	09/894,637
		<b>Filing Date</b>	June 27, 2001
Date Submitted: <b>(TO BE INSERTED)</b>		<b>First Named Inventor</b>	Gary Allan Kemp II
		<b>Group Art Unit</b>	3624
(use as many sheets as necessary)		<b>Examiner Name</b>	Weisberger, R.
		<b>Attorney Docket Number</b>	024051-0155
Sheet	1	of	1

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	A1	5,297,032		TROJAN et al.	03/22/1994	

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	A2		WO 00/65510		PCT	11/02/2000		
	A3		WO 01/16830		PCT	03/08/2001		
	A4		WO 01/16852		PCT	03/08/2001		
	A5		WO 01/22315		PCT	03/29/2001		
	A6		WO 01/88808		PCT	11/22/2001		

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>

**RECEIVED**  
FEB 14 2003  
**GROUP 3600**

Examiner Signature		Date Considered	3/04
--------------------	--	-----------------	------

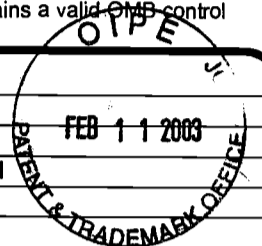
\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, D.C. 20231.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> Date Submitted: February 11, 2003 (use as many sheets as necessary)	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">Complete if Known</th> </tr> <tr> <td style="width:50%;">Application Number</td> <td>09/894,637</td> </tr> <tr> <td>Filing Date</td> <td>June 27, 2001</td> </tr> <tr> <td>First Named Inventor</td> <td>Gary Allan Kemp II</td> </tr> <tr> <td>Group Art Unit</td> <td>3624</td> </tr> <tr> <td>Examiner Name</td> <td>Weisberger, R.</td> </tr> <tr> <td>Attorney Docket Number</td> <td>024051-0155</td> </tr> </table>	Complete if Known		Application Number	09/894,637	Filing Date	June 27, 2001	First Named Inventor	Gary Allan Kemp II	Group Art Unit	3624	Examiner Name	Weisberger, R.	Attorney Docket Number	024051-0155
Complete if Known															
Application Number	09/894,637														
Filing Date	June 27, 2001														
First Named Inventor	Gary Allan Kemp II														
Group Art Unit	3624														
Examiner Name	Weisberger, R.														
Attorney Docket Number	024051-0155														



Sheet 1 of 1

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	A1	5,297,032		TROJAN et al.	03/22/1994	

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	A2		WO 00/65510		PCT	11/02/2000		
	A3		WO 01/16830		PCT	03/08/2001		
	A4		WO 01/16852		PCT	03/08/2001		
	A5		WO 01/22315		PCT	03/29/2001		
	A6		WO 01/88808		PCT	11/22/2001		

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>

RECEIVED  
 FEB 14 2003  
 GROUP 3600

Examiner Signature	Date Considered	
--------------------	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.



INVESTOR IN PEOPLE

Application No: GB 0219306.8  
Claims searched: New Claims 1-31

Examiner: Graham Russell  
Date of search: 27 November 2002

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK C1 (Ed.T):  
Int C1 (Ed.7): G06F 17/60  
Other: Online: EPODOC, Full text patent databases, JAPIO, WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
A	WO 01/88808 A1 (NASDAQ) see page 15 line 8 <i>et seq</i>	
A	WO 01/22315 A2 (NASDAQ) see abstract	
A	WO 01/16852 A2 (EPIT) see page 27 lines 24-31	
A	WO 01/16830 A1 (BLOOMBERG) see page 39 line 28	
A	WO 00/65510 A1 (TRADING TECHNOLOGIES) see abstract & Fig 19	
A	US 5297032 (MERRILL LYNCH) see column 4 lines 25-42, Table 1 columns 7-8, column 6 line 55 - column 8 line 68	

**RECEIVED**

FEB 14 2003

**GROUP 3600**

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



#13

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Attorney Docket No. 024051/0155**

Applicant: Gary Allan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH  
Serial No.: 09/894,637  
Filed: June 27, 2001  
Examiner: R. Weisberger  
Art Unit: 3624

**RECEIVED**  
DEC 19 2002  
**GROUP 3600**

**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 CFR §1.56 and 37 CFR §1.97**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Submitted herewith on Form PTO-SB/08 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR 1.56. A copy of each listed document is being submitted to comply with the provisions of 37 CFR 1.97 and 1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a prima facie prior art reference against the claims of the present application.

Serial No. 09/894,637

Attorney Docket No. 024051/0155

**TIMING OF THE DISCLOSURE**

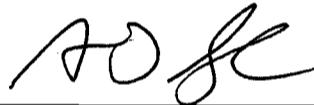
The instant Information Disclosure Statement is believed to be filed in accordance with 37 C.F.R. 1.97(b), prior to the mailing date of a first Office Action on the merits.

Applicant respectfully requests that the listed documents be considered by the Examiner and formally be made of record in the present application and that an initialed copy of Form PTO SB/08 be returned in accordance with MPEP §609.

Respectfully submitted,

DECEMBER 18, 2002

Date



Ankur D. Shah

Registration No. 41,514

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

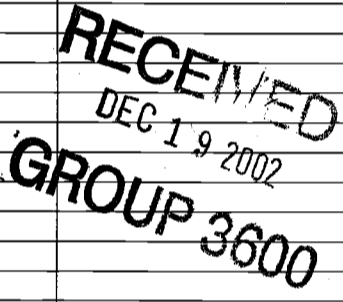
Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 19-0741 for any such fees; and applicant(s) hereby petition for any needed extension of time.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO		<i>Complete if Known</i>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>		<b>Application Number</b>	09/894,637
Date Submitted: December 18, 2002		<b>Filing Date</b>	June 27, 2001
(use as many sheets as necessary)		<b>First Named Inventor</b>	Gary Allan Kemp II
		<b>Group Art Unit</b>	3624
		<b>Examiner Name</b>	Weisberger, R.
		<b>Attorney Docket Number</b>	024051-0155
Sheet	1	of	1



U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
✓	A1	2002/0055899		WILLIAMS	05/09/2002	



FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>

Examiner Signature	Date Considered	
--------------------	-----------------	--

\*EXAMINER: Initial reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, D.C. 20231.



US 20020055899A1

(19) **United States**

(12) **Patent Application Publication** (10) Pub. No.: **US 2002/0055899 A1**  
Williams (43) Pub. Date: **May 9, 2002**

(54) **DISPLAY SYSTEM AND METHOD FOR DISPLAYING AND ORGANIZING FINANCIAL INFORMATION**

(76) Inventor: **Joseph C. Williams, Cincinnati, OH (US)**

Correspondence Address:  
**Mark D. Elchuk  
Harness Dickey & Pierce P.L.C.  
P.O. Box 828  
Bloomfield Hills, MI 48303 (US)**

(21) Appl. No.: **09/731,267**

(22) Filed: **Dec. 6, 2000**

**Related U.S. Application Data**

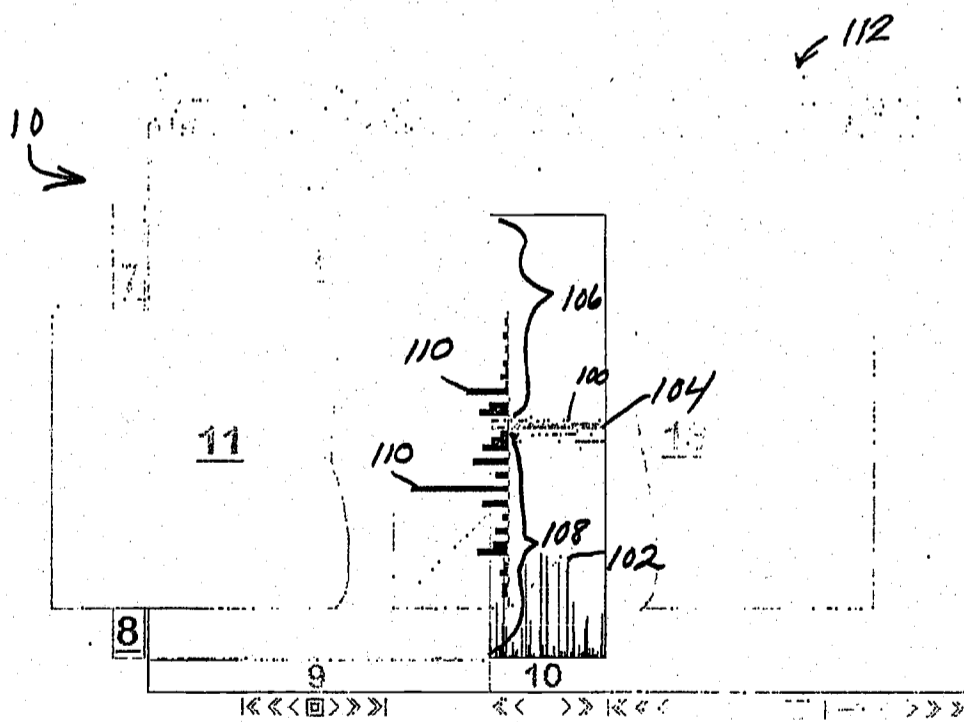
(63) Non-provisional of provisional application No. 60/169,233, filed on Dec. 6, 1999.

**Publication Classification**

(51) Int. Cl.<sup>7</sup> ..... **G06F 17/60**  
(52) U.S. Cl. .... **705/37**

(57) **ABSTRACT**

A system and method for displaying and organizing highly complex and voluminous financial information pertaining to stock market trading activity on a computer display terminal in a manner that permits an individual to easily monitor and assimilate the information. The system forms a visual display which organizes and presents the trading information for a selected stock in a number of independent regions on a computer display terminal. A user can choose to display information pertaining to a number of user-defined stocks from a plurality of tabs along an upper edge of the display. For any stock selected, ask and bid sales and volume information for all of the auction participants for the selected stock can be displayed along with post trade information. Other significant information pertaining the trading positions of the auction participants is readily discernable from changes in color of the tabs designating those auction participants. Still other regions of the display allow the user to replay all previous activity information for the selected stock or to view pertinent post-trade analytical information concerning the stock. The system and method enable non-professional individuals to more easily discern trends in the activity of those stocks important to the user as well as to more quickly discern important trends in the trading activities of the auction participants for each of those stocks.



# Functional Areas Chart #1

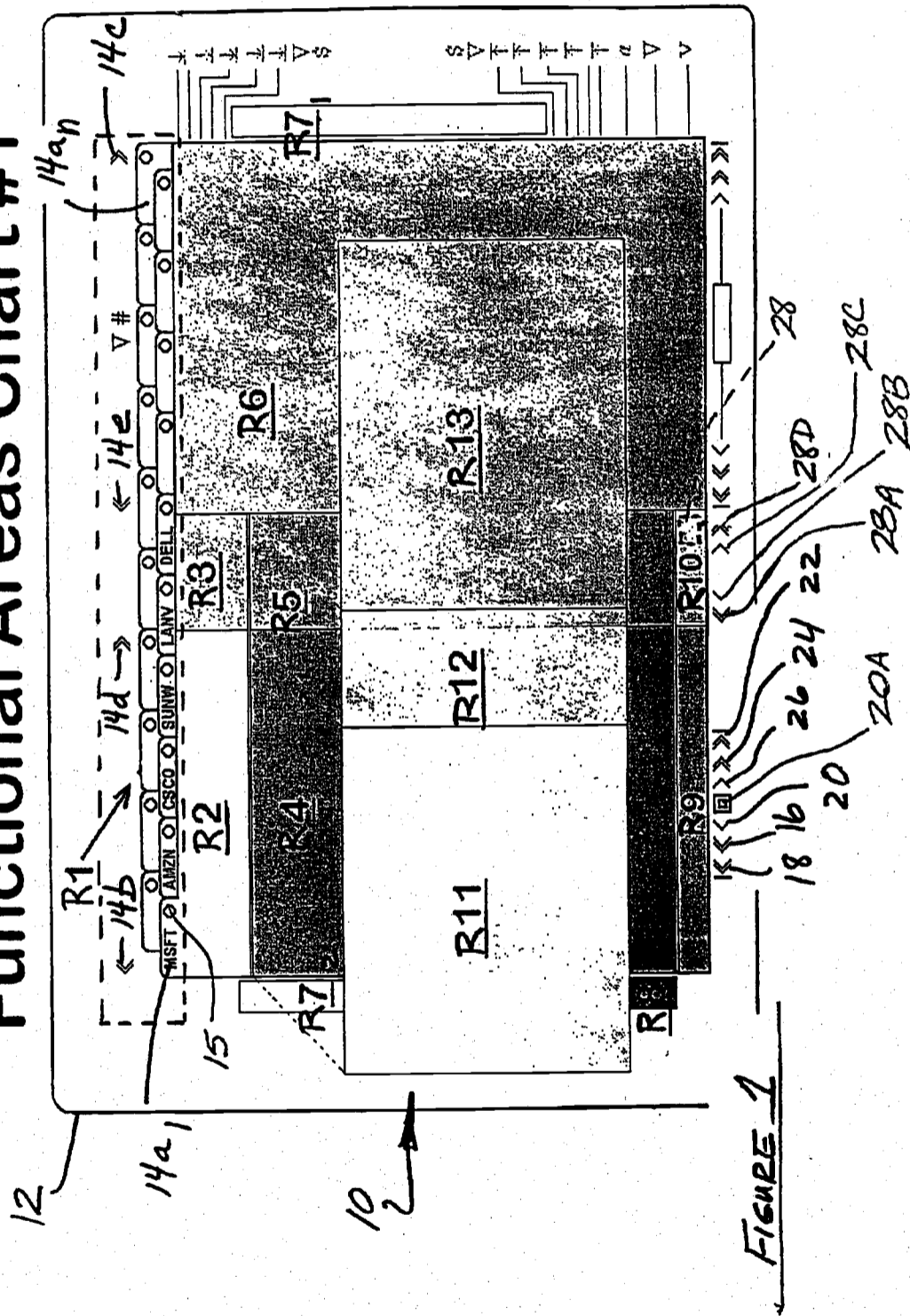
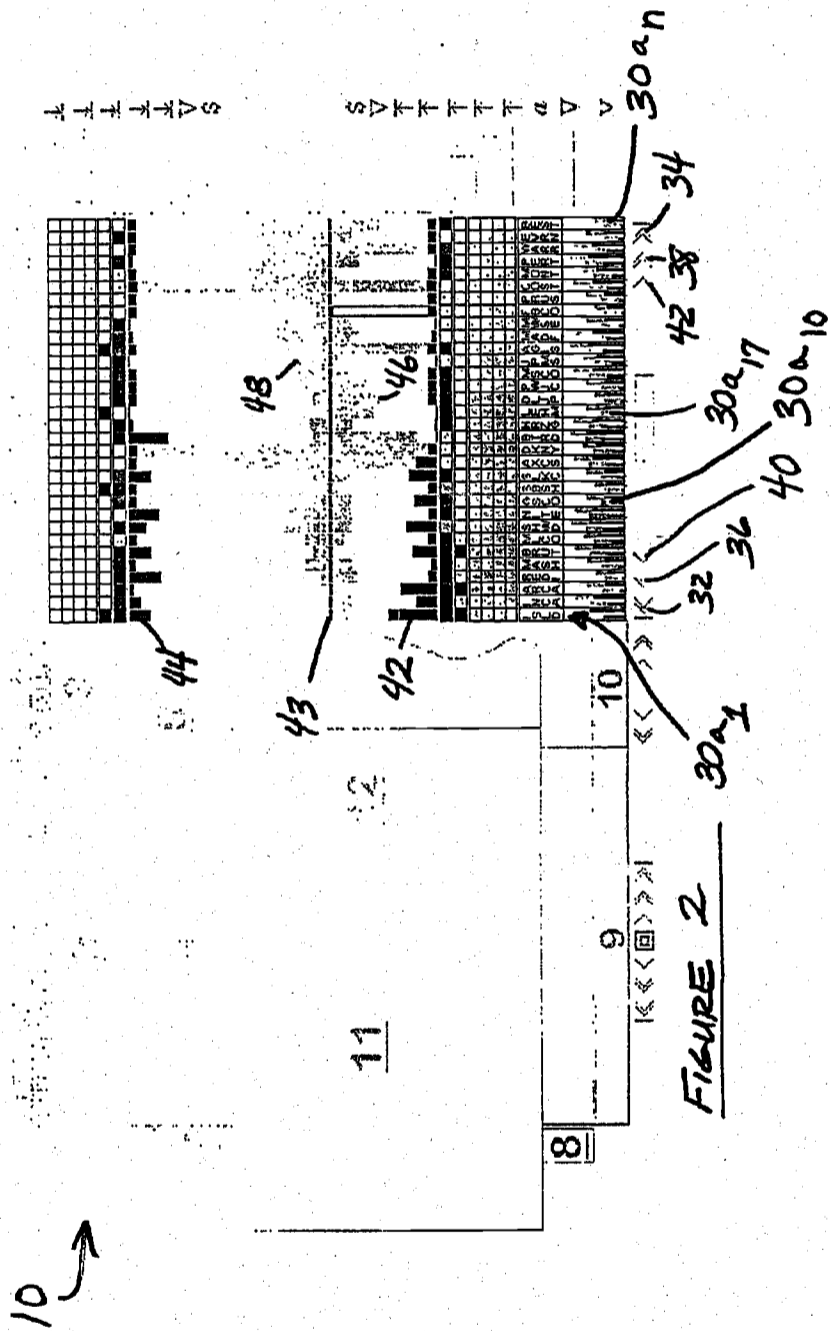


FIGURE 1



# Auction Participant Area-Sorts Chart #6



# Auction Participant Chart #2

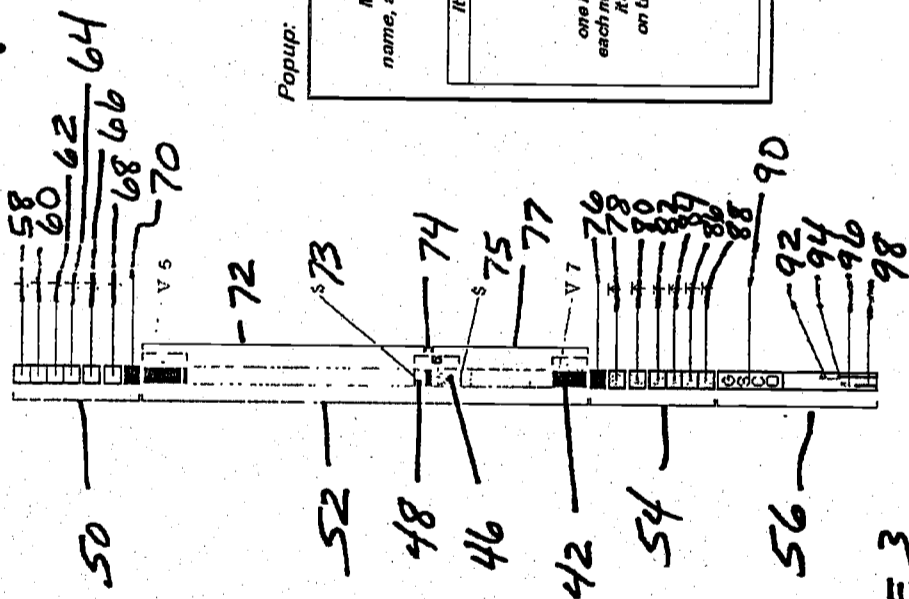


FIGURE 3

FIGURE 4

# Ticker Area Chart #3

112

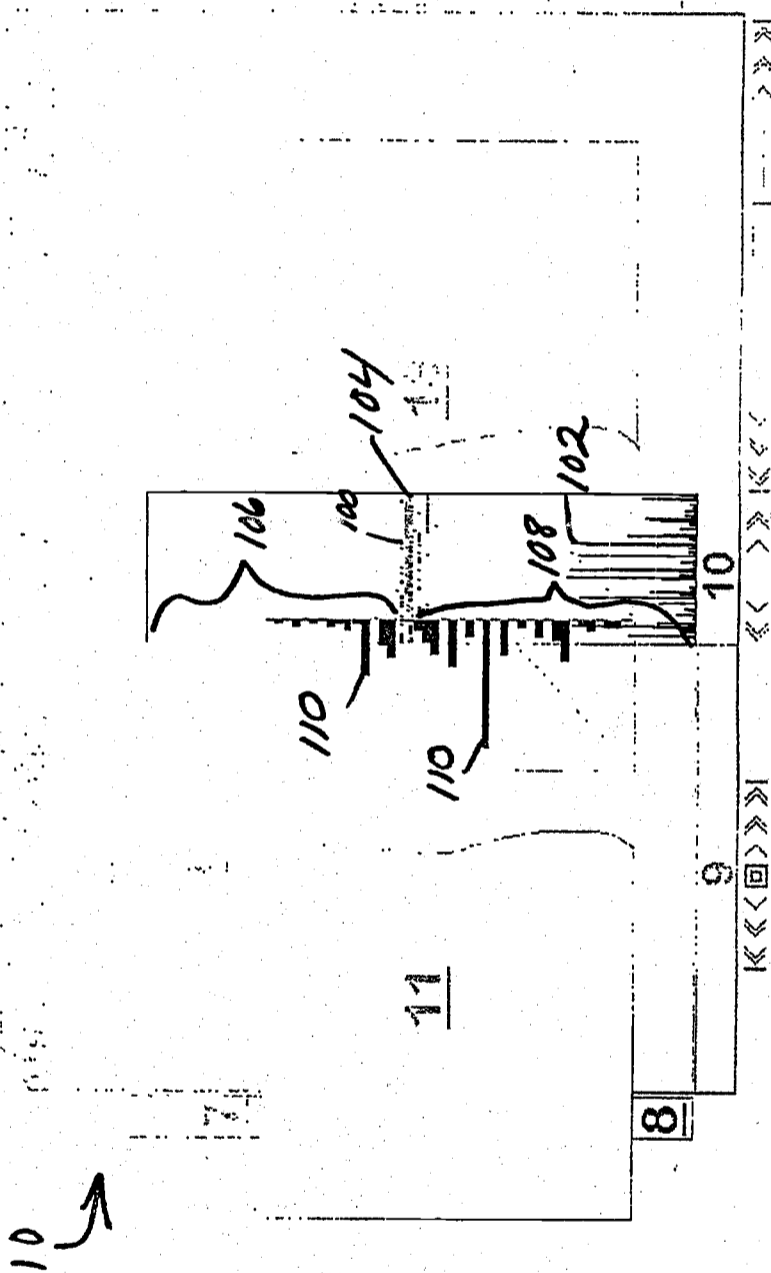


FIGURE 5

# Auction & Ticker Chart #4

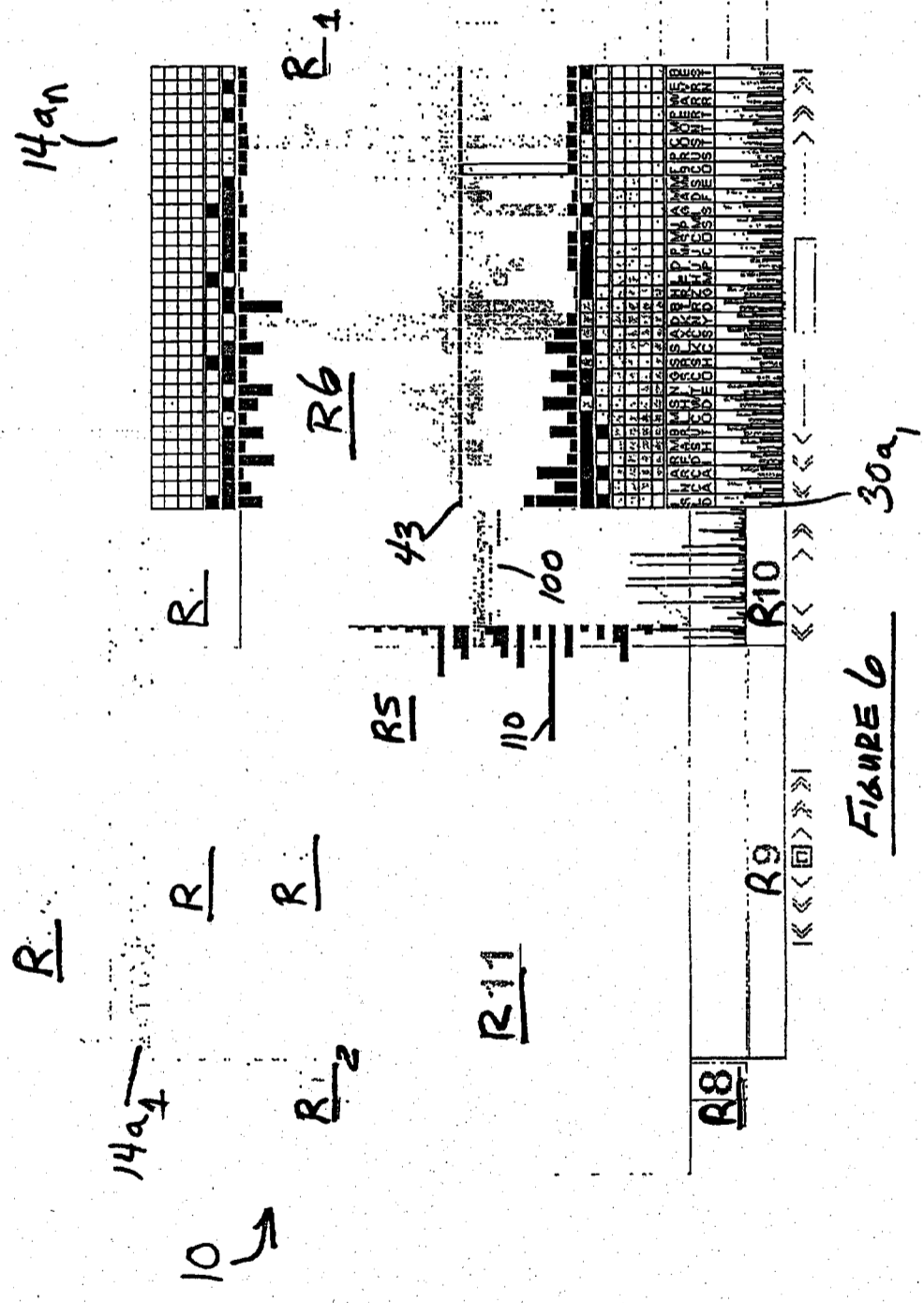


FIGURE 6

# 1-minute Bars Chart #5

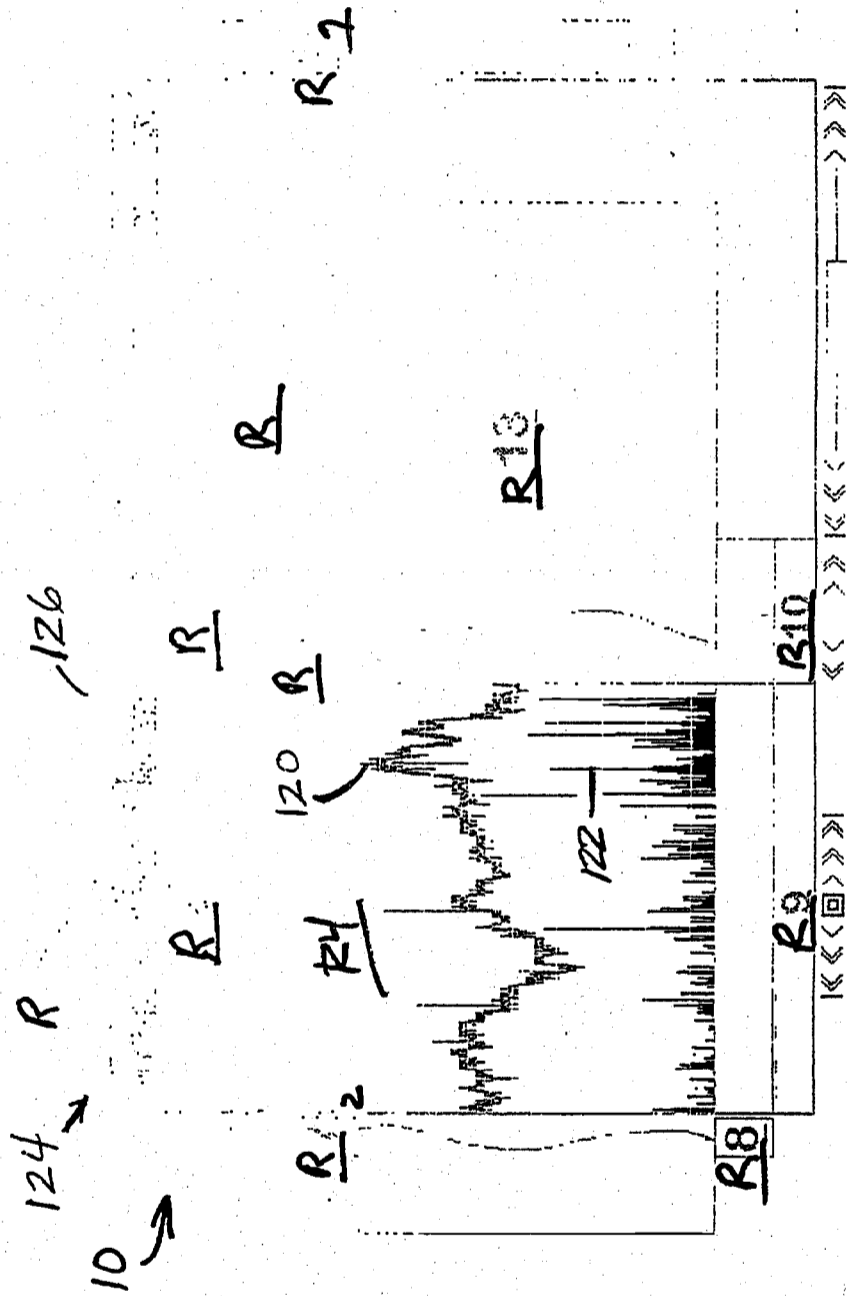


FIGURE 7

# General Overview Chart #7

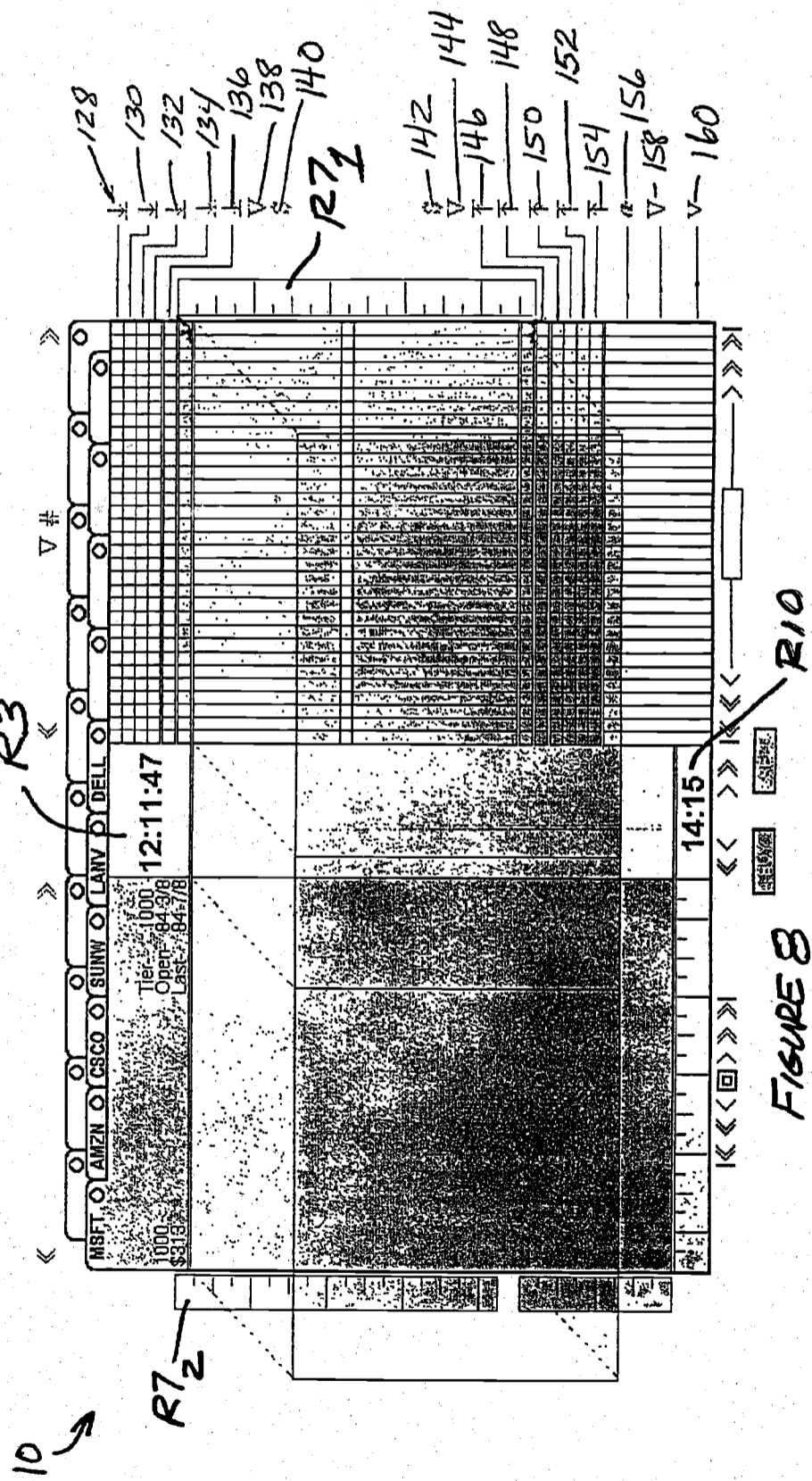


FIGURE 8

## DISPLAY SYSTEM AND METHOD FOR DISPLAYING AND ORGANIZING FINANCIAL INFORMATION

### TECHNICAL FIELD

[0001] This invention relates to software systems for displaying large amounts of data in various forms on a display terminal to improve the ease with which the information may be viewed, and more particularly to a software system for presenting a large amount of financial data, in real time, on a computer display terminal in a logically organized manner to aid a user in evaluating and assimilating the financial information much more easily and quickly than with prior information presentation systems.

### BACKGROUND OF THE INVENTION

[0002] At the present time there is an unprecedented level of interest and personal involvement by individuals in the stock market. As a result of individual retirement accounts (IRAs), 401 K plans, etc. and, most importantly, access to on-line trading of securities, more and more people are actively following and participating in stock market trading. Over the next several years, market hours are expected to be extended for many of the existing stock exchanges, and the number of on-line accounts is expected to increase significantly. On-line trading has also made it possible for individuals to execute trades from their homes or offices without the involvement of a broker.

[0003] With more and more individuals actively participating in on-line trading, there is an increased need to provide highly complex and voluminous financial information, which has heretofore not been readily available to professionals, and non-professional individuals in a manner which enables the information to be quickly and easily understood. As an example, information has long been available from a NASDAQ "Level 2" data feed to professionals such as stock brokers and professional traders. However, such information is not readily understood and/or assimilated quickly by most individuals who are not highly experienced in the securities markets. For the non-professional, and the inexperienced professional, it would take considerable time and experience to gain sufficient familiarity with the information presented in a Level 2 data feed before this information could become a valuable tool to the individual.

[0004] Even when complex financial information is available, such as with the Level 2 data feed described above, the data is not presented in a logically organized manner so as to provide a complete analysis of the information and/or to readily indicate trends or trading patterns of market participants. Thus, certain valuable information is virtually ignored even when such information could be extrapolated from the raw financial data being provided by the data feed.

[0005] It is therefore a principal object of the present invention to provide a system and method for storing information on a file server and organizing and presenting a large volume of highly complex information on a visual display terminal used with a computer system in such a manner as to enable non-professional financial persons, and professionals alike, to much more easily assimilate the information to help such individuals to make better educated trading decisions when participating in stock market trading.

[0006] More specifically, it is an object of the present invention to provide a system and method for logically organizing and providing a visual representation of a large volume of highly complex data in such a manner that a non-professional individual, or even a professional financial person, can easily monitor information pertaining to any one of a large plurality of stocks or other securities such as, but not limited to, bonds, options and derivatives, and can further select to display, in greater detail, specific sub-groups of valuable information extrapolated from the raw data received from a data feed that pertain to the activity of that particular selected stock or security.

[0007] It is still another object of the present invention to provide a system and method which is capable of presenting a large amount of useful financial data in real time, and which also provides the ability for the user to quickly review past market activity over a variable period ranging from one minute to one month or longer, to thus gain a greater appreciation as to the trends of those stocks important to the individual.

[0008] It is still another object of the invention to provide high performance data management by using a server computer or computers to provide data storage and data calculations. This allows efficient use of the user's computer by sending only the required data to their system.

[0009] It is still another object to provide a system and method which presents a large amount of financial information in a form which is much easier for the individual to assimilate, and which further permits the user to sort pre-trade and post-trade financial information in numerous ways to further enhance the usefulness of the information.

[0010] It is yet another object of the present invention to provide a system and method for organizing and displaying pre-trade and post-trade information for virtually any number of user designated stocks or other forms of securities such as mentioned above, and which makes use of color, and changes in color saturation, to indicate trading activity of the auction participants of any stock being monitored by the user.

### SUMMARY OF THE INVENTION

[0011] The above and other objects are provided by a system and method in accordance with preferred embodiments of the present invention. In one preferred embodiment, the system of the present invention comprises a software system for displaying and organizing complex and voluminous Level 1 and Level 2 stock market data in a manner which makes the data much more easily assimilated by the user. The system allows the user to define virtually any number of particular stocks which the user wishes to monitor. These user-designated stocks are then represented along one edge of a computer display terminal in a first region with a "tab" associated for each stock. The user can select any particular stock by positioning the pointer of a graphical user interface, such as a mouse, over the tab representing the desired stock, and clicking on the tab. This presents a variety of information pertaining to that particular selected stock. Controls are also provided to enable the user to quickly scroll through the tabs, via a mouse, to select a desired stock.

[0012] Each tab further includes a visual indicator which is illuminated whenever a user defined event occurs relative

to that stock. This allows the user to be immediately apprised that the event has occurred, even if the user is not viewing that stock.

[0013] Whenever a stock is selected, a second region of information is visible to the user. This information includes, but is not limited to, displays of the trading volume for that stock on the particular day on which the information is viewed, the current bid price for the stock, the current asking price for the stock, the opening price, the price of the position the user is holding and the long and short positions of the user. It may also display the user's current loss or gain on both an active and a simulated account, along with the user's stop position.

[0014] A third region of the system may be included to display a digital clock. The clock can be set for any time zone and has a user defined display to alert the user of important events before same occur, such as the closing of the NASDAQ within a certain number of minutes, a closing of the bond market within a selected number of minutes, or any other or even non-market related event having relevance to the user.

[0015] A fourth region may be included to display the last minutes of trading activity of the stock currently selected by the user, in graphical format, from the time and sales ticker information from the data feed. This feature also allows the user to customize the display to include the previous days, weeks, months or year's activity of the selected stock such that this information appears at the beginning of each day. This enables the user to recognize more quickly trend patterns of given stocks.

[0016] A fifth region of information of the display includes volume and price information for each sale flowing directly from the activity of each auction participant for the selected stock.

[0017] A sixth region of the display provides a wide variety of information, some of which has heretofore been completely unavailable, pertaining to the activities of all of the auction participants regarding the particular selected stock. It further presents the information in a unique manner making same much more easily visually assimilated by the individual, and further in a manner which assists the individual in recognizing trading patterns or trends of the auction participants. In one preferred embodiment the present invention displays the bid and ask data of each auction participant in an associated column. This important information is presented in one region of the display with the above-mentioned columns arranged side-by-side. In this manner the user can quickly ascertain important "bid" and "ask" information for a number of auction participants at a glance.

[0018] A pair of seventh regions of the display system form "rulers" which display the price on both of the "ask" and "bid" sides of the selected stock in user defined increments. The scale for viewing this information is set automatically by the system based upon the selected stock's price and volatility. This region is also customizable by the user for each stock selected.

[0019] An eighth region of the display system graphically displays the trading volume for the stock presently being viewed by the user.

[0020] A ninth region contains tabs for overlaying technical analysis graphs while the area below the ninth region of the display system forms a "trader player" which for the first time ever allows the user to stop, start, "rewind" and "replay" previous activity for the selected stock. The playback speed is also adjustable by the user.

[0021] A tenth region of the display system displays the time for the historic activity being displayed below in region nine. If the trader player is not in use, then the simulation clock displays the current time of day. If the trader player below region nine is in use, then the simulation clock of region ten shows the actual time pertaining to the data being displayed by the trader player.

[0022] An eleventh region of the display system forms a transparent overlay which displays one or more market analysis studies selected by the user that pertain to the stock being viewed. The technical analysis studies may also be defined by the user.

[0023] A twelfth region of the display system forms a transparent overlay which uses horizontal bars to display the trading volume at each price point of the stock being viewed or the incidences of auction participants at each price.

[0024] A thirteenth region of the display system is used to graphically display the theoretically worse case scenario for exiting a stock based upon the presumption that all trading for that particular stock has ceased and all orders were executed matching the current bid price and volume to the current ask price and volume.

[0025] It will be appreciated that the display system of the present invention preferably displays several of the above-described regions in overlapping fashion with other ones of the regions. Thus, any selected region can be brought to the front of the display system such as, for example, by positioning the pointer of a mouse over the desired region and clicking on the mouse. It is also a principal advantage of the display system that region six, which displays all of the auction participant's activity relative to the currently selected stock, is placed on one side of the display system, and therefore represents pre-sales activity, while other information representing post-sales activity is presented adjacently thereto on the other side of the display system with information flowing from one side of the display directly to the other on a single chart.

[0026] Various ones of the above-described regions also make use of colors, and more particularly changes in color, to quickly indicate to the user significant activity occurring relative to a particular stock. All colors can be specified by the user. In this manner, the user can be alerted to important activity concerning any one or more of a large plurality of stocks that the user is tracking activity for. The alerts can be customized by the user for each stock they follow. For example, an alert may be set to notify the user if a stock goes outside its 52 week average. All calculations for the alert are done on the server and only the alert notification is sent to the user. When significant activity is noted, the user can then select that particular stock to present a full array of financial data and market activity pertaining to that particular stock.

[0027] While the present application makes specific reference throughout to stocks, it will be appreciated that the invention can be adapted to use with little or no modification to monitor other forms of securities such as bonds, options and derivatives.



## BRIEF DESCRIPTION OF THE DRAWINGS

[0028] The various advantages of the present invention will become apparent to one skilled in the art by reading the following specification and subjoined claims and by referencing the following drawings in which:

[0029] FIG. 1 is a simplified view illustrating the various regions of the display system and method of the present invention;

[0030] FIG. 2 is a view of the auction participant activity region illustrating pertinent pre-trade information on the activities of each auction participant for the selected stock or other form of security;

[0031] FIG. 3 is an enlarged view of the field pertaining to one of the auction participants shown in FIG. 2;

[0032] FIG. 4 is a view of a pop-up screen displayable by the user for any auction participant;

[0033] FIG. 5 is a view of information displayed in the sales ticker region R5;

[0034] FIG. 6 is a view of the information presented in the auction participant region (R6) together with the information presented in the sales and ticker region (R6);

[0035] FIG. 7 is a display of the one minute bar graph information of region R4; and

[0036] FIG. 8 is a view of the clocks of regions R3 and R10, together with the scales used in regions R7<sub>1</sub> and R7<sub>2</sub>, and also the various sort buttons.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0037] Referring to FIG. 1, there is shown a display system 10 in accordance with one preferred form of the present invention. The display system 10 comprises a means for logically organizing and visually presenting a large amount of financial and stock market information in a much more easily assimilated form, thus enabling nonprofessional as well as professional individuals alike to more readily assimilate a large volume of information concerning any number of user selected stocks, bonds, derivatives, options, or virtually any other form of security. It will further be appreciated that the information, which is stored on a file server, and which is organized and presented in a highly efficient manner by the system and method of the present invention, is extrapolated from a suitable data feed, such as a NASDAQ Level 1 data feed or a NASDAQ Level 2 data feed, which feeds raw financial information into the file server. The manner in which this data is organized and displayed by the system and method of the present invention, as will be explained in greater detail in the following paragraphs, allows the information to be accessed and assimilated much more efficiently by the user, thus enabling the user to make better informed decisions when participating in stock market trading activities. The display system 10 is written in Java, but it will be appreciated that the system 10 could be constructed in a number of different programming languages including, but not limited to, C++.

[0038] The display system 10 shown in FIG. 1 is displayed on a display terminal 12, which is in turn coupled to a suitable computer system. The computer system (not shown) is in turn in communication with the file server

which collects, calculates and stores the data from the data feed supplying the information that appears on the display terminal 12. Preferably, the computer system incorporates a mouse or other suitable graphical user interface which permits the user to select various portions of the information displayed on the display terminal 12 simply by, for example, positioning a pointer or cursor over the desired area and clicking with a mouse. It will be appreciated that such control could also be implemented from a keyboard of the computer system but it is expected that a mouse will be the preferred means for most users in using the display system 10.

[0039] The display system 10 sorts and organizes the voluminous amount of data received from the data feed into a plurality of regions. Each region may be "selected" by simply positioning the mouse pointer over the desired region and clicking with the mouse or entering a keyboard command. For the purpose of description, further reference to selecting any one of the regions to be described below will be explained in connection with the use of a mouse. At any time a user may right click the mouse on any control element, such as a button or tab, in the system 10 and the system 10 will display the function that each element performs.

[0040] The display system 10 includes a first region R1, preferably disposed along the upper edge of the screen of the display system 12, which contains a plurality of "tabs" 14<sub>a</sub> - 14<sub>n</sub>, which each designate a particular stock within a group of stocks that the user has chosen to monitor. It will be appreciated that a virtually infinite number of stocks can be selected by the user to represent various stocks which the user wishes to track. In the present example, the stocks of Microsoft, Inc. (MSFT), Amazon.com (AMZN), Cisco Systems, Inc. (CSCO), Sun Microsystems, Inc. (SUNW), Lanvision Systems, Inc. (LANV) and Dell, Inc. (DELL) are shown for illustrative purposes only.

[0041] The user configures a tab 14<sub>a</sub> for a particular stock by selecting a "new" tab and inputting the four letter stock market abbreviation code for that particular company. By selecting arrow 14<sub>c</sub>, the user can increase the number of auction participants in the display by 5. By selecting arrow 14<sub>e</sub> the number of auction participants in the display is reduced by 5. The use of arrow 14<sub>d</sub> reduces the size of the minute bar graph by one-half an hour while 14<sub>b</sub> increases the size of the minute bar graph by one-half an hour up to 6.5 hours. The stocks are also sorted in alphabetical order such that those designated stocks behind the particular company selected are displayed in alphabetical order from left to right. The "V" button allows the user to display the volume at each price point for the horizontal bars in overlay area 12. The designator "#" allows the user to display the number of occurrences for the horizontal bars in overlay area 12.

[0042] With further reference to FIG. 1, when tab 14<sub>a</sub> (MSFT) is selected, then this tab is brought to the front of region "R1" and all of the pertinent financial information pertaining to Microsoft's stock is displayed in every information region of display system 10. Selecting tab 14<sub>a</sub> containing CSCO would similarly cause its stock to be brought to the front and all of the stock market activity pertaining to CSCO would be displayed.

[0043] Each tab 14<sub>a</sub> further includes an indicator 15 which provides a visual indication to the user that a user-defined

event has occurred. The user defined event may be, for example, that stock going outside of its 52 week moving average. This feature will be described in detail in the following paragraphs.

[0044] Referring further to FIG. 1, region "R2" comprises a "summary block". The summary block is used for presenting a numerical summary of the data presented graphically on other portions of the display system 10 for the particular stock being viewed. This may include, but is not limited to, a display of the day's trading volume for the selected stock, the current bid price, current ask price, the opening price, the price of the position the user is presently holding, as well as the user's long and short positions. It also displays the current loss or gain on the user's active account, as well as on a simulated account (if same is being used), along with the user's "stop" position for the selected stock.

[0045] Region "R3" displays a digital clock that can be set for any time zone. It also has a user defined display to alert the user of important events such as the closing of a particular stock exchange within a particular number of minutes. Accordingly, the user, for example, could configure the clock to sound an alarm over a speaker associated with the computer system or provide a visual indication within region R3 that the NASDAQ will be closing within ten minutes, that the bond market will be closing within 15 minutes, or the time for opening rush, final sprint, morning reversals, lunch break, Cinderella hour, or any other relevant, time-sensitive information important to the user.

[0046] Region "R4" displays the last minutes trades for up to 6.5 hours in graphical format flowing directly from the sales ticker, which will be described momentarily. Region R4 also allows the user to customize the display to include the previous days, weeks, months or even year's activity of the selected stock at the beginning of each day so that trend patterns for that particular stock may be recognized more quickly and easily.

[0047] Region "R5" is used to denote price and volume activity flowing directly from the activities of the auction participants for the selected stock.

[0048] Region "R6" illustrates the activities of all of the auction participants for the stock being viewed and presents the information in a unique manner which serves to make the information much more quickly and easily assimilated by the user. This region will be discussed in detail in the following paragraphs.

[0049] Regions "R7<sub>1</sub>" and "R7<sub>2</sub>" each represent a "ruler" which is used to display the price and volume on both the ask and bid side for the selected stock in user defined dollar increments. The system 10 automatically sets the scale appearing within each region R7<sub>1</sub> and R7<sub>2</sub> for each particular stock viewed based upon that stock's price and volatility. For example, for a stock with high volatility, the system 10 displays the price in smaller increments, such as down to 32nds of a dollar or 64ths of a dollar, whereas other stocks may be displayed down to eighths or sixteenths of a dollar. However, the user can customize this region for each stock denoted by tabs 14a, 14a<sub>n</sub>. The increments can also be defined by the user to allow the data displayed in region R7<sub>1</sub> and R7<sub>2</sub> to be presented in decimal notation. This is defined under a preferences menu to be explained momentarily.

[0050] Region "R8" graphically displays the trading volume for the selected stock being viewed.

[0051] The "buttons" below "R9" include the "Trader Player" control bar, which allows the user to stop, start, rewind and replay historical data at various speeds. Button 20A allows the user to stop and start the screen activity. Selecting arrow 28B rewinds the activity 15 minutes each time it is clicked via the mouse. Selecting arrow 28A rewinds the activity 1 hour for each mouse click. Arrow 28C moves forward 15 minutes for each mouse click. Arrow 28D moves forward one hour for each time it is clicked via the mouse. Selecting arrow 18 takes the user back to the beginning of the day's trading activity. Selecting arrow 22 takes the user to the present activity, or to the end of the day if the trading day is over. Selecting arrow 20 slows down the speed of the replay slightly, while arrow 16 slows down the replay considerably. Selecting arrow 26 speeds up the replay slightly, while arrow 24 speeds up the playback considerably.

[0052] Region "R10" is used to display a "simulation" clock which displays the time associated with the information being viewed on the trader player display at region R9. If the trader player of region R9 is not in use, then the simulation clock displays the current time of day. If the trader player is in use it will show the time it is actually running the trading data for. It also includes a bar, represented by dashed line 28, moving from left to right in the drawing of FIG. 1, which represents the difference between the current time and the time running on the trader player of region R9. As the bar 28 moves to the right, the difference between the time displayed on the digital clock in region R3 (i.e., the actual time of day) and the time displayed in region R10 will be reduced. When both clocks display the same time, then the user will know that the information being displayed in the trader player region R9 is real time information.

[0053] Region "R11" represents a "technical trading and trading studies overlay" region for displaying graphs of a plurality of different studies used for market analysis and technical trading. The particular studies displayed are selectable by the user. The tabs for the technical trading overlays are located in Region "9". This region also overlays the price paid, stop order and sell point as set by the user.

[0054] Referring to region "R12", this region forms a transparent overlay that makes use of horizontal bars to display the trading volume at each price point for the selected stock, or the number of instances of auction participants at each price point.

[0055] Region "R13" graphically displays the theoretically worse case scenario for exiting a stock based upon the presumption that all trading ceased and all orders were executed matching the current bid price and volume to the current ask price and volume.

[0056] It will be appreciated that each of the regions 1-10 may be displayed or not displayed based upon user preference. Regions 11-13 are transparent overlays which can be brought to the front of the display by positioning the mouse pointer over the visible portion of that particular region and clicking with the mouse.

[0057] Referring now to FIG. 2, the wide ranging auction information available for viewing in region R6 can be seen in greater detail. The auction chart is basically comprised of a number of fields 30a<sub>1</sub>-30a<sub>n</sub>. Each field 30a includes

information pertaining to the market activity of each auction participant involved with the selected stock being viewed. As will be understood by those involved in the financial markets, the auction participants are those organizations such as brokerage firms and electronic communications networks (ECNs) actively engaged in buying and selling securities. For example, "LEHM" at field 30a<sub>17</sub> designates the Lehman Brothers Brokerage Firm where as "ISDL" represents the Island ECN.

[0058] Arrow 32 underneath region R6 allows the user to jump to the first (i.e., leftmost) auction participant while arrow 34 allows the user to jump to the last (i.e., rightmost) auction participant. Arrows 36 and 38 allow the user to scroll quickly in either the left or right directions in increments of 5 to display a particular desired auction participant. Arrows 40 and 42 allow the user to scroll one field at a time through the various listed auction participants in either direction.

[0059] Running horizontally through the auction region R6 is the "inside market" line 43. The inside market line 43 represents the price between the current best bid and the current best ask price. Each field 30a<sub>1</sub>-30a<sub>n</sub> includes blocks 42 indicating the volume of the selected stock that that particular auction participant is willing to purchase. Similarly, block 44 in each field 30a represents that volume of stock that each particular auction participant is willing to sell. Also associated with each field 30a is a vertical bar 46 which extends downwardly from the inside market line indicating the present bid price for that particular stock at the volume represented in bar 42 for each auction participant. Above the inside market line, each field 30a includes a vertical bar 48 representing the present ask price by each auction participant for the selected stock at the volume represented in bar 44. The actual price increments for the selected stock are displayed vertically in region R7<sub>1</sub> on one side of the screen of the display terminal 12 and in R7<sub>2</sub> on the opposite side of the screen, while the volume is displayed in region "R8" below region R7<sub>2</sub>.

[0060] Referring now to FIG. 3, a more detailed analysis of the auction and ticker region R6 will be provided with reference to one particular auction participant. In this instance the auction participant is Goldman Sachs Co. (which also appears in field 30a<sub>10</sub> in FIG. 2 as GSCO). Each field 30a is comprised of a plurality of smaller sub-fields graphically representing various information on the activity of the auction participant. Sub-field 50 represents the "ask volatility" area, which displays the primary ask activities of each auction participant. Sub-field 52 represents an auction participant histogram for graphically displaying the price and volume for both the bid and ask for the selected stock by the auction participant. Sub-field 54 represents the "bid volatility" area which displays the primary bid activities of each auction participant. Sub-field 56 contains the auction participant's identification and volume history.

[0061] With specific reference to sub-fields 50 and 54, a plurality of indicator cells or blocks 58-70 and 76-88 are shown. It should also be noted that each indicator display may be turned on or off based upon user defined parameters. Block 58 represents the "inside market switch indicator." This block 58 displays a color when an auction participant moves away from the inside market line 43 on FIG. 1 by raising their ask price. The color display increases in intensity each time another move away from inside market is

made. Accordingly, the user is quickly apprised whenever a particular auction participant begins making a series of movements away from the inside market price. The color fades over time if no moves are made indicating that the information is getting stale.

[0062] Block 60 displays a color when the auction participant moves toward the inside market line 43 on FIG. 2 by lowering their ask price. The color increases in intensity each time another move toward inside market is made. The color fades over time if no moves are made, indicating that the information is getting stale.

[0063] Block 62 displays a color when the auction participant refreshes their ask. This means that their previous ask was accepted, and they have renewed their offer to sell. As this number of times increases, the color becomes more saturated, thus providing a quick visual indication to the user of this activity. This color intensity also fades over time if no activity of the auction participant occurs. Block 64 makes use of color intensity to indicate the number of times the auction participant has been at inside market that day. The greater the number of times, then the more saturated the color becomes, again providing a quick visual indication to the user. The color will fade over time if no activity occurs. Block 66 displays a color when an auction participant switches from inside market on one side of the inside market line 43 to the other side. The color display increases in intensity each time another inside market switch is made by the auction participant. Again, however, the color fades over time if no activity of the auction participant occurs.

[0064] Sub-field 68 is an inside market indicator which is illuminated when the auction participant is at inside market and is off when the auction participant is not. Sub-field 70 represents a "movement" indicator which uses color intensity to indicate when an auction participant has changed its bid or ask price. If the auction participant raises its ask or raises its bid, then a designated color will appear, such as blue, to indicate that the activity may drive the price of the stock upwards. The more times the auction participant raises their bid or ask, the more intense the color becomes. If the participant lowers its bid or ask, then a different color will be displayed in a sub-field 70, such as brown, to indicate that the activity may drive the price downward. The more times the participant lowers its bid or ask, the more intense the color will become. The intensity of the colors in sub-fields 68 and 70 diminishes over time if no further activity occurs, thus indicating that the activity is becoming stale and therefore less valid.

[0065] For the user to set the specific price or volume limits described above, the user left clicks with the mouse pointer positioned in the pertinent region. This brings up a "pop-up" menu which displays all the options that the user may desire to set. Data input is accomplished using standard languages and prompts supported by Microsoft<sup>®</sup>7. User definitions can be set for individual stocks, groups of stocks or all stocks or securities in their portfolio. For example, left clicking on region R2 would bring up a pop-up menu specific to Region R2. In region R2 the user can also select preferences for other information such as numerical displays of the current day's trading volume, current bid price, current ask price, and the opening price of a selected stock for that particular day. The user may also specify the price position they are holding for a selected stock, their long and

short position and the color for the various indicators employed to visually signal important activity of the auction participants.

[0066] Referring further to FIG. 3, area 72 represents the "ask" area for displaying the ask volume and ask price. Line 73 represents the auction participant ask price. Area 74 is the "inside market spread indicator", which displays the best bid and ask of all auction participants. Line 75 represents the auction participant bid price. Sub-field 46 corresponds to the bid price while sub-field 48 corresponds to the ask price. Area 77 is the "bid" area for displaying the bid volume and bid price. The bid volume, represented by block 42 on FIG. 2 represents the volume of shares the auction participant is willing to purchase.

[0067] With further reference to FIG. 3, area 54 further includes a number of sub-fields 76-88 which correspond identically in function to sub-fields 58-70 described previously herein. The only difference being that sub-fields 76-88 are used to signify auction participant bid activity rather than ask activity. Sub-field 90 includes the identification designation for the auction participant, in this example "GSCO" for Goldman Sachs Co.

[0068] With further reference to FIG. 3, several bar graphs 92-98 are used to graphically present important information concerning the trading volume of the stock for a particular auction participant. Graph 92 indicates the year-to-date total volume of the stock traded by the displayed auction participant. Graph 94 indicates the year to date block trade volume of the auction participant. A block trade is defined as a trade of over 10,000 shares. Graph 96 indicates the total volume of the previous month of the displayed auction participant in the selected stock, and graph 98 illustrates the previous month's block trade volume by the auction participant in the selected stock.

[0069] With brief reference to FIG. 4, the user can position the pointer of the mouse over any of the blocks making up any of the fields 30a, by right clicking on the mouse, and an informational "pop-up" 100 will be displayed. The pop-up provides specific information for the selected auction participant as well as numerical information corresponding to the various sub-fields described in FIG. 3.

[0070] Referring now to FIG. 5, the sales ticker information of region R5 is displayed in greater detail. Small black squares, such as square 100, each represent a particular transaction (i.e., trade) concerning the selected stock. The vertical bar graph which is vertically in line with each square, such as bar graph 102 which is vertically aligned with square 100, graphically indicates the volume of that particular trade. The sales ticker region R5 also includes scales on both sides of an inside market line 104 for indicating price, although this scale has been omitted for purposes of clarity in the drawing of FIG. 5. The sales ticker includes regions 106 and 108 within which horizontal bar graphs 110 may be displayed. The bar graphs appearing in area 106 graphically represent the volume of shares at each ask price. Graphs 110 in area 108 similarly represent the volume of shares available at each bid price. By clicking on element 112 ("#"), the graph changes colors and displays the number of instances at each price. Clicking on the "V" button with the mouse changes the display back to volume. It will also be appreciated that the squares representing transactions will be continually moving from right to left as

new ticker information arrives from the data feed, flowing directly from the auction participant area.

[0071] Referring briefly to FIG. 6, the sales ticker information is shown together with the auction participant information. This provides a valuable, quick visual reference to the user both in terms of pre-trade and post-trade information.

[0072] Referring now to FIG. 7, the one minute bar chart of region R4 is displayed. As can be seen, the dark black dots 120 represent actual trades, with the rightmost side of region R4 representing the most recent trades having occurred. Bar graphs 122 along the lower edge of region R4 represent the total volume of each particular trade. The light grey graph immediately above each black dot represents the highest trade price at that particular minute that the trade occurred. The bar graph 122 extending directly below each dot 120 indicates the lowest price at that particular minute for the selected stock. Selecting button 124 increases the minute bar graph by one-half an hour up to 6.5 hours. Selecting button 126 decreases the minute bar graph by one-half an hour.

[0073] Referring now to FIG. 8, the clocks appearing in regions R3 and R10, as well as simplified representations of the scales used in regions R7<sub>1</sub> and R7<sub>2</sub>, are visible. It also displays the "sort" buttons.

[0074] Selecting sort button 128 sorts on the number of times an auction participant has moved away from inside market. The auction participant with the most such moves will be on the left, and the auction participant with the least such moves will be on the right.

[0075] Selecting sort button 130 sorts on the number of times the auction participant has moved toward inside market. The auction participant with the most such moves will be on the left, and the auction participant with the least such moves will be on the right.

[0076] Selecting sort button 132 sorts on the number of times an auction participant has refreshed. The auction participant with the most number of refreshes will be on the left, and the auction participant with the least number of refreshes will be on the right.

[0077] Selecting sort button 134 sorts on the number of times the auction participant has been at inside market. The auction participant with the greatest number of instances will be on the left, and the auction participant with the least on the right.

[0078] Selecting sort button 136 sorts on all the auction participants who are at inside market. Therefore, those with their inside market indicator on will be to the left.

[0079] Selecting sort button 138 "V" sorts all auction participants based on their ask volume. The auction participant with the highest such volume will be on the left, and the auction participant with the least on the right.

[0080] Selecting sort button 140 "\$" sorts on all auction participants based on their ask price. The auction participant with the highest ask price will be on the left, and the auction participant with the lowest will be on the right.

[0081] Sort buttons 142, 144, 146, 148, 150, 152 and 154 represent the same sort activity as buttons 128-140, respectively, except on the "bid" side activity rather than the "ask" side activity.

[0082] Selecting sort button 156 ("a") sorts on all auction participants in alphabetical order, from left to right.

[0083] Selecting sort button 158 ("V") sorts the auction participants on their year-to-date total volume. The auction participant with the highest such volume will be on the left, and the auction participant with the least on the right.

[0084] Selecting sort button 160 ("v") sorts the auction participants on the previous month's volume. The auction participant with the highest such volume will be on the left, and the auction participant with the least on the right.

[0085] The system and method 10 of the present invention thus provides a means to monitor a very large amount of complex stock, bond, option, derivative or virtually any other securities related information on a variety of exchanges, and in a manner which makes same much more easily assimilated by non-professionals and professionals alike. The system 10 of the present invention presents the information received from a data feed in a manner which also makes important trends, which would be important in making a trading decision, quickly discernable by even non-professionals. The system and method 10 further enables an extremely large volume of trading activity to be reviewed quickly to further help identify important trading trends concerning those stocks which the user is monitoring. The particular manner in which the present invention logically organizes the large amount of data and presents same in easy to discern graphical formats further significantly eases the manner in which the information may be assimilated by individuals and used to make more intelligent stock trades.

[0086] Those skilled in the art can now appreciate from the foregoing description that the broad teachings of the present invention can be implemented in a variety of forms. Therefore, while this invention has been described in connection with particular examples thereof, the true scope of the invention should not be so limited since other modifications will become apparent to the skilled practitioner upon a study of the drawings, specification and following claims.

What is claimed is:

1. A software system for organizing and monitoring a large amount of financial information pertaining to trading activities occurring on a financial market exchange, and presenting such information on a video display screen, comprising:

a header display region for displaying a header corresponding to at least one user defined company which a user desires to monitor financial information pertaining thereto; and

an auction participant region for displaying said financial information in real time in an easily viewable graphical format, said financial information relating to trading activities concerning said one user defined company by a plurality of user designated auction participants.

2. The system of claim 1, wherein said financial information includes real time information presented in a graphical format on a current ask price, a current bid price, a current volume of shares available at said ask price, and a current volume of shares sought at said bid price, for each of said user selected auction participants.

3. The system of claim 2, wherein said auction participant region includes an inside market line designation for denot-

ing a midpoint between highest one of said bid prices and a lowest one of said ask prices for said auction participants defined by said user.

4. The system of claim 1, further comprising a summary region capable of being displayed on said display concurrently with said header display region, for displaying a summary of financial information of the user selected company.

5. The system of claim 1, further comprising a recent trades region capable of being displayed on said display concurrently with said header display region, for displaying information concerning recently executed trades of financial instruments of said user selected company.

6. The system of claim 2, further comprising at least one display region arranged as a narrow elongated display for displaying in real time price and volume information on at least one of said ask and bid prices for financial instruments of the user selected company.

7. The system of claim 1, further comprising a price and volume activity region for displaying, in real time, price and volume information flowing directly from trading activities of all of the user designated auction participants, relative to the user selected company.

8. The system of claim 1, further comprising an historical trading playback function and a user operated control panel for enabling a user to replay on the video display screen previously stored portions of auction participant activity which has occurred over a user defined time period, concerning a financial instrument of the user selected company.

9. The system of claim 8, wherein the user can fast forward said previously stored portions of said financial information on said video display screen via said control panel.

10. The system of claim 1, further comprising a technical studies overlay display region for displaying market analysis graphs on a portion of said video display concerning the user selected stock.

11. The system of claim 1, further comprising at least one sort control for enabling said user to sort market activity of said auction participants on said video display into a predetermined pattern on said video display in accordance with a predetermined criterion.

12. A software system for organizing and monitoring a large amount of financial information pertaining to financial instrument trading activities concerning a plurality of companies occurring on a financial exchange, and presenting such information on a video display screen in an easily to view graphical format, the system comprising:

a header display region for displaying headers corresponding to a plurality of user defined companies which a user desires to monitor financial information pertaining thereto, said headers being selectable by said user to allow said user to monitor and review detailed information concerning financial instrument trading activities for the selected said company; and

a replay system including user actuatable controls for enabling said user to selectively re-display archived portions of said financial information on said video display.

13. The system of claim 12, further comprising an auction participant display region for displaying real time information in a graphical format concerning bid prices and ask prices relating to said financial instruments, and volume

information for each of said bid and ask prices, of a plurality of user designated auction participants engaged in financial instrument trading activities concerning said user selected company.

14. The system of claim 13, wherein said ask and bid prices and said volume information of each of said user selected auction participants is presented in an elongated subregion adjacent one another for quick visual comparison.

15. The system of claim 13, wherein said auction participant display region includes an inside market line designation for denoting a midpoint between a highest one of said bid prices and a lowest one of said ask prices for said auction participants defined by said user.

16. The system of claim 12, further comprising at least one sort control for enabling said user to sort market activity of said auction participants on said video display into a predetermined pattern on said video display in accordance with a predetermined criterion.

17. The system of claim 12, wherein said auction participant region includes indicator cells assigned to each said auction participant which change color to denote trends in trading activities of each of said auction participants.

18. The system of claim 12, further comprising a summary region capable of being displayed on said display concurrently with said header display region, for displaying a summary of said financial information pertaining to one of said user selected companies.

19. The system of claim 12, further comprising a price and volume activity region for displaying, in real time, price and volume information flowing directly from trading activities of all of the user designated auction participants, relative to the user selected company.

20. The system of claim 12, further comprising further comprising a technical studies overlay display region for displaying market analysis graphs concerning the user selected financial instrument.

21. A software system for organizing and monitoring a large amount of financial information pertaining to financial

instrument trading activities concerning a plurality of companies occurring on a financial exchange, and presenting such information on a video display screen in an easily viewable and comprehensible graphical format lending itself to quick visual interpretation by a user, said system comprising:

a header display region for displaying headers corresponding to a plurality of user defined companies which a user desires to monitor financial information pertaining thereto, said headers being selectable by said user to allow said user to monitor and review detailed information concerning financial instrument trading activities for the selected said company;

an auction participant display region for displaying real time financial information concerning bid prices and ask prices, and volume information for each of said bid and ask prices, in an easy to interpret graphical format, of a plurality of user designated auction participants engaged in financial instrument trading activities concerning said user selected company; and

a sort control for allowing said user to said auction participants to organized and presented on said video display screen in accordance with a plurality of user defined criteria.

22. The system of claim 21, further comprising a replay control displayed on said video display for allowing a user to replay archived portions of said financial information of selected ones of said user defined companies on said video display.

23. The system of claim 22, wherein said auction participant region includes a plurality of indicator cells associated with each of said auction participants; and

wherein said cells change color in response to activity of each of said auction participants.

\* \* \* \* \*



*Handwritten initials/signature*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Attorney Docket No. 024051/0155**

Applicant: Gary Allan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH  
Serial No.: 09/894,637  
Filed: June 27, 2001  
Examiner: R. Weisberger  
Art Unit: 3624

**RECEIVED**  
NOV 15 2002  
**GROUP 3600**

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 CFR §1.56 and 37 CFR §1.97**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Submitted herewith on Form PTO-SB/08 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR 1.56. A copy of each listed document is being submitted to comply with the provisions of 37 CFR 1.97 and 1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a prima facie prior art reference against the claims of the present application.

Serial No. 09/894,637

Attorney Docket No. 024051/0155

**TIMING OF THE DISCLOSURE**

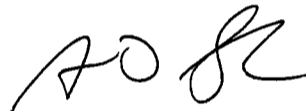
The instant Information Disclosure Statement is believed to be filed in accordance with 37 C.F.R. 1.97(b), prior to the mailing date of a first Office Action on the merits.

Applicant respectfully requests that the listed documents be considered by the Examiner and formally be made of record in the present application and that an initialed copy of Form PTO SB/08 be returned in accordance with MPEP §609.

Respectfully submitted,

*NOVEMBER 14, 2002*

Date



Ankur D. Shah  
Registration No. 41,514

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 19-0741 for any such fees; and applicant(s) hereby petition for any needed extension of time.



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> Date Submitted: November 14, 2002 (use as many sheets as necessary)				<b>Complete if Known</b>	
				Application Number	09/894,637
Sheet 1 of 1				Filing Date	June 27, 2001
				First Named Inventor	Gary Allan Kemp II
				Group Art Unit	3624
				Examiner Name	Weisberger, R.
				Attorney Docket Number	024051-0155

### U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
A	A1	2002/0023038		FRITSCH et al.	02/21/2002	
	A2	6,408,282		BUIST	06/18/2002	

**RECEIVED**  
NOV 15 2002  
**GROUP 3600**

### FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
A	A3		WO 00/52619		PCT	09/08/2000		
	A4		WO 00/62187		PCT	10/19/2000		
	A5		WO 01/16852		PCT	03/08/2001		

### OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>

Examiner Signature		Date Considered	
--------------------	---	-----------------	---

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, D.C. 20231.

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Gary Alan KEMP II et al.  
Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Appl. No.: 09/894,637  
Filing Date: 06/27/2001  
Examiner: R. Weisberger  
Art Unit: 3624

RECEIVED  
TECHNOLOGY CENTER 3800  
09 OCT 21 AM 8:31

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 CFR §1.56**

Mail Stop PATENT APPLICATION  
Commissioner for Patents  
PO Box 1450  
Alexandria, Virginia 22313-1450

Sir:

Submitted herewith on Form PTO/SB/08 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56. A copy of each listed document is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b).

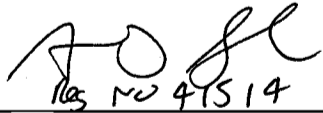
**RELEVANCE OF EACH DOCUMENT**

Document A6 discloses a computerized stock exchange trading system. An English translation of the foreign-language document is not readily available. However, the absence of such translation does not relieve the PTO from its duty to consider the submitted foreign language document (37 CFR §1.98 and MPEP §609). An English language abstract is provided herewith.

Applicants respectfully request that any listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 CFR §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

By  105 MW 41514

Date: October 20, 2003

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5485  
Facsimile: (202) 672-5399

William T. Ellis  
Attorney for Applicant  
Registration No. 26,874

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> Date Submitted: October 20, 2003 (use as many sheets as necessary)				<b>Complete if Known</b>	
				Application Number	09/894,637
				Filing Date	06/27/2001
				First Named Inventor	Gary Allan Kemp II
				Group Art Unit	3624
				Examiner Name	R. Weisberger
				Attorney Docket Number	024051-0155
Sheet	1	of	1		

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	A1	4,903,201		WAGNER	02-20-1990	
	A2	5,101,353		LUPIEN et al.	03-31-1992	
	A3	5,946,667		TULL, JR. et al.	08-31-1999	
	A4	6,035,287		STALLAERT et al.	03-07-2000	
	A5	2002/0138401	A1	ALLEN et al.	09-26-2002	

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	A6	WO	95/26005	A1	BELZBERG, Sydney H.	09-28-1995		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>

Examiner Signature	Date Considered	
--------------------	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, PO Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, PO Box 1450, Alexandria, Virginia 22313-1450.

**United States Patent** [19]

**Wagner**

[11] Patent Number: **4,903,201**

[45] Date of Patent: **Feb. 20, 1990**

AI

- [54] **AUTOMATED FUTURES TRADING EXCHANGE**
- [75] Inventor: **Susan W. Wagner, Dallas, Tex.**
- [73] Assignee: **World Energy Exchange Corporation, Dallas, Tex.**
- [21] Appl. No.: **548,319**
- [22] Filed: **Nov. 3, 1983**
- [51] Int. Cl.<sup>4</sup> ..... **G06F 15/30**
- [52] U.S. Cl. .... **364/408; 364/918.8; 364/900**
- [58] Field of Search ..... **364/200; 900, 300, 408; 340/825.26; 235/375**

- 4,334,270 6/1982 Towers ..... 364/300
- 4,346,442 8/1982 Musmanno ..... 364/408
- 4,376,978 3/1983 Musmanno ..... 364/408
- 4,412,287 10/1983 Braddock, III ..... 364/408
- 4,554,418 11/1985 Toy ..... 364/900

**OTHER PUBLICATIONS**

*Wall Street Journal*, "Amex, Toronto Exchange Develop a Plan to Link Trading Floors Electronically", date not known.

*Info World*, "Buying Stocks On-Line", 9/17/84, pp. 31-32.

"Trading System Falling Apart; Will Exchanges Automate?", undated article from magazine of unknown origins.

*Primary Examiner*—Jerry Smith  
*Assistant Examiner*—Jon D. Grossman  
*Attorney, Agent, or Firm*—Sigalos, Levine & Montgomery

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

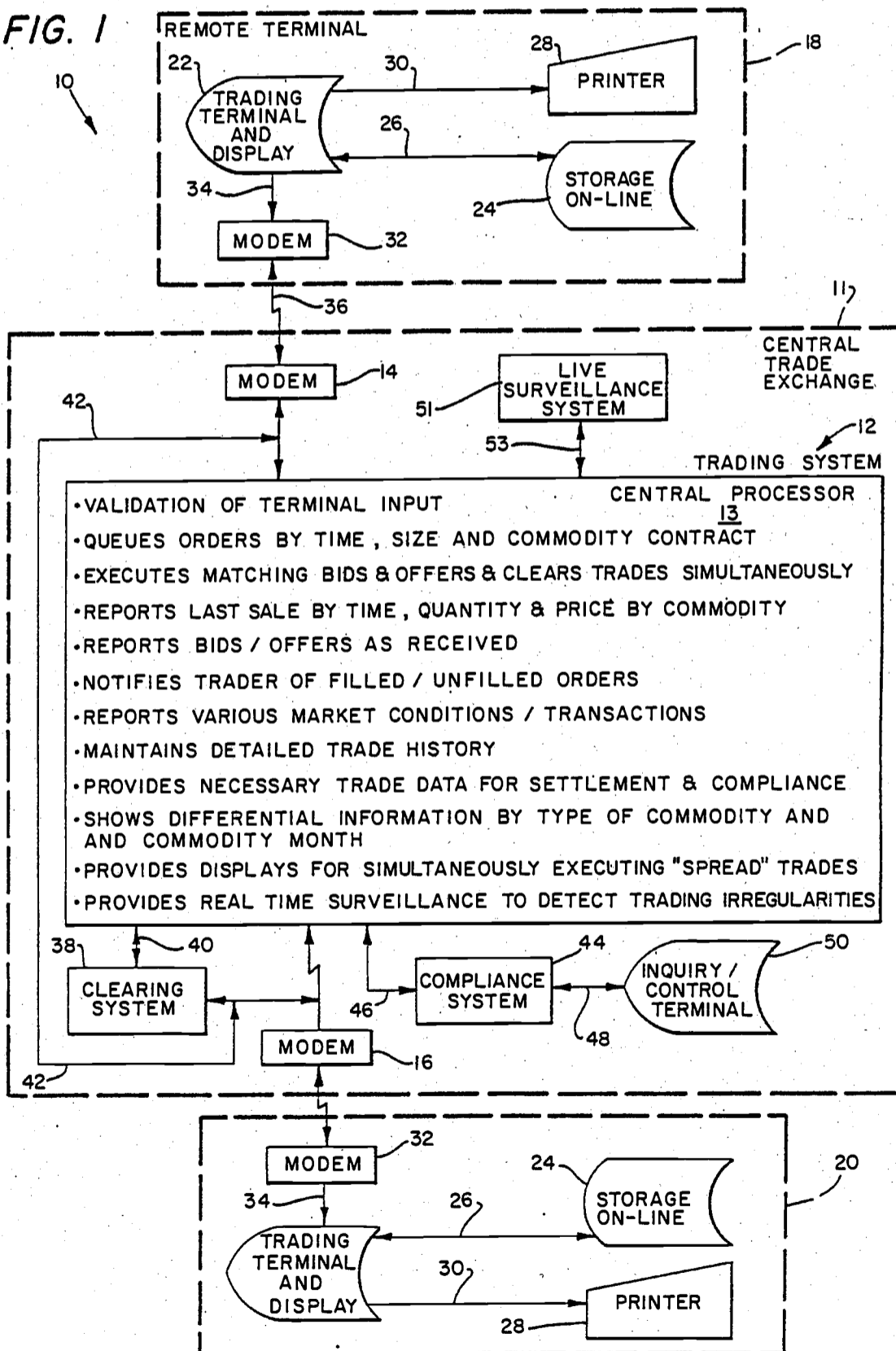
- 3,253,263 5/1966 Lee et al. .... 340/172 S
- 3,573,747 4/1971 Adams et al. .... 364/200 X
- 3,581,072 5/1971 Nymeyer ..... 235/152
- 3,594,503 7/1971 Wolf et al. .... 178/88
- 3,596,254 7/1971 Highleyman et al. .... 340/172.5
- 3,652,795 3/1972 Wolf et al. .... 179/2 DP
- 3,753,233 8/1973 Cardell, Jr. .... 340/172.5
- 3,770,941 11/1973 Gechele et al. .... 235/61.7 R
- 3,848,233 11/1974 Lotan et al. .... 364/200 X
- 3,974,480 8/1976 Gernelle ..... 364/200
- 3,976,840 8/1976 Cleveland ..... 179/2 DP
- 4,032,946 6/1977 Wakatsuki et al. .... 364/900
- 4,264,782 4/1981 Konheim ..... 364/200 X
- 4,275,456 6/1981 Tanaka et al. .... 364/900
- 4,321,672 3/1982 Braun et al. .... 364/408

[57] **ABSTRACT**

A computerized open outcry exchange system for transacting sales of a particular futures commodity contract by members of a futures trading exchange wherein bids to purchase or offers to sell the particular commodity contract are made by the members through remote terminals and the exchange computer automatically matches offers and bids to complete the transaction.

**42 Claims, No Drawings**

FIG. 1



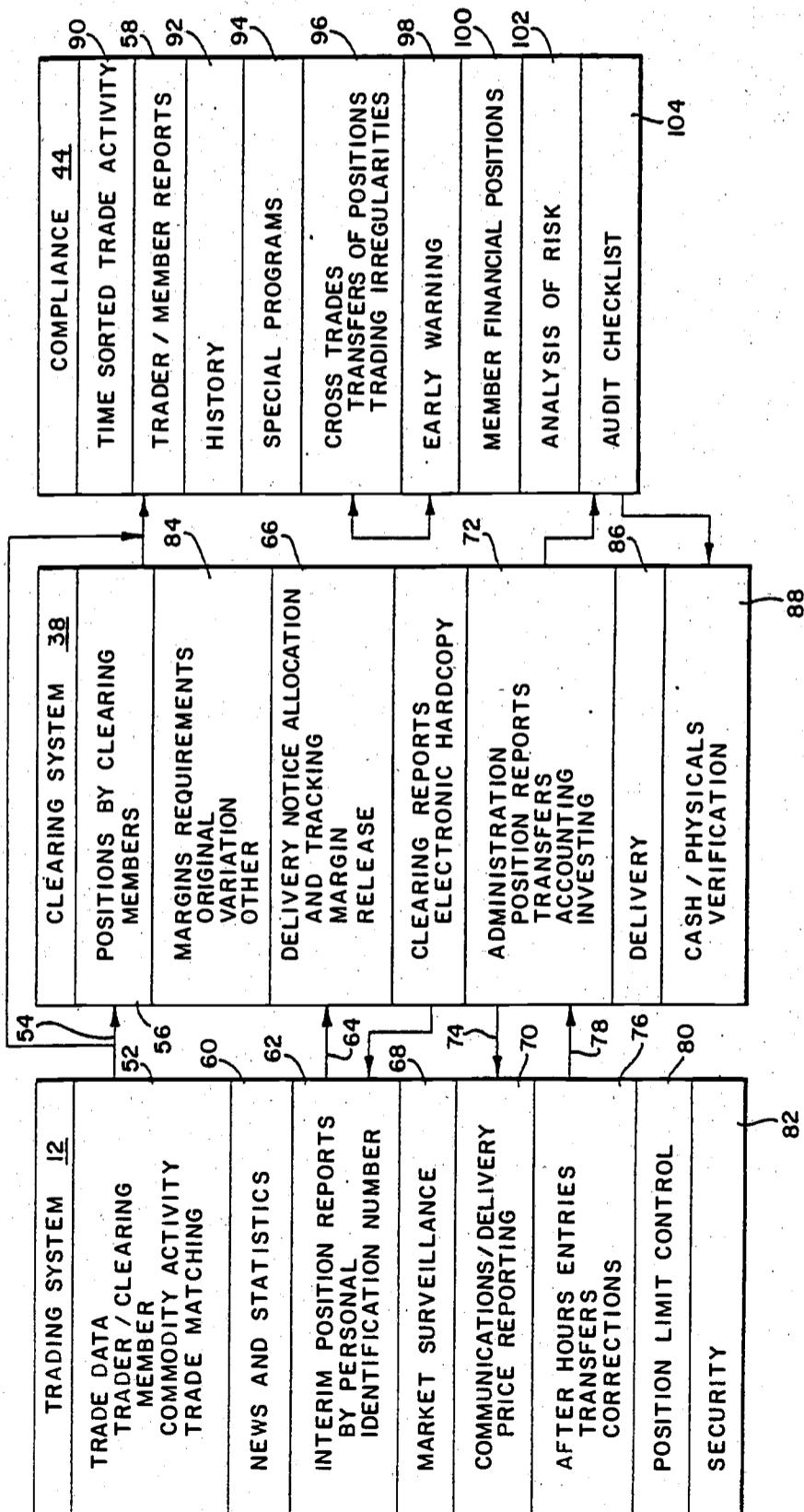
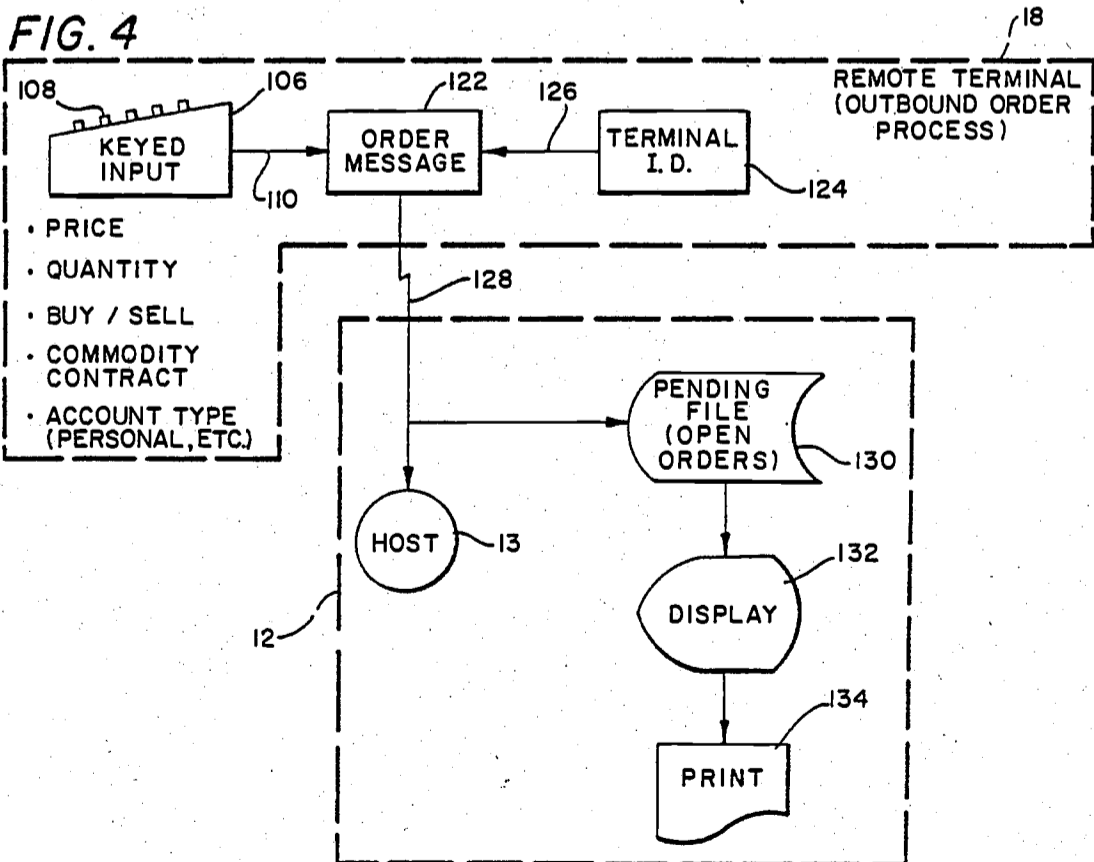
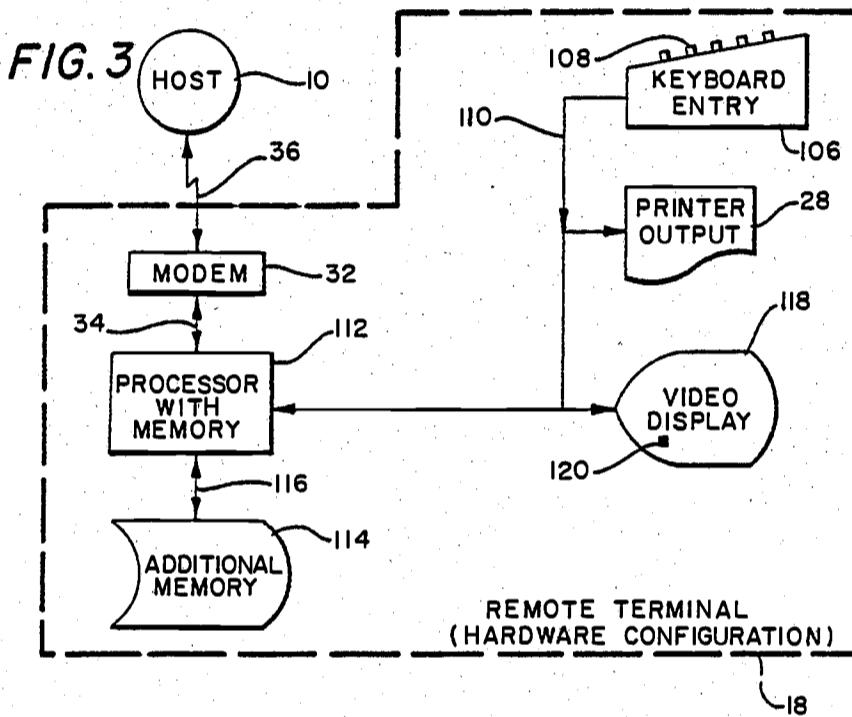
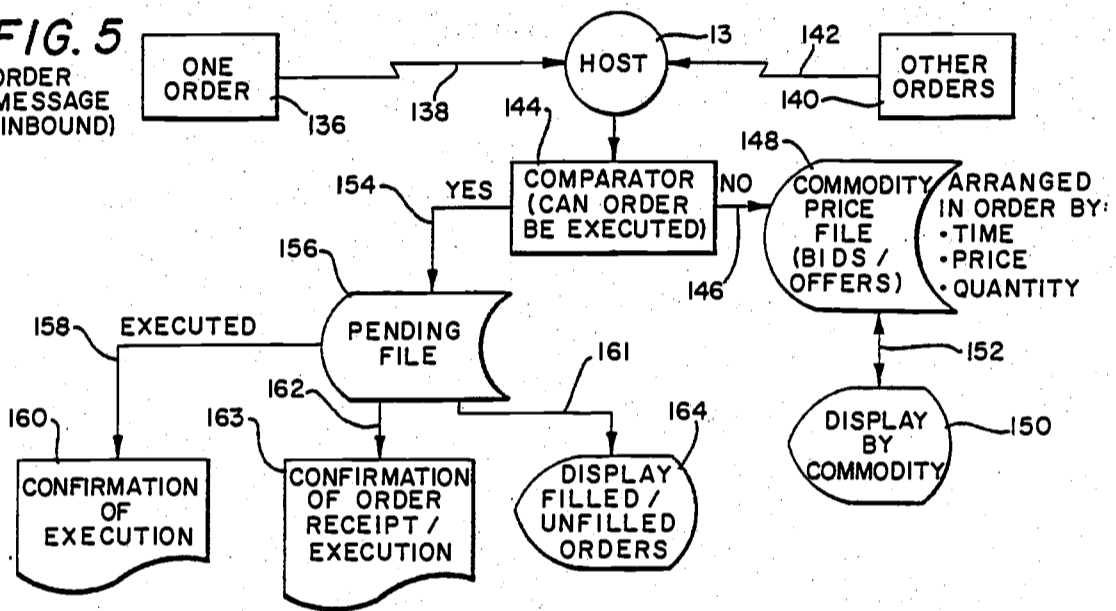


FIG. 2





**FIG. 5**  
ORDER MESSAGE (INBOUND)



**FIG. 6**

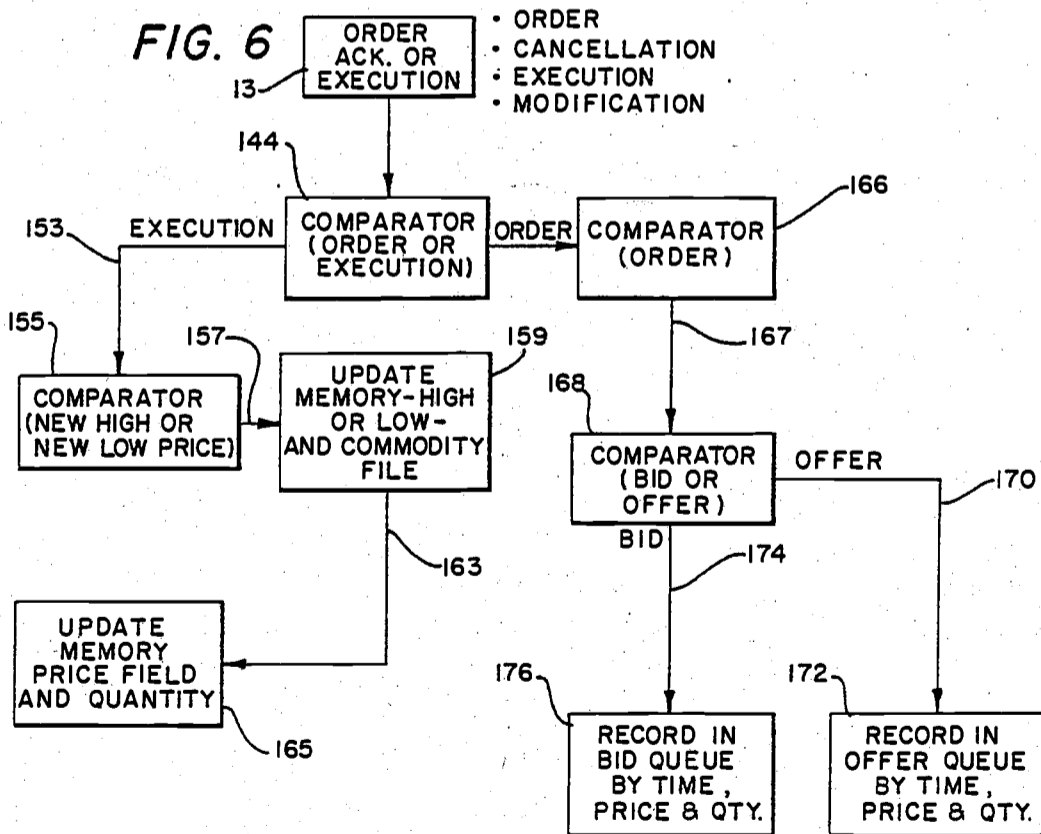


FIG. 7

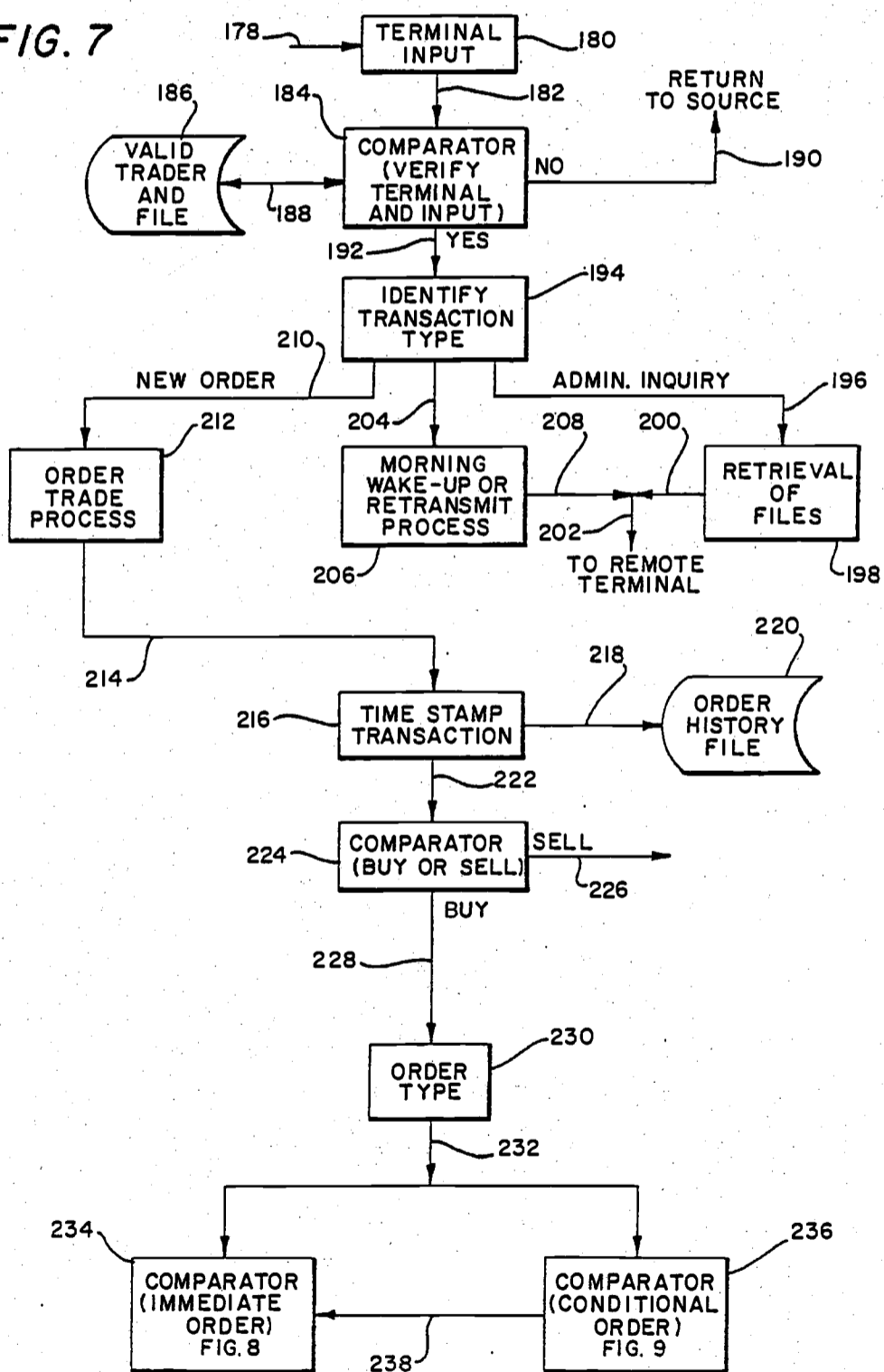


FIG. 8

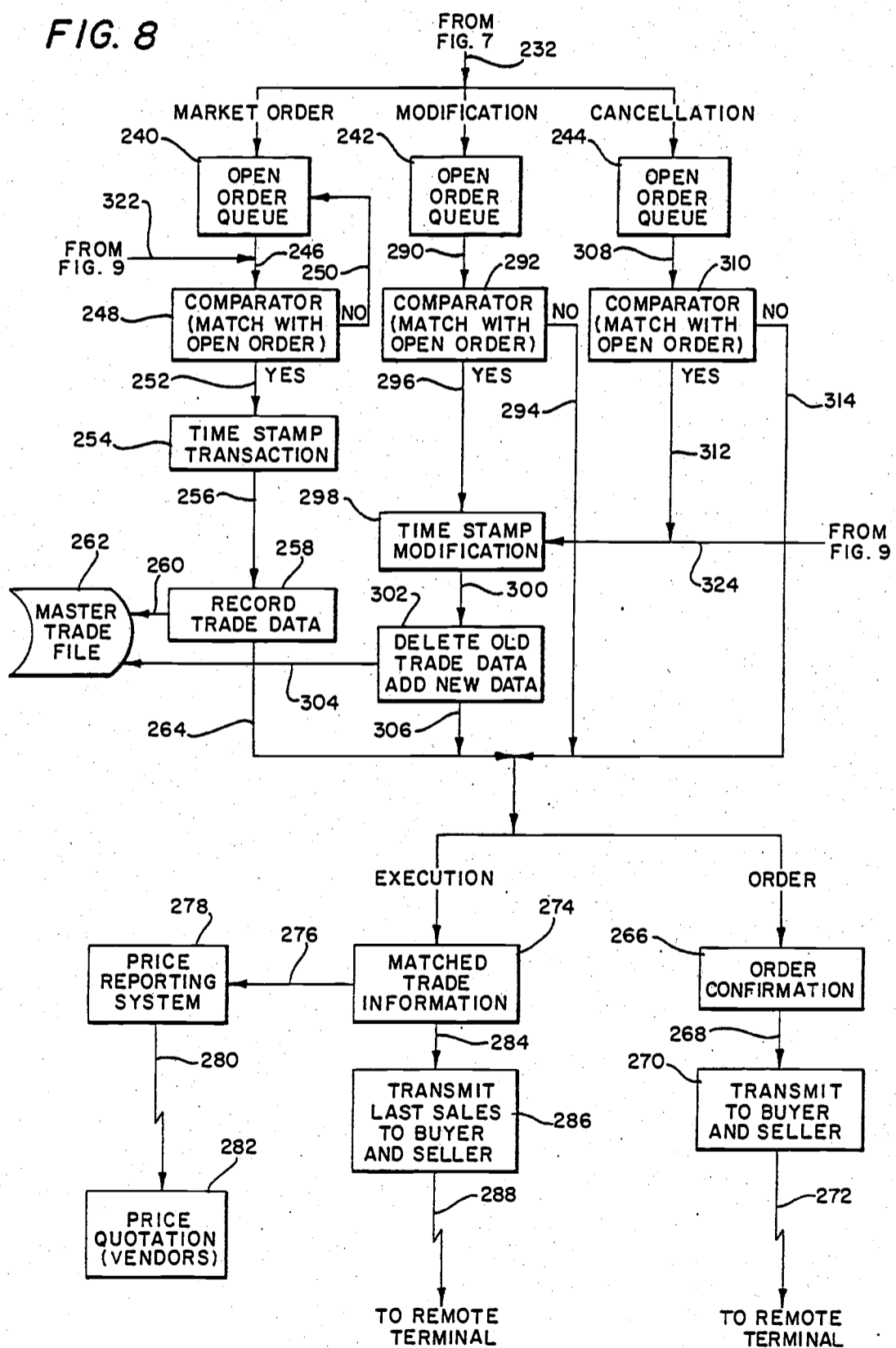


FIG. 9

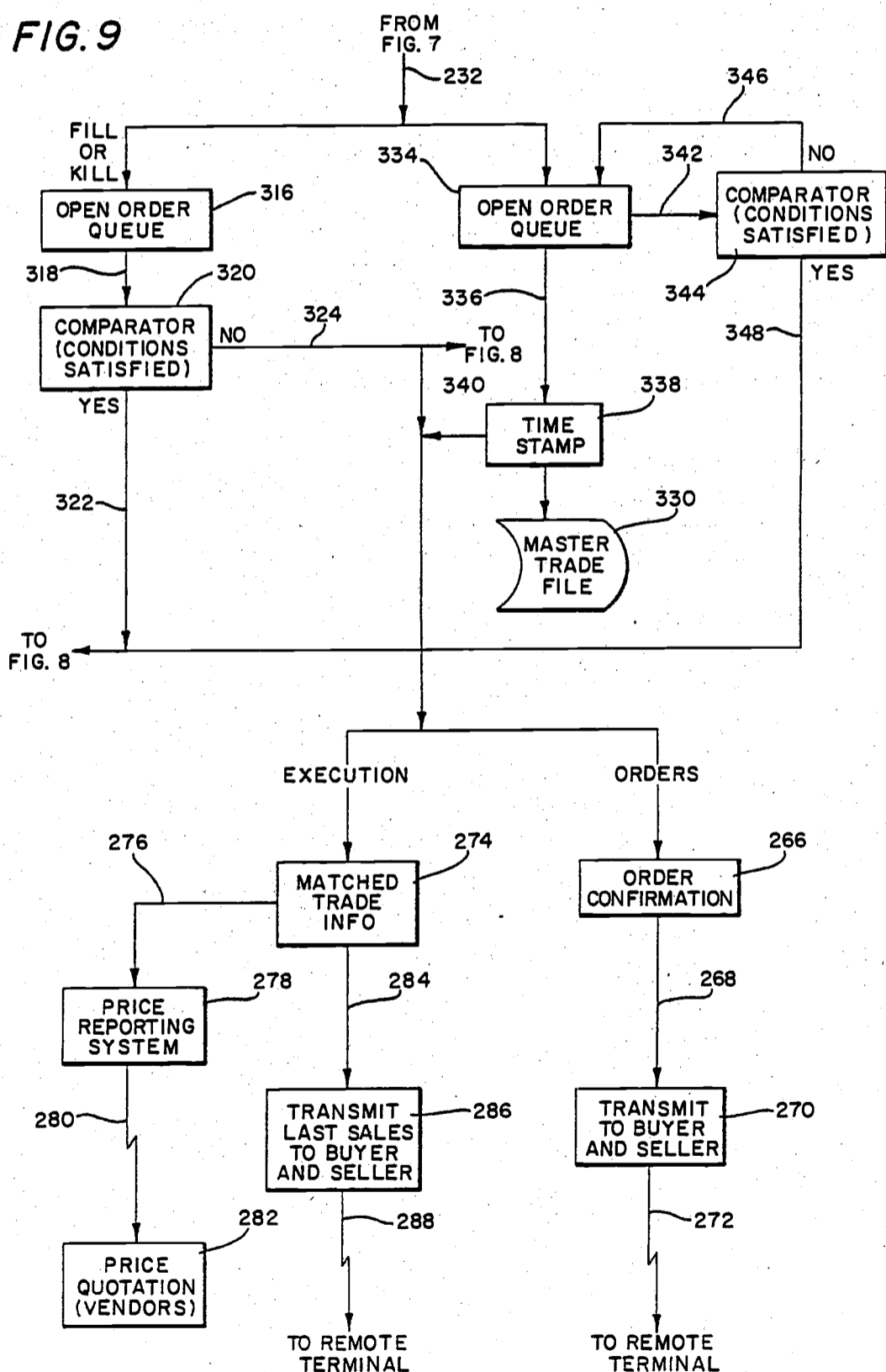
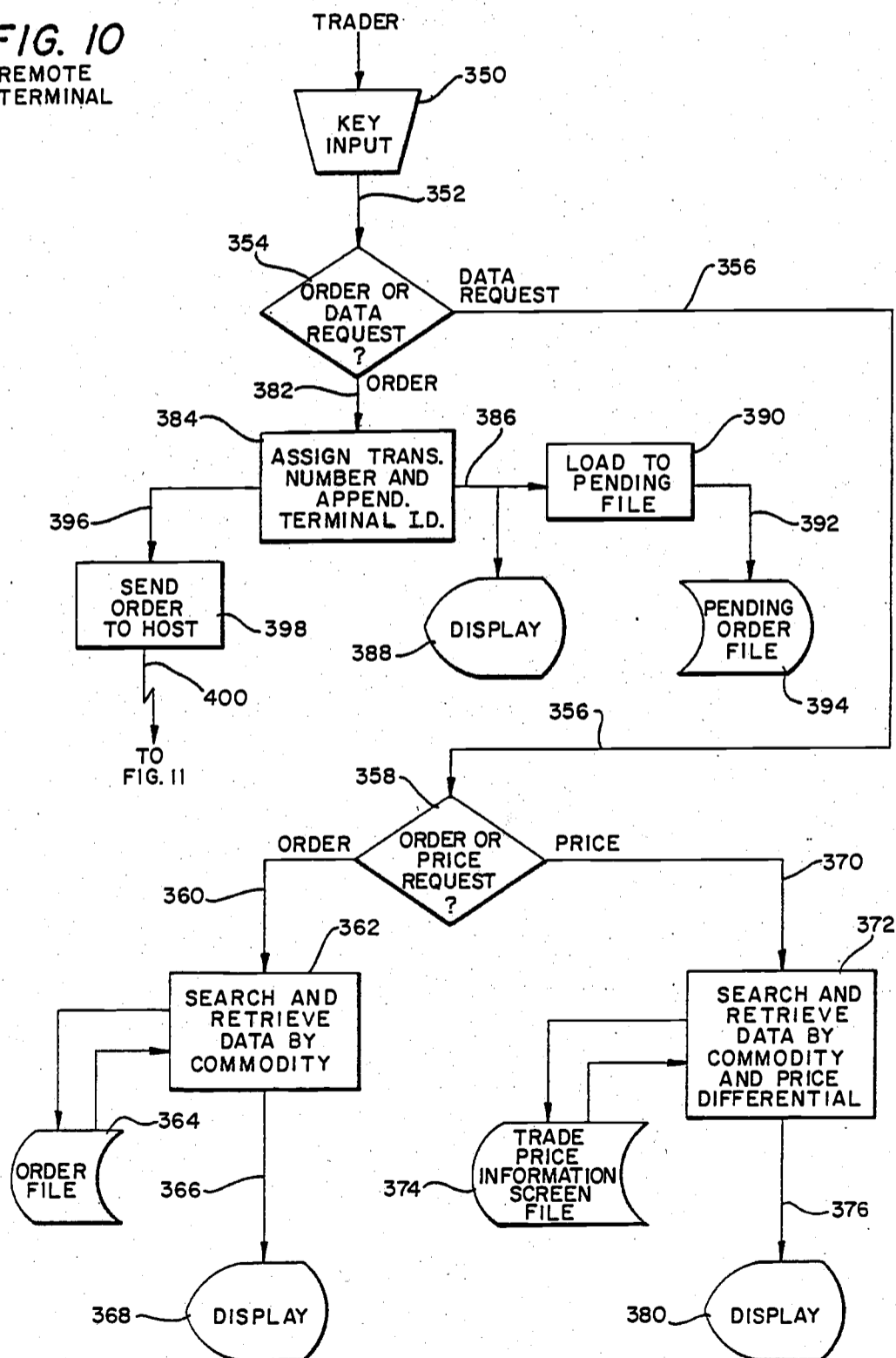


FIG. 10  
REMOTE  
TERMINAL



**FIG. 11**  
CENTRAL  
EXCHANGE  
SYSTEM

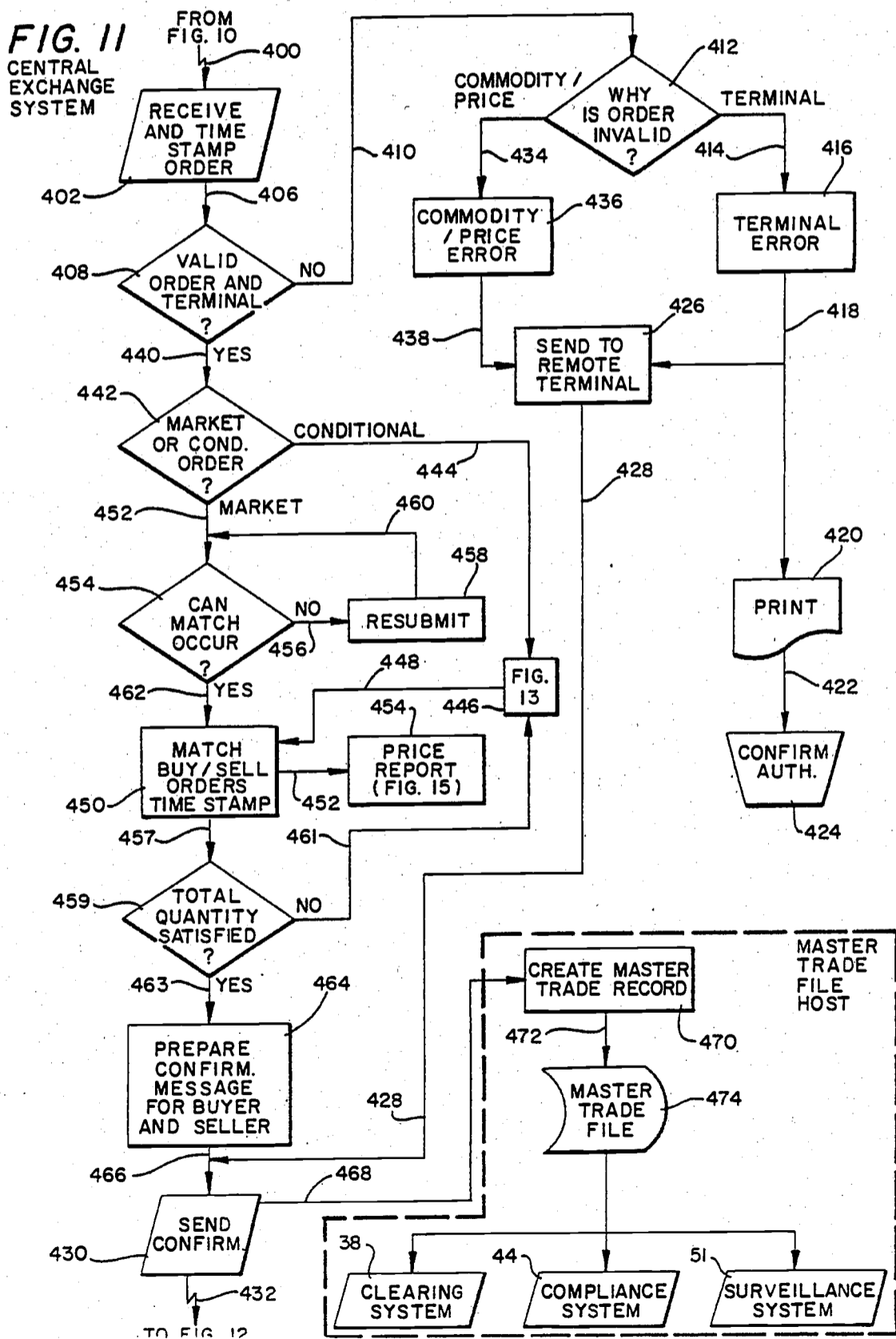


FIG. 12  
REMOTE  
TERMINAL

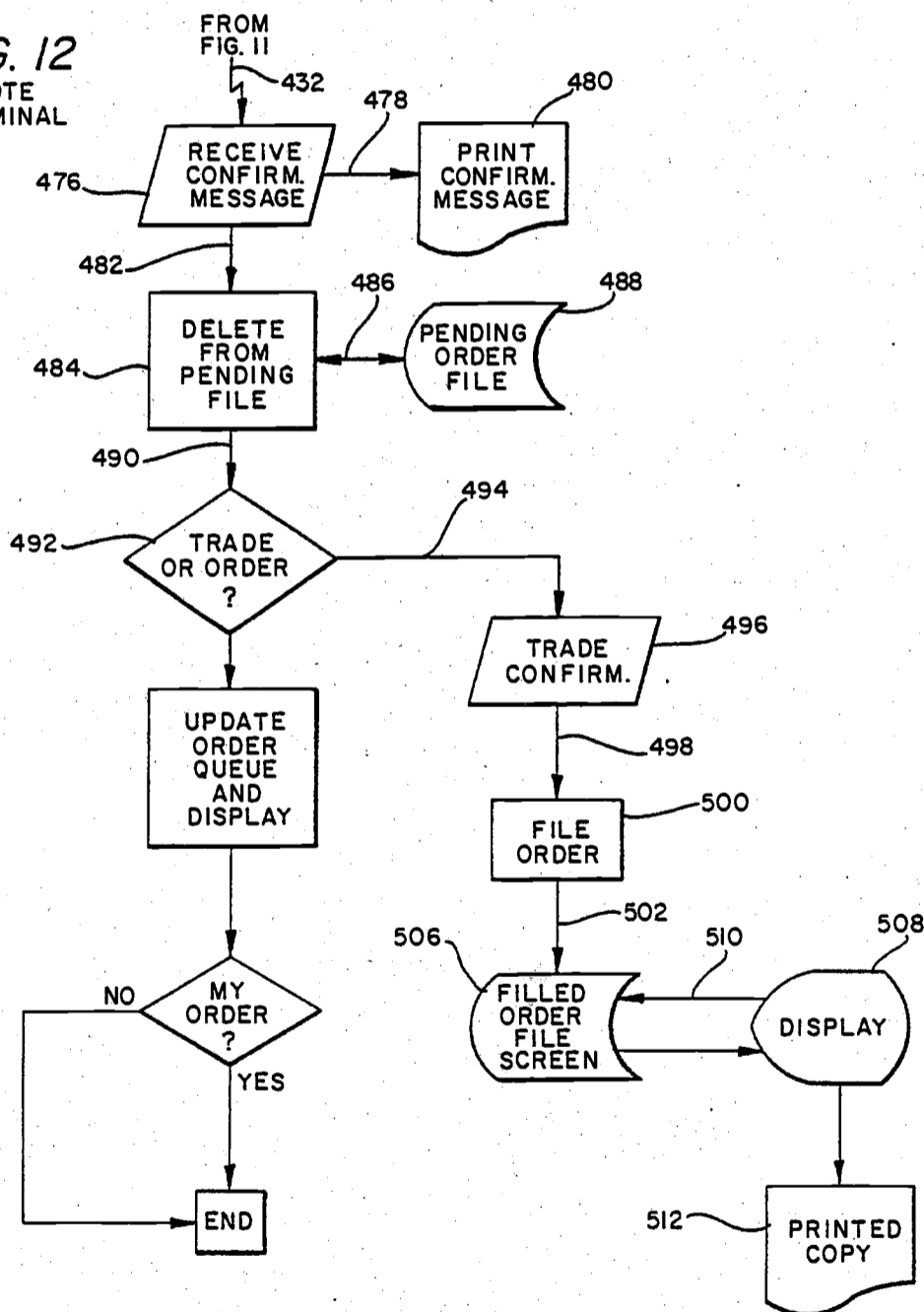


FIG. 15  
PRICE  
REPORTING  
PROCESS

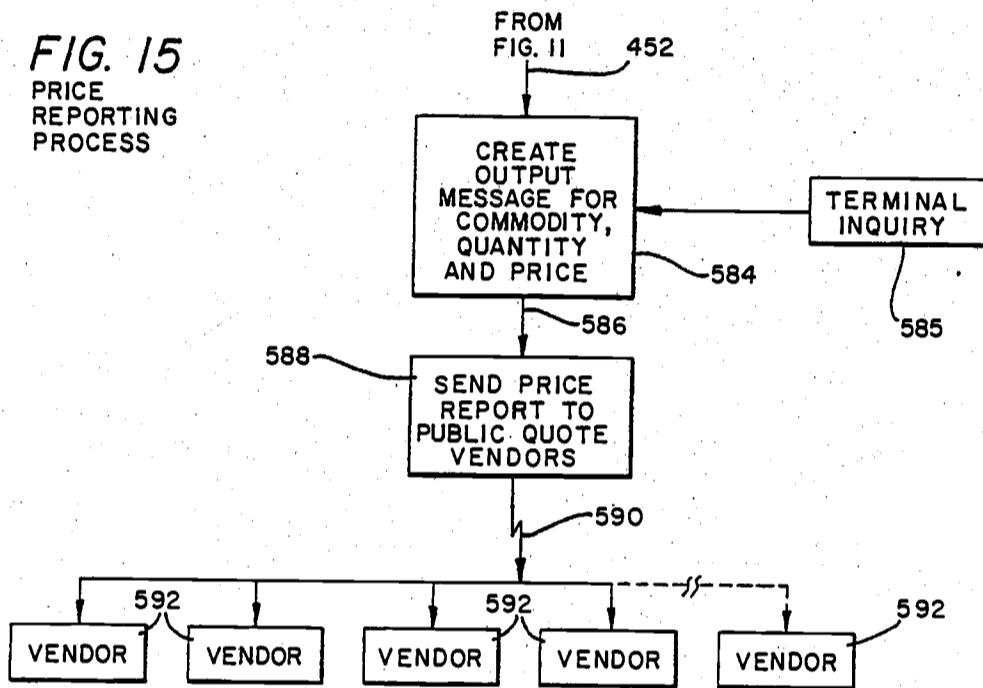


FIG. 16

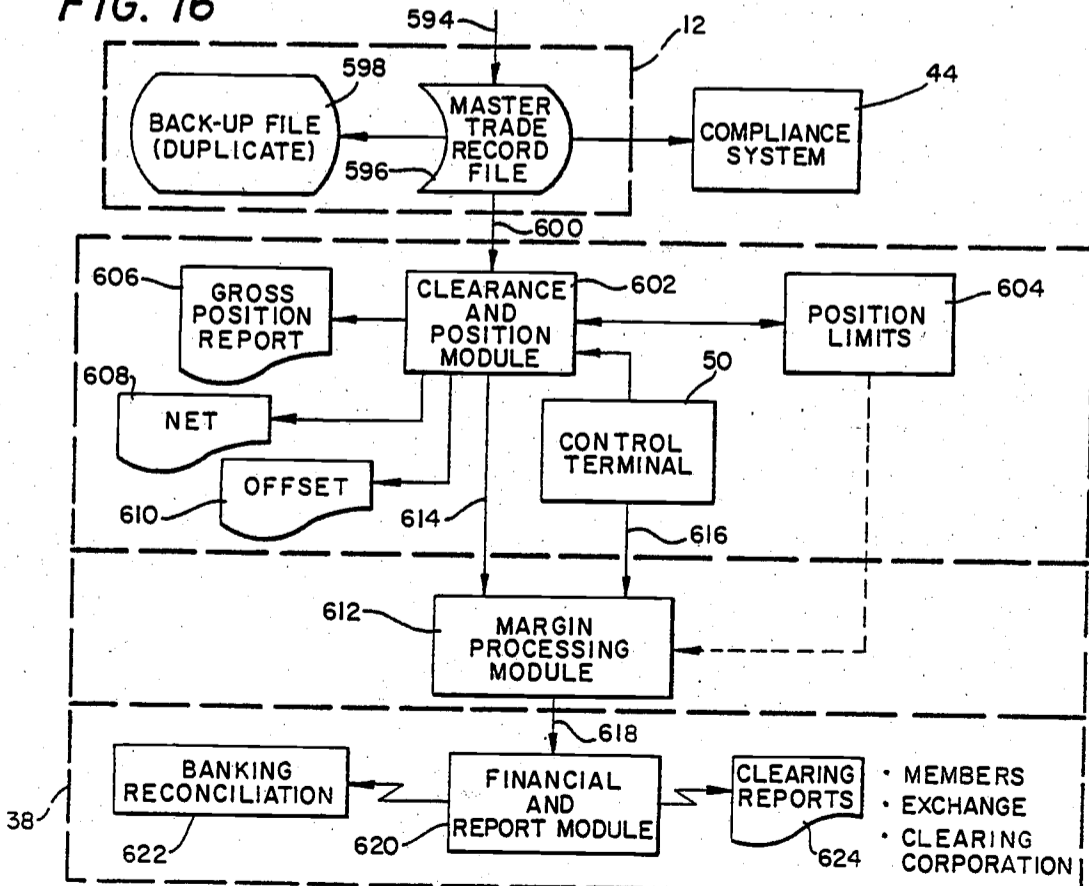




FIG. 17

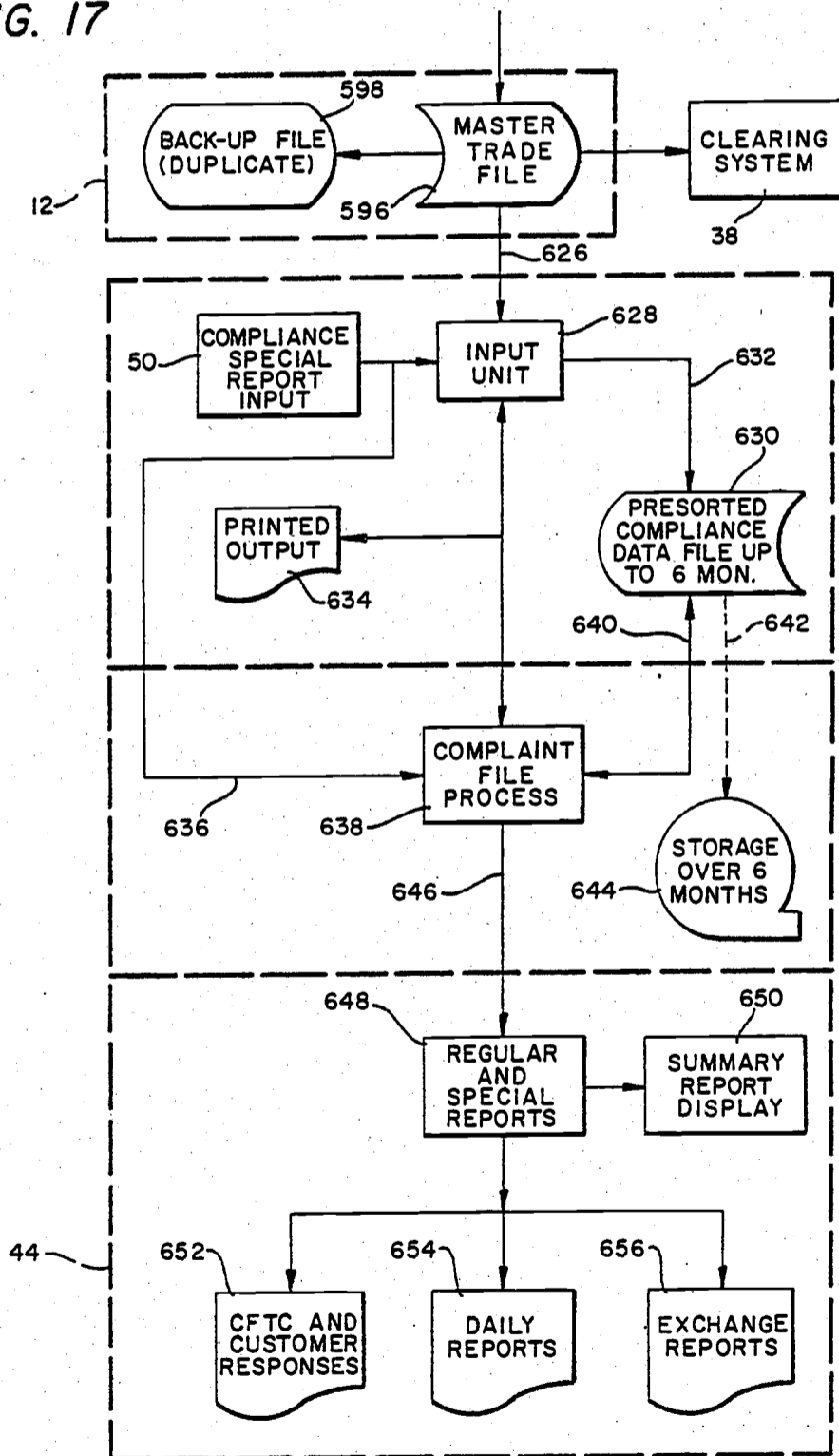


FIG. 19

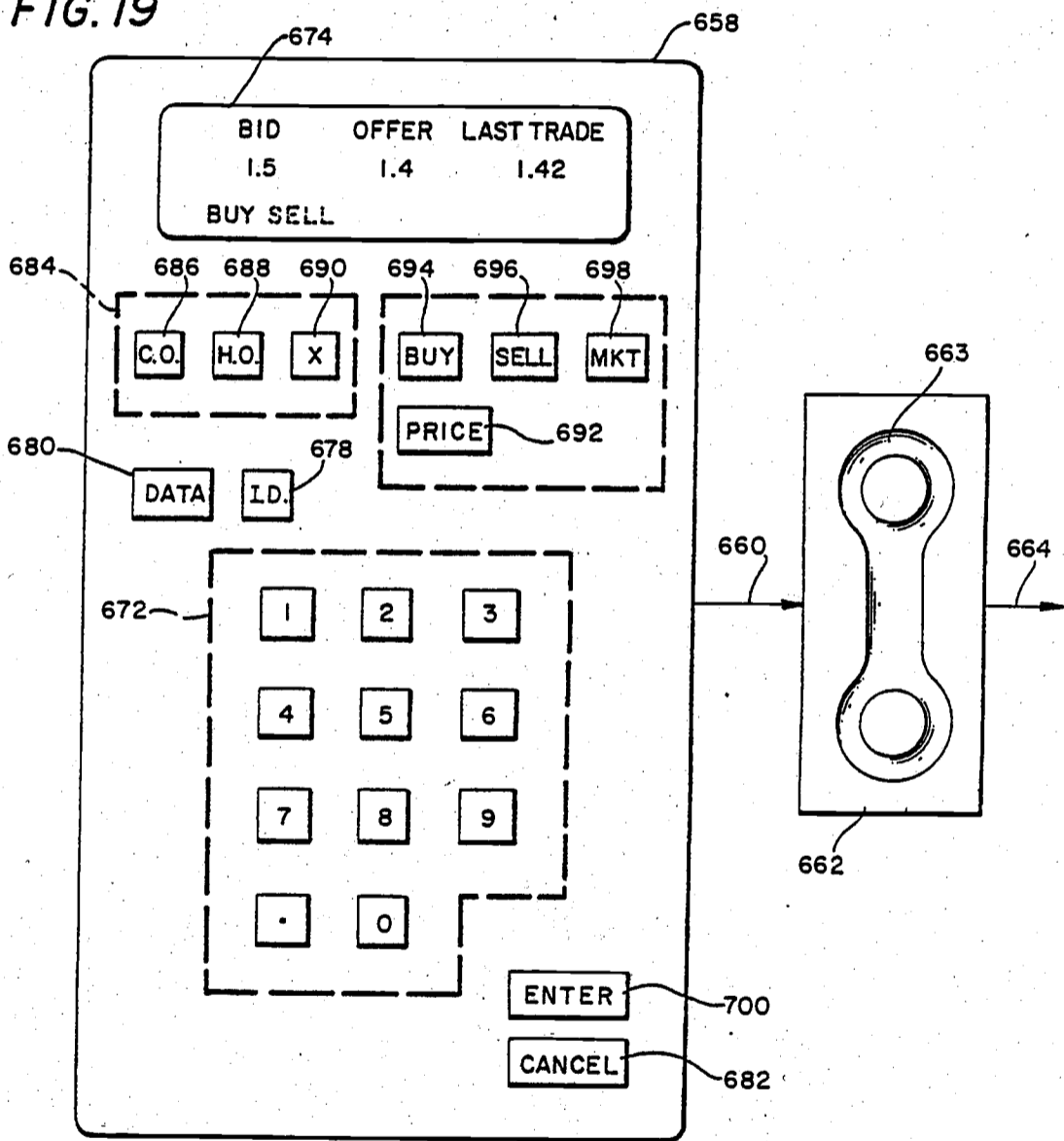
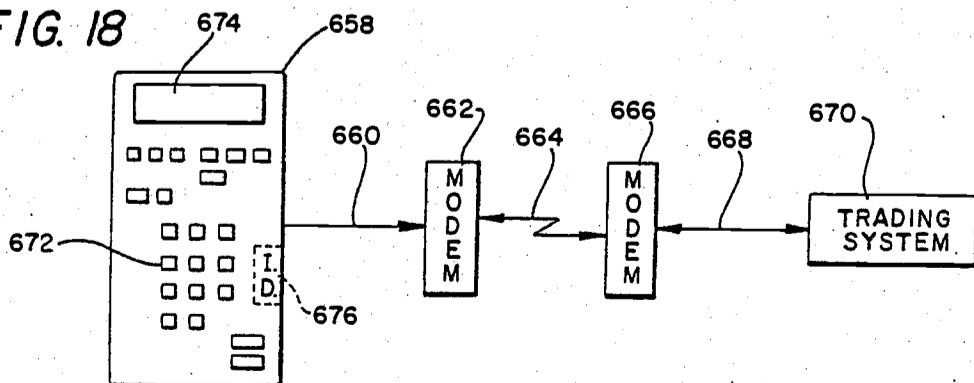


FIG. 18



## AUTOMATED FUTURES TRADING EXCHANGE

## FIELD OF THE INVENTION

The present invention relates to a futures trading exchange and in particular to an automated open outcry futures trading exchange having a central processor associated with one or more remote terminals through which trades can be made by members of the exchange who enter offers or bids at the remote terminal and couple them to a central processor which compares any bid with offers on a priority basis, finds a match and completes the execution of the transaction.

The major purpose of the futures marketplace is to provide a facility whereby large numbers of people can make bids and offers through a central location on a commodity contract in order to determine its market value. A second purpose of the futures market is to spread the risk of price changes in a business from a small group of people to a larger group of people. This process is known as risk management. The reason the risk can be spread is that speculators, in addition to hedgers, enter the market and provide liquidity when they recognize an economic benefit from changes in the prices of commodity contracts. The larger number of participants allows a hedger to identify a price level which takes into account his cost of doing business and his desired profit level and then to lock-in a price level by offsetting losses in the cash market with equal gains in the futures market. All of this must be done in such a way as to minimize fraud and manipulation of the marketplace and is conducted with the oversight of and under the direction of the federal government which establishes the required rules and regulations.

## BACKGROUND OF THE INVENTION

The method or process of trading futures contracts has remained virtually the same since the markets first opened in the 1800's. Use of state of the art technology in present systems has been limited thus resulting in major inefficiencies and opportunities for abuse. The futures trading system and markets, as they exist today, are the remnants of an archaic system. When an investor (hedger or speculator) wishes to trade on any of the futures exchanges, he is many times removed from access to firsthand trade data unless he is a floor trader. He must first call his broker who may have a direct line to a floor clerk but, generally, must call the trading room of the broker headquarters. The trading room calls the floor clerk who in turn relays the information to a runner. The runner relays the request for information or execution of a trade to the floor trader. The floor trader stands in a "pit" and executes a trade by shouting out his offer to sell, or buy, until someone across the pit signals that they will take the offered price (bid). When a trader thinks he has made a trade, he marks a trading card and a portion of the card is given to the exchange to begin the clearing process or accounting and funds collection process. This is known as the "open outcry" system because trading takes place in a central location in open view of a variety of participants. Most exchanges require that the trader enter the trade within one-half hour of the time a trade has been executed.

As can be imagined, there are many problems with the present archaic system. The markets were originally designed when there were a relatively few number of people who wished to participate in the process. As the number of participants have increased, it has meant that

those who are directly on the floor of an exchange are at a distinct advantage over those who are not physically present. First, when a customer asks a question as to what is taking place, the question is relayed through four or five people. An answer to a question is at most subjective because it is based on the observation of those who are on the floor. The floor trader will tell what he thinks is happening but he does not have the tools to be sure that his observation is correct. The advantage that a floor trader has is that if his observation is not correct, he can make an additional trade to correct the situation for himself. But a retail broker or customer may not be advised of a change and at worst may simply be given inaccurate information.

The opportunity for mistake or abuse has been acknowledged by regulators and exchanges alike. As the system presently exists, trades are not confirmed until after an exchange is closed for the day. Therefore, if a floor trader has traded in front of a customer in order to obtain a better price or has failed to execute a trade for fraudulent reasons, it is difficult to detect. Even when a trade has been properly executed the opportunity for abuse or mistakes is still high as will be discussed hereinafter.

On a traditional exchange, after a trade is made a card is handed to an exchange employee who then keypunches the data into the computer. At the same time trading cards must be manually sorted to match trades. At the end of the day the computer lists are checked against the trading cards to reach agreement as to the trades which have been made. As can be well understood, there, first, may have been a mistake in the key-punching process. Secondly, there may be a difference given in the two cards as to the price at which a trade was made and thirdly because the trades are based on eye contact, there may be a difference in opinion as to whether a trade was actually made at all. When there is disagreement, a list of "out trades" is made and agreement must be reached as to whether the trade was made at all and if so at what price. The nature of the discrepancy determines whether the trader, the broker, or the customer must bear the cost of an out trade. Again, because the customer is at a lengthy distance, he is at a disadvantage because he takes no part in the resolution process.

The accounting process also has its problems. Once the matching of trades takes place, the information is fed into the clearing process of an exchange. The present clearing process in most exchanges is a computerized process. However, since information is manually entered, after the fact of the trade, its value lies only in the accounting process and not in the control of the exchange process. The exchange only knows at the end of the day if a trader has exceeded his position limits or has incorrectly identified a clearing member or has provided other incorrect information. On most exchanges 300 to 400 individuals are required to process trading cards and complete the clearing function.

The surveillance of the system as it now exists (to insure proper operation and minimize mistakes and abuse) also has numerous problems. Surveillance is completed on existing exchanges through live observation. An exchange employee stands in the middle of a ring and observes trading as it takes place. With close to a 1,000 people on the floor of an exchange, observation is spotty at best. Some exchanges have programs for detecting illegal trade practices which are repetitive but

even when such practices are detected often the information available as evidence is inaccurate and unreliable.

The present invention, the automated futures trade exchange, has created an entire automated process for trading futures contracts which provides accurate and precise information, trading based on factual data, assurance of execution and immediate confirmation of the contracts, control through real time processing of information and electronic surveillance, and the use of computer hardware to implement the process. It does not separate clearing and surveillance from the futures trading process as do other exchanges because it is the combined process which allows the markets to function properly.

All trading conducted on the automated futures trading system will be effected through a central computer complex programmed to handle orders for the exchange's futures contracts. Access to this central computer will be available only through specially programmed remote computer terminals which will be distributed only to exchange members who will have a coded membership number. Each remote terminal will consist of a keyboard, a printer, on-line storage and a video monitor, the latter displaying a variety of information regarding the futures contracts traded on the exchange. Members will be able to utilize these terminals to transmit to the central computer bids and offers for their own accounts as principals or for the accounts of customers for whom they are agents. However, the system does not allow direct negotiations between members of the exchange as in the system disclosed in U.S. Pat. No. 3,573,747. Instead, the system acts as an intermediary among members and matches bids and offers and completes the transaction. Thus, the present novel system is an open outcry system since trading takes place in a central location in open view of a variety of participants.

When an order is transmitted to the central computer, its pertinent characteristics will be recorded including quantity, price, the time that the order was placed, and the capacity in which the order is entered; that is, whether as agent or principal. The exchange central computer will retain all orders received, arranging each bid and offer on the basis of its price, quantity and entry time and displaying all bids in descending order of price and all offers in ascending order of price. Thus, each bid or offer will become part of the market data displayed in every member's remote terminal video monitor. The breadth of the market will also be indicated. That is, whether a bid of 200 contracts represents one offer to buy 200 contracts or 20 offers to buy 10 contracts.

In addition, the video monitor of each remote terminal will display lot sizes, last sale prices, daily price ranges, the volume for each contract month, the spread relationships or price differential among the various contract months, and allows simultaneous spread trades (both in time and by commodity) to take place.

Pertinent to this process is the capability to modify prices at a remote terminal by moving a cursor on the video display to the bid or offer desired to be modified by the user which modification is then accomplished through the keyboard. The capability to see the display of buys and sells is analogous to the open outcry system of trading and is pertinent to good trading because it shows the supply and demand in the market. On the floor of an existing exchange, a trader would have a "feel" for the market but would not be able to relay to

a customer with any degree of accuracy information pertaining to the distribution of bids and offers.

The exchange central computer will automatically match equal bids and offers on a first come, first served basis thereby executing the transaction. Each transaction execution will be immediately confirmed to the members on both sides of the trade by the printing mechanisms of those members terminals. Each execution report will include information regarding the date, time, quantity and price of the transaction. The exchange central computer will be able to handle a full array of futures orders including straddles, limit orders and stop orders. Because bids and offers are transmitted from the remote terminals directly into the computer there will be no chance for an "out trade", that case where a trade is made but the bid and offer do not match. Moreover, because trading will be effected solely by the computer, a record will exist of the precise time each order was entered, the precise time it was executed and the precise time an execution report was transmitted.

Another important factor in trading is the capability to determine the liquidity of the market. Again, on the floor of an exchange a trader may note that trading is active but by the time information is relayed back and forth between the principal and the trader the price may have moved considerably or the bids and offers may no longer be present. No presently existing exchange can determine with accuracy during the trading the volume of trading immediately taking place. The present system will record trades exactly as they are made, when they are made, and thus a member would be able to determine the volume of trading taking place at any particular time and would have the information necessary to determine whether it is likely that he can come in and out of the market at his desired price level.

Each terminal on the system will be specifically designated to trade a certain number of contracts. Position limits for each principal are thus determined by the fiduciary capabilities of the participant. Under the present system of trading on exchanges, a member may execute trades far in excess of his limit without detection by the exchange. In the present trading system, limits will be programmed into each individual terminal thus further eliminating the possibility of "out trades" because an individual trader has exceeded his limits. During trading times live surveillance of the market will take place through control terminals at the exchange. Information may be fed directly into the surveillance system to detect the patterns of trading which may be manipulative and since all information is recorded as trading takes place, accuracy is assured.

All information from the trading system will be moved directly to the clearing system. Thus, there is no manual matching of trades and accuracy of the data is assured. Earlier and more rapid transfer of funds will be possible thus increasing the financial viability of the exchange as a whole.

It has been recognized for some time in the futures industry that multiple factors determine the pricing of commodities. Thus, the use of computerized analysis has rapidly developed and multiple tools for graphing and receiving information has been developed. But the process for trading and processing trades remains archaic. The present system provides a means of executing trades, validating the information, and notifying parties of pertinent changes without bias to those who

remote terminals 18 and 20. The remote terminals 18 and 20 may be either "smart" terminals or "dumb" terminals. Thus, if remote terminal 18 is a "smart" terminal, it may include a microprocessor 22 which would include a keyboard and a display for text editing which is associated with a memory or storage unit 24 through connection 26, a printer 28 through connection 30 and an output on connection 34 to modem 32. The output of modem 32 may be transmitted on common communication lines 36 to the modem 14 on the premises of central exchange 11.

The central processor of trading system 12 of the central exchange 11 receives bids or orders from the remote terminals 18 and 20. It is obvious that any number of remote terminals 18 and 20 may be used but for simplicity of the drawings and discussion thereof, only two of the remote terminals 18 and 20 are shown in FIG. 1. Each of the remote terminals 18 and 20 will be in the possession of an exchange member and are given an identification number for that member. The identification number must be entered into the system by the remote terminal 18 or 20 before the central processor of trading system 12 will accept the data from it. Thus, the central processor of trading system 12 validates each terminal input by checking the terminal identification number. If the identification number is correct, the central processor of trading system 12 stores the order in its memory queue by time, quantity and contract price. It then executes matching bids and offers and clears the trades simultaneously. The central processor of trading system 12 also reports the last sale by time, quantity and price by commodity or contract. It also reports all bids and offers as they are received and notifies the traders at the remote terminals of filled or unfilled orders. It can access its memory to report various market conditions and transactions and maintains a detailed trade history for each trade member. Finally, it provides the necessary trade data for settlement and compliance with the rules of the exchange.

A clearing system 38 receives data from the central computer of trading system 12 on connection 40 and clears all trades based upon exchange rules and the like as will be discussed more completely hereinafter in relation to FIG. 2. The output of the clearing system 38 is coupled to the output of the central processor of trading system 12 on line 42 for transmission as needed through modems 14 and 16 to the remote exchanges 18 and 20 respectively. In like manner, a compliance system 44 receives data from the central computer of trading system 12 on connection 46 and checks that data to see if it meets predetermined limits or requirements established for each exchange member. It also provides information on connection 48 to inquiry terminals 50 to answer inquiries from exchange officers who ensure that the system rules are being complied with. This will be discussed more fully hereinafter with relation to FIG. 2. A surveillance system 51 is coupled to the central processor 12 by connection 53 to enable exchange officers to review all information relating to trading.

FIG. 2 is a chart illustrating the systems relationships among the trading system 12, the clearing system 38 and the compliance system 44.

Thus, the trading system 12 receives the trade data and verifies the validity of the terminal submitting the data by terminal identification number or broker number as shown in block 52. It also stores data relating to the activity of any particular commodity so that all information as to what is happening immediately to that

commodity is available. Also it does trade matching by surveying all bids and all offers and finding a match, if one exists, between the bids and offers. It also coupled the trading information through connection 54 to the clearing system 38 as illustrated by block 56 so that the clearing system can determine the position of each member. Inasmuch as each member is limited in the amount of trading that can be done, the clearing system 38 is constantly checking so that the limitations cannot be violated. In addition, the output of the trading system 12 from block 52 on line 54 is also coupled to the compliance system 44 to block 58 in order that traders or member's activities can be monitored and reports can be compiled illustrating the actual trades of each of the members or traders.

Also, the trading system 12 will provide news and statistics relating to a particular commodity such as movement of oil, changes in prices and the like as well as a morning market report as illustrated by block 60.

In addition, the trading system 12, as represented in block 62, provides for each remote terminal the number of trades open and outstanding and thus provides interim position reports by personal identification number of the trader or member. That information is also coupled on line 64 to block 66 of the clearing system 38 which makes preparation for delivery notice and allocation and tracking and thus keeps track of what orders were received from whom and sold to whom, where and the like. In addition it keeps track of the margins or monies required relative to delivery of commodities. It also provides for a release to the exchange when the plans of both the buyer and the seller change. Further, the trading system 12 provides for market surveillance which allows exchange officers to monitor all trades taking place so that any peculiarities in trading can be detected thus preventing fraudulent trades or manipulations of the market.

Also, as represented by block 70 in the trading system 12 of FIG. 2, the trading system 12 can provide communications with traders or members through their remote terminals and report delivery of commodities and any commodity pricing information to any trader or member. In addition, the trading system 12 can receive administrative position reports and transfers from the clearing system 38 in block 72 on line 74 and communicate that information to traders or members. Also, as represented by block 76 in the trading system 12, after hours entries including housekeeping functions, such as transfers and corrections, can be sent to block 72 of the clearing system 38 on line 78 so that the clearing system 38 can use that information for accounting, investing and the like.

In addition, the trading system 12 can provide position limit controls for the members or traders as illustrated by block 80 and thus keep track of the amount of trading that any one particular terminal is allowed to handle. Finally, as represented by block 82 of the trading system 12, security of the system can be maintained as, for instance, checking the number of the terminals on the line and their identification numbers.

In regard to the clearing system 38, as stated earlier, block 56 receives data on trading from the trading system block 52 and keeps track of the trading positions of each of the members. Also, as represented by block 84 in the clearing system 38, margin requirements for each of the members are maintained, so that the margin requirements are tabulated and kept on file. Further, as

shown in block 72, the accounting functions are maintained by the clearing system 38.

When actual delivery of commodities is required, the clearing system 38 keeps note of that information as represented in block 86. Finally, as represented in block 88 the clearing system maintains a file of physical verifications of what took place over some period of time as for instance whether actual deliveries of commodities were made or the trade was just a paper exchange.

The compliance system 44 as represented in block 90 keeps track of the time sorted trade activity for any particular trader or clearing member. Thus, a file history of each trader is maintained.

Also, as stated earlier, the compliance system 44 as represented by block 58 provides trader member reports on all of their activity so that this activity can be monitored.

In addition, as represented by block 92, a complete history of all trades of any particular trader is maintained including the date of the trade, the price of the trade, the quantity, the commodity and the like.

Block 94 of the compliance system 44 relates to special programs which may be maintained for special problems which are to be monitored for compliance. In addition, block 96 of compliance system 44 represents a monitor for patterns to enable detection of trading irregularities, transfer of positions, cross trades and the like. Also, as represented by block 98, the financial condition of each member is maintained and a warning of a dangerous financial condition of a member is provided for monitoring purposes. This history of record of the members' financial positions as traders is recorded as represented by block 100 for monitoring by exchange officers. In addition, block 102 represents the position of the traders relative to their net worth and thus enables the trade exchange officers to analyze the risk involved in allowing a trader to operate in the system under certain limits which are set. Finally, block 104 represents a check list of certain factors relating to each trade exchange member to assure that they are in compliance with the regulations established by the exchange.

Thus, as can be seen in FIG. 2 the trading system 12, clearing system 38, and compliance system 44 work with each other to transact trades, monitor the operation of the exchange, ensure that all traders are operating within preset parameters, and maintain a history of the operation during the automated processing so that compliance with preset conditions is maintained and the trading history of each member is reviewable.

FIG. 3 is a diagrammatic representation of a remote terminal 18 which is coupled by a local communication lines 36 to a host or central processor of the trading system 12 of the futures trading exchange 10 shown in FIG. 1. The remote terminal 18 includes a keyboard 106 having keys 108 for the entry of data and which produces output signals on line 110 which is coupled to a terminal 112. As stated earlier, the terminal may be either a "dumb" terminal or a "smart" terminal. If it is a smart terminal, it may be a microprocessor having its own internal memory as well as additional external memory 114 coupled thereto by means of lines 116 which may be used for additional storage. The information stored by the terminal 112 may be displayed by video display 118 or printed by printer 28. Video display 118 has thereon a cursor 120 which is movable by activation of certain of the keys 108 on keyboard 106. When the processor 112 receives information from the central processor in the futures exchange system 10, it

arranges the received bids or offers on the basis of price and the time received by the central processor and displays in the remote terminal 118 the arranged bids and offers and displays all bids in descending price order and all offers in ascending price order. If the user's bid or offer needs to be modified, the movable cursor 120 on the display 118 may be moved along the displayed bids and offers of the user and the data therein modified through keyboard keys 108. All of that information is, of course, stored in the terminal 112 and associated memory 114. The communication that needs to take place with the trading system 10 is done on line 34, through modem 32 and local communication lines 36 to the central processor in the trading system 12 of futures trading exchange 10.

An example of a system for operating from a remote terminal 18 to the central processor 13 of the automated trading system 12 is illustrated diagrammatically in FIG. 4. The order is keyed into the system through keyboard 106 and keys 108 thereon. The information typed into the system would include price, quantity, whether it is a buy or sell order, the type of contract (commodity type), the account type (whether its personal, customer, broker, and so forth) and the identification of the clearing member (or whether the buyer or seller is sponsored by a clearing member). This information is coupled in code via connection 110 to the processing unit 122. Also coupled to processing system 122 is code unit 124 which automatically produces a terminal identification signal on connection 126 which is transmitted first by the processing unit 122 on local transmission lines 128 to the host or central processor 13 of the trading system 12. The terminal I.D. number may include the account type (the terminal identification number), the clearing member identification number, the trader identification, and transaction number. The central computer 13 processes this order and stores it in the pending file 130 of its memory. It can also display the information on display 132 and print it with printer 134.

The details of the processing of the incoming order by the central processor 13 is shown in FIG. 5. In addition to one order being generated by a remote terminal 136 and sent to the central processor 13 via communication lines 138, other orders are being received from other terminals 142 and are coupled through local communication lines 142 to the central processor 13. After the signals are received by central processor 13, they are processed through a comparator 144 which compares all offers to bids and all bids to offers to see if the order can be matched with a corresponding bid or offer and processed or executed. If it cannot be executed, it is coupled through line 146 to a commodity or contract price file 148 where it is stored according to time received, price asked and quantity of the commodity. This information, of course, may be coupled to a display 150 through connection 152 for visual inspection.

If the comparator 144 determines that the order can be matched or executed, it produces an output on connection 154 which is coupled to pending file 156 and stored. If the order can be matched with a corresponding bid or offer, the execution of the trade takes place and the information is coupled through connection 158 to printer 160 for confirmation of the execution. In addition, the output of pending file 156 on line 162 is coupled to printer 162 for printing of the confirmation of the order received. Obviously a common printer may take the place of both printers 160 and 163. Finally, the

stored information in pending file 156 may be coupled through connection 161 to display 164 where that information can be viewed by operators of the exchange.

Further details of the system of FIG. 5 is shown in FIG. 6. Thus the host or central processor 13 can receive cancellation of orders, modification of orders or orders that can be executed. Again, if comparator 144 finds that a match occurs with a particular order and an execution can occur, a signal is produced on connection 153 which is coupled to comparator 155 which determines whether or not there is a new high or new low price. If a new high or a new low price is determined, that information is coupled through connection 157 to the memory 159 where the commodity file and the day file is updated with the new high or the new low price for that day and for that commodity. That information is also coupled through connection 163 to memory 165 to update the central processor price field and quantity file. In addition, of course, the confirmation of the order and the execution and the display thereof is taking place as shown in FIG. 5.

If comparator 144 determines that the order cannot be executed because it is a particular type of order or because it has been cancelled or modified or does not match a bid or offer, the signal is coupled to comparator 166 which determines the type of contract or commodity to which the order relates and then couples that information on connection 167 to another comparator 168 that determines whether the order is a bid or an offer for that particular type of commodity. If it is an offer, the signals are coupled through connection 170 to memory queue 172 which records the offer in the queue by time, price and quantity.

If comparator 168 determines that the order is a bid, it produces an output on connection 174 which is coupled to memory 176 where the bid information is recorded in the bid queue by time, price, and quantity. Thus, the information is stored for future use when a match can be found. In like manner, if the order is a cancellation or modification of either an offer or a bid then the bid queues and offer queues are modified accordingly.

A more detailed diagrammatic illustration of the central processor 13 and the processing system of the futures trading exchange 10 is set forth in FIG. 7. The input on common communication lines 178 from the remote terminals (18, 20 in FIG. 1) is received by the central processor input terminal 180 which produces an output on line 182 that is coupled to a comparator 184. The comparator looks at memory 186 through connection 188 to compare the signal codes received with a stored trader and contract file code. If the input signal cannot be verified that the terminal and the trader are valid, a signal is produced on line 190 which is sent back to the remote terminal indicating that the input signal is not acceptable. If the comparator 184 determines that the input signal is valid then it produces an output on line 192 which is coupled to transaction identifier 194. This unit 194 determines whether the transaction is a new order, an administrative inquiry, or a morning wakeup or retransmit process.

If an administrative inquiry is received from a remote terminal, a signal is produced on line 196 which is coupled to memory 198 for retrieving the information in the files about which the inquiry is made. An output is then produced on line 200 which is retransmitted through common communication lines 202 to the remote terminal requesting the information.

If morning wakeup information is required or a retransmission of data is required, the output of identifier unit 194 on line 204 is coupled to the memory 206 to obtain the information for the morning wakeup and the output on line 208 is again transmitted through local communication lines 202 to the remote terminal requesting the morning wakeup.

If identifier unit 194 determines that the incoming signals constitute a new order, it produces an output on connection 210 to the order process circuitry 212 in the central processor unit for processing. The output of circuitry 212 on line 214 is coupled to a time stamp unit 216 and sent through connection 218 to the memory history file 220. Thus, a file history of all orders is kept in memory 220.

As the order is time stamped and filed in the history file of memory 220, it is also coupled through connection 222 to decision unit 224 which decides whether the order is a buy or sell order. The processing of the buy and sell orders are exactly the same and so only a discussion of the buy order processing will be disclosed in detail. The signals which are produced by decision unit 224 on line 226 and coupled to the sell processing network will be the same as that which is discussed for the buy processing network except that separate storage queues would be used. The output of decision unit 224 on 228 occurs if the order is a buy order and is coupled through decision unit 230 which determines whether or not the order is an immediate order or a conditional order. The output of decision unit 230 on line 232 is coupled to circuit 234 if it is an immediate order or is coupled to circuit 236 for processing if it is a conditional order. If the conditional orders considered by circuit 236 meet all of the required conditions, then a signal is produced on line 238 which is coupled to the immediate order circuit 234 for processing.

The immediate order processing circuit 234 in FIG. 7 is shown in detail in FIG. 8. The output of decision unit 230 on line 232 is coupled to open order memory queue 240 if it is a market order, to open order memory queue 242 if it is an order modification request and to open order memory queue 244 if the input is an order cancellation. These memory queues store the signals on a first come, first served basis.

If the input signal on line 232 is a market order, it is placed in open order queue 240 which produces an output on line 246 which is coupled to a detector 248 which checks to see if the order would match with a corresponding existing open order. If no match occurs, the output signal on line 250 is coupled back to the open order queue 240 to maintain the market order so that the order can be continually sent to detector unit 248 until a match is found. If a match is found, the detector unit 248 produces an output on line 252 which is coupled to timing unit 254 where the order is time stamped at the time the transaction takes place. The signal is then coupled on line 256 to memory 258 where the transaction is recorded and transferred via line 260 to master trade file 262. Also, the output of memory 258 on line 264 is coupled to a confirmation circuit and an execution circuit. The order is confirmed in confirmation circuit 266 which produces an output on line 268 that is coupled to a terminal 270 where the confirmation is broadcast to the buyers and sellers at the remote terminals on common communication lines 272.

At the same time, the signal is also coupled to execution circuit 274 which determines that there is a matched trade and stores that information. The infor-

mation is also coupled on line 276 to a price reporting system 278 which transmits the signal on common transmission lines 280 to vendors 282 who desire the price quotations. At the same time, the circuit 274 produces an output on line 284 to terminal 286 to broadcast the last sale to buyers and sellers over communication lines 288 to remote terminals.

If the order received on line 232 from decision unit 230 in FIG. 7 is a modification order, it is coupled to open order queue 242 which produces an output on line 290 to match determining unit 292. If no match can be found for the modified order, an output signal is produced on line 294 which is coupled to order confirmation unit 266 and sent back to the remote terminals as a confirmed received order as indicated previously.

If a match can be obtained, unit 292 produces an output on line 296 that is coupled to time unit 298 which time stamps the modified order and sends the signals on line 300 to a memory 302 which deletes the old trade information stored in master file 262 and adds the new data via line 304. At the same time, it produces an output on line 306 which is coupled to the execution matching trade unit 274 for processing as indicated previously.

If the signals received from the decision unit 230 on lines 232 in FIG. 7 are cancellation order signals they are sent to open order queue 244 which produces an output on line 308 to matching unit 310. If a match has already occurred indicating that the bid or offer has been accepted and cannot be cancelled, a signal is produced on line 312 which is coupled to the time stamp unit 298 and is processed as described previously. If no match occurs, indicating that the order is open and outstanding and can be cancelled, a signal is produced on line 314 which is coupled to the execution circuit 274 for execution and the order confirmation circuit 266 both of which are transmitted to the remote terminals as described previously.

The conditional order circuit 236 in FIG. 7 is disclosed in detail in FIG. 9. If the signal produced by decision unit 230 on line 232 in FIG. 7 is a conditional order it will be coupled on line 232 to the conditional order circuit shown in FIG. 9. The conditional orders are either "fill or kill" or "limit up," "limit down," "time order," "at market", "stops," and "spreads/straddles." Other types could be established if needed or desired. If the conditional order is a "fill or kill" order it is coupled to open order memory queue 316 where it is stored and an output produced on line 318 to circuit 320 which determines whether or not the "fill or kill" conditions can be satisfied. If the order can be filled, circuit 320 produces an output on line 322 which is coupled to match circuit 248 in FIG. 8 and the signal processed as described previously. If the condition cannot be satisfied, then the order is killed by an output being produced on line 324 which is coupled to time stamp unit 298 in FIG. 8 which produces an output on line 300 to the delete data circuit 302 for executing the cancellation in Master Trade File 262 as explained earlier and to confirmation circuit 266 where the signals are processed as described previously in relation to FIG. 8 and confirmed to the remote terminal.

If the signal on line 232 from FIG. 7 is a conditional order other than a "fill or kill" order it is coupled to open order queue 334. That memory produces an output on line 336 which is time stamped at unit 338 and stored in master trade file 330. In addition, that information is coupled from time stamp unit 338 on line 340 to

the matched trade information circuit 274 and order confirmation circuit 266 for processing as described earlier with relation to FIG. 8. Open order queue 334 also produces an output on line 342 to decision unit 344 to see if the conditions are satisfied. If they are not, they are returned through line 346 to open order queue 334 for reprocessing in an attempt to satisfy the condition. If and when the condition is satisfied, the output of circuit 344 on line 348 is coupled to the match decision circuit 248 in FIG. 8 for processing as described previously.

The flow chart for the remote terminal or trader system is shown in FIG. 10. A trader at the remote terminal site, enters data into the system through a keyboard input 350 which produces data signals on line 352 indicating either an order or data request. The decision unit 354, whether the signal is an order or a data request, couples those signals through line 356 to a decision circuit 358 to decide whether the data requested is order data or price data. If it is order data, the signal is coupled on line 360 to a unit 362 which stores the order as a pending order by contract or commodity, price and quantity. This information is stored in memory 364 and can be coupled to line 366 for display by display unit 368. In like manner, if the requested data is price data, decision circuit 358 produces an output signal on line 370 which again is coupled to a circuit 372 which searches for and retrieves data from the memory by contract (commodity) and price. This information is obtained from memory 374 and can be coupled through line 376 to display 380 for display for the operator.

The data entered by the trader through keyboard 350 as order data or a data request to the control processor of the futures exchange is coupled through line 382 to a circuit 384 which assigns a transmission number and appends the appropriate terminal identification number. The circuit 384 also produces an output on line 386 which couples order data to display 388 and to a circuit 390 which loads that information on line 392 to memory 394 for storage purposes as a pending order.

After circuit 384 assigns the transaction number and appends the terminal I.D. number to the data, the data then is coupled through connection 396 to modem 398 for transmission on common transmission lines 400 to the central processor of the futures trading exchange.

FIG. 11 is a flow chart diagram of the exchange system wherein the central processor 12 receives the incoming orders or data requests, processes them and retransmits the pertinent information to the remote terminals for storage. The exchange system receives the order information from the remote terminal on line 400 and where it is received and stamped according to the time received as at step 402. The signal is then coupled on line 406 to a decision circuit as at step 408 which determines whether or not the order is valid and whether the terminal is valid. This step simply compares the codes received from the remote terminals with the codes stored in the central processor and if it determines that the received signals are not valid an output is coupled on line 410 to decision step 412 which decides whether the terminal is invalid or the contract or price is invalid or both and, if the terminal identification is invalid, it produces an output signal on line 414 which is coupled to step 416 which formats a message indicating that the terminal identification number is not authorized and is rejected. This information is not only coupled on line 418 where it can be printed as at step 420. It is also coupled through line 422 to a storage unit as at step 424 for storage in the master file. The rejection



signal on line 418 is also coupled to a circuit as at step 426 which sends the message signal indicating that the terminal is unauthorized on line 428 to a modem unit as at step 430 which produces an output on line 432 that is the common communication line to the remote terminal.

If it is the contract (commodity), price or quantity that is determined to be invalid, the signal is produced by a decision unit as at step 412 on line 434 to a circuit which formats a message as at step 46 indicating that the contract or price range is invalid and a rejection signal is produced on line 438 which again is coupled to a circuit to produce an output as at step 426 on line 428 which is transmitted to the remote terminal as stated previously.

If the signal received from the remote terminal is valid, an output signal is produced as at step 408 on line 440 which is coupled to a decision unit which determines the signal to be either a conditional signal or a market signal as at step 442. If the signal is a conditional signal, it is coupled through line 444 to an order queue circuit for processing as at step 446 as will be described later in relation to FIG. 13. If the signal can be processed, an order queue produces an output as at step 446 on line 448 which is coupled to a match circuit. In that circuit as at step 450, the buys are matched with offers and sells are matched with buys and those orders are time stamped.

If the decision circuit determines that the order is a market order as at step 442, then it produces an output signal on line 452 which is coupled to a match determination circuit. If no match can be found as at step 454, a signal is produced on line 456 which is coupled to resubmit circuit which transmits the signal as at step 458 on line 460 back to the input of the match circuit which continues trying to match the order with a corresponding buy or sell as at step 454. When a match is obtained, an output signal is produced on line 462 which is coupled to circuit where the buy is matched with a sell or the sell with the buy and the transaction is time stamped as at step 450.

The output of the time stamp circuit at step 450 is coupled first on line 452 to price reporting system which is shown in detail in FIG. 15 and which is a public price reporting process as at step 454 to enable the public to see the price of the transactions that are occurring.

The output of the time stamp unit at step 450 is also coupled on line 456 to decision unit which determines whether or not the total quantity of the order can be satisfied as at step 458. If only part of the order can be satisfied and there is a partial match, that portion which is not matched is coupled through path 460 back to the order queue where it is reprocessed as in step 446 until a match can occur.

If a match can occur for the received order, the output of step 458 on line 462 is coupled to a unit which prepares the confirmation message to be sent to the buyer and seller at the remote terminals as at step 464. This output is coupled on line 466 to a modem which transmits the signal on line 432 back to the remote terminals as at step 430.

In addition, the modem unit produces an output signal at step 430 on line 468 which is coupled to a master trade file in the central processor which creates a master trade record including one record for the buyer and one for the seller as at step 470. This record enables an output on line 472 to be stored in the master file index as

at step 474 which can be accessed by the clearing system as at step 38, the compliance system as at step 44, and surveillance system as at step 51. These systems are used as has been described earlier with reference to FIGS. 1 through 9.

FIG. 12 is a flow chart of the processing of the information transmitted from the exchange system central processor 12 back to the remote terminal 18 or 20. The data from the central processor 12 is coupled on line 432 to the confirmation circuit as at step 476 in the remote terminal 18 or 20. That information is coupled through connection 478 to the printer which produces a hard copy of the confirmation message as at step 480. The output of the confirmation circuit at step 476 is also coupled through connection 482 to the pending file control circuit as at step 484 which produces an output on connection 486 to delete the pending order stored in memory as at step 488 if the order has been filled. Thus, as an order is matched and confirmed, it is deleted from the remote terminal pending order file at step 488.

The pending file control circuitry also produces an output on line 490 which is coupled to decision network to determine whether an order or a trade has been completed as at step 492. If the trade has been completed, the decision network at step 492 produces an output on line 494 which is coupled to a trade confirmation circuit at step 496 that produces an output on line 498 to cause a control circuit to produce an output at step 500 on connection 502 which stores the completed order in memory as at step 506. The display at step 508 is coupled to the memory at step 506 through connection 510 and the filled order can be displayed for visual observation. Also, a printed copy of the order can be produced by the printer at step 512.

FIG. 13 is a flow chart diagram of the order queue shown as step 446 in FIG. 11. If the decision network at step 442 in FIG. 11 decides that the incoming order is a conditional order, it couples a signal on line 444 to be prioritized by time, price and quantity as indicated at step 530. The output at step 530 is coupled on line 532 for automatic updating and filing as at step 534 which is disclosed in detail in FIG. 14. Step 530 also produces an output on line 536 to a code unit which appends the condition code to the order as at step 538. Thus, a code exists for price limit condition, for the time condition, or the stop condition. Whichever condition is attached to that particular order, it is coded in this step 538 and the output is produced on line 540 to a network which scans the open order file in the central computer to see if a match can occur for those particular conditions as at step 542. Sellers look to the stored bids and buyers look to the stored offers. That output on line 544 is coupled to decision unit to see if a match can occur as at step 546. If no match can be made under those particular conditions, the request is sent back on line 548 to the input of the open order file to continue to scan the open files looking for a match as at step 542. If a match can occur, an output is produced on line 550 to a control unit which deletes the order from the open order file as at step 552 and produces the output on line 448 to a match circuit as at step 450 shown in FIG. 11 where the order is time stamped.

As will be recalled with relation to FIG. 11, if only a part of an order can be satisfied, the part of the order which could not be matched is coupled on line 460 to the prioritizing circuit as at step 530 in FIG. 13 and the signal is processed as described previously in relation to a conditional order.

An automatic update file at step 534 receives the data on line 532 from the prioritizing network at step 530 and updates the files automatically to keep track of the conditional orders. The automatic update file process at step 534 produces an output on line 428 which is coupled to the input of a send confirmation circuit at step 430 in FIG. 11 from where the information is sent back to the remote terminal for storage.

The details of the process of automatic updating the files at step 534 are shown in the flow chart set forth in FIG. 14. The information is received from the prioritizing network as step 530 on line 532 and is coupled to a decision network as at step 554 in FIG. 14. If the signals are representing a trade, they are coupled on connection 556 to control circuit which stores that information at step 558 in computer memory at step 560. A signal is also produced on line 562 to a unit at step 564 which prepares a message for distribution to the remote terminals. This output message on line 566 is coupled to transmitting unit at step 568 for transmission on line 428 to the remote terminals.

If the message received is for an order, a decision unit produces an output at step 554 on line 570 which is coupled to an assignment order update control unit that produces an output at step 572 on line 574 and stores the data in the order update file at step 560. The assignment order update unit at step 572 also produces an output on line 576 to a message preparation unit at step 578 that prepares the message and couples it on line 580 to a transmitting unit at step 582 which produces an output on line 428 to the remote terminals.

The public pricing reporting process at step 454 in FIG. 11 is disclosed in detail in FIG. 15. The signal on line 452 from a match circuit at step 450 in FIG. 11 is coupled in FIG. 15 to message creating unit at step 584 which creates the output message for the contract, the quantity and the price. That message is coupled on line 586 to a transmitting unit at step 588 which sends the price report to the public quote vendors on commercial communication lines 590 to various users represented at step 592.

FIG. 16 is a detailed diagrammatic representation of the clearing system 38 as well as its association with the trading system 12 and the compliance system 44. Thus, trading system 12 collects all trade activity and input data on line 594 and forwards it to the master trade record file 596. The master trade file also transfers information to backup file 598 for redundant purposes. Thus, the master file 596 contains all trade related data which supports both the clearing system 38 and the compliance system 44. Master file 596 serves as an audit tool so that all buy and sell transactions are maintained in the record for review at a later date.

Clearing system 38 establishes Commodity Futures Trading Commission (CFTC) requirements and regulations to be observed during the trading process. It determines the validity of each transaction by comparing the transaction data with the CFTC requirements and regulations. The clearing system 38 receives data from the master trade file 596 on line 600 and sorts the data by clearing member and trade type (house/customer). Further, the clearance and position module 602 calculates the gross position report for the CFTC. This means that it keeps track of all trades of any member in total. It compares trades with position limits established at position limit unit 604 to see that the trader is staying within limits which are set by the exchange through control terminal 50 on lines 606. Thus, the exchange enters

through control terminal 50 (a keyboard, for example) the data necessary to establish position limits for each customer and stores those in clearance and position module 602. The gross position report of any particular trader can be made into a printout at 606 so that a written copy of the position of each member can be obtained as necessary. In addition, the clearance and position module 602 calculates net and offset positions by clearing member (house, customer and total). These positions can also be printed at 608 and 610 to have a written report. Thus, clearance and position module 602 verifies position limits and open positions by commodity and members.

In addition, clearance and position module 602 forwards positions through the margin processing module 612 on line 614 for margin calculation. Again, the margin limits are established through control terminal 50 which couples an output on line 616 to the margin processing module 612 for establishing those limits. At that point, the margin processing module 612 calculates original (initial) and variation margin requirements. It also calculates advance and special margin requirements which have been entered through control terminal 50. It summarizes margin requirements by clearing member and house/customer activity. This data can then be forwarded on line 618 to the financial and report module 620 which prepares clearing reports for clearing corporation members and the exchange. It provides a trade register, position and margin summary and the like. It updates the bank account and provides information for reconciliation module 622. It also prints the clearing reports at 624 where written reports are desired. These written reports can be made available to the exchange itself, to members of the exchange, and to the CFTC.

FIG. 17 is a detailed diagrammatic representation of the compliance system 44 as well as its association with the trading system 12 and the clearing system 38 as shown in FIG. 16.

The compliance system 44 establishes predetermined criteria necessary to detect illegal trade practices or trade patterns which would adversely affect the commodity market and automatically compares the transaction data with the predetermined criteria thereby enabling detection of any such illegal trade practices or trade patterns. It also records various reports of members as described hereafter and provides reports to the CFTC as required.

The input to compliance system 44 on line 626 is received from the trading system 12. Since the compliance system is intended to ensure that no manipulations of the market are occurring, it receives all order and trade related data at input unit 628 and sorts the data by major category such as the trader, clearing member, contract, price and time of buy or sell. That information is coupled to memory 630 on line 632 for storage and thus a standard file is built up by major category for retrieval or analysis. If for any reason any of that information needs to be checked to ensure that no irregularities are occurring in the market, the requested data is entered through a keyboard of inquiry/control terminal 50 and the information is either displayed or printed as an output at 634. In addition, if there are complaints by customers, traders, and the like, that information is entered through keyboard 50 and coupled through lines 636 to complaint file 638. Those complaints are stored and if the enforcement staff needs to make inquiries concerning those complaints they can enter a retrieval

input through keyboard 50 and the particular complaint access can be printed or displayed at 634. Also, those complaints are coupled through line 640 to the data file 630 where they are stored for up to 6 months. Any information over 6 months is coupled through line 642 to storage 644 for longer storage. The complaint file storage 644 maintains a tape record of all transfers over 6 months old in predetermined format. Also, it can notify staff of the aging of complaints through the printer 634 and monitor any responses from the staff.

Finally, the information stored in the complaint file 638 can be coupled through line 646 to unit 648 which prepares daily and monthly reports. They can be displayed on screen 650 and distributed as necessary in the form of a hard copy to the CFTC and the customers at 652. The daily reports can be printed at 654 and the reports for use by the exchange can be printed at 656. Thus, the compliance system 44 time sorts all trade activities, provides trader/member reports, keeps a detailed history of all the trading activities of any trader/member, enables special programs to be activated in order to detect any unusual patterns of trading, provides data on crossed trades including transfer of positions and trading irregularities, provides an early warning when trading data illustrates some irregularity, keeps track of the members financial positions by maintaining information on fiduciary status, provides an analysis of any risk which may accompany any particular type of trade based on the members financial capabilities, and amount of trades and also provides an audit checklist so that any trading pattern histories can be reviewed and followed up.

FIG. 18 is a diagrammatic representation of a portable terminal coupled to the trading system for communicating buy, sell and trade information to and from the trading system by telephone. The portable terminal 658 is shown coupled through line 660 to modem 662 which translates the information into data sufficient for transmission on telephone line 664 to the trading system modem 666 which produces an output on line 668 and is coupled to the trading system 670. The modem 658 includes a keyboard 672, a display 674 and an identification circuit 676. This system enables the trader to carry a portable terminal to some location apart from his remote terminal and allows him to communicate with the trading system over the phone lines to determine the highest bid made, the lowest offer made and the last trade price of a particular commodity. The information received from the trading system is displayed so that he can make the proper decision. He can then make an offer or bid at a price he selects or at the market price. The bid or offer which the user makes is also displayed. When he is satisfied with the offer or bid he wants to make, he can enter the data which is then transmitted to the trading system 670. The trading system 670 first inspects the identification number which is transmitted from the portable terminal 658 and if the identification number is acceptable, the trading system will either return the requested data to the remote terminal or accept the transmitted data from it.

FIG. 19 is a schematic representation of the portable terminal itself illustrating the details thereof.

The portable terminal 658 includes a display 674 and a numerical entry keyboard shown generally at 672. When it is desired to communicate with the trading system 670, a telephone receiver is placed in a cradle 663 in modem 662. An access code must be dialed on the telephone to reach the trading system 670. When the

trading system 670 receives the access code, it returns a signal to the remote terminal 658 indicating that it is ready to receive information. If the user desires to know the current bid price, offer price and last trade price of a particular commodity, he simply depresses I.D. key 678 which transmits the identification code in this particular portable terminal 658 to the central processor. If the central processor recognizes the identification number, it sends back a signal (not shown) to indicate on the display that it is ready to receive or send requested data. The operator then depresses the desired commodity button 686, 688 or 690 and data switch 680 and the information requested is transmitted by the trading system 670 to the portable terminal 658.

If the user then wishes to make a bid or an offer, he simply depresses the cancel button 682 and the information on the display disappears. Again, he first depresses key 678 to establish his identity. He then depresses one of the commodity buttons shown generally at 684 which could include, for instance, crude oil button 686, heating oil button 688 or any other like commodity button 690 generally designated in the drawing by the letter X. He then depresses the appropriate keys 672 to determine price of the bid or offer which is displayed on display 674, then depresses price button 692 and buy button 694 or sell button 696 depending upon the transaction. He also may depress market button 698 to indicate that he wants to purchase at the market price rather than establishing any particular price through keyboard 672. When he has taken those steps and is satisfied with the entry shown on the display indicating that he is buying or selling a particular type of commodity at a particular price, he then depresses Enter button 700 which causes the data to be transmitted on line 660 to modem 662 where it passes over the telephone lines 664 to the trading system 670. If an invalid identification number is transmitted, the computer returns a not accepted message because of invalid identification. If the identification number is accepted, and if the buy or sell transaction can be completed, the trading system 670 notifies the remote portable terminal 658 on the display 674. However, the actual transaction is recorded at the remote terminal of the trader which is fixed at his normal location for storage purposes. The remote terminal 658 does not include available storage to keep track of that kind of information. It simply allows transaction data to be reviewed and a buy or sell trade to be made and the resulting buy or sell, if any, is recorded in the trader's fixed terminal at its particular location. Since it will have the same identification number as the remote portable terminal 658; the computer can so distinguish and send the information for storage to the proper fixed terminal.

Thus, there has been disclosed an automated futures exchange trading system in which all remote terminals that are associated with the exchange are given an identification number. These terminals can communicate with the central processor of the exchange system which validates the terminal input, cues the orders being received by time, size and commodity, executes matching bids and offers and clears trades simultaneously, reports the last sale by time, quantity and price according to commodity, reports bids/offers as they are received, notifies traders of filled or unfilled orders, reports various market conditions and transaction to the remote terminals for use by the traders, maintains a detailed trade history of each member of the exchange and provides the necessary trade data for settlement and

compliance. This unique system provides accurate and precise information, trading based on factual data, assurance of execution and immediate confirmation, control through real time processing of information and surveillance, and the use of computer hardware to implement the process.

While the invention has been described in connection with a preferred embodiment, it is not intended to limit the scope of the invention to the particular form set forth, but, on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A computerized open outcry exchange system for transacting sales of a particular futures commodity contract in varying volumes or lot sizes by members of a futures trading exchange as principals or agents for others wherein bids to purchase or offers to sell said particular commodity contract are made by said principals or agents through remote terminals, said system comprising:

- a. means for receiving and storing bids and offers from said remote terminals and automatically completing a transaction of matching bids and offers on a first-come, first-served basis thereby establishing a trading system,
- b. means for storing CFTC requirements and regulations to be observed on said buy and sell transactions thereby establishing a clearing system,
- c. means coupling said stored CFTC requirements and regulations in said clearing system to said trading system for comparing said transaction with said stored requirements and regulations thereby determining the validity of each transaction,
- d. means for storing predetermined compliance criteria necessary to detect illegal trade practices or trade patterns which would adversely affect said commodity market thereby establishing a compliance system, and
- e. mean coupling said stored compliance criteria in said compliance system to said trading system and said clearing system for automatically comparing said transaction determined to be valid to said predetermined compliance criteria thereby enabling detection of illegal trade practices and trade patterns which would adversely affect said commodity market.

2. A system as in claim 1 further including:

- a. means in said remote terminals for identifying by code said member, as agent or a principal, making said bid or offer, and
- b. a central processor in said trading system having means for recording said identify code whereby said agent or principal may be identified.

3. A system as in claim 2 further including:

- a. means in said central processor for storing relevant information relating to each received bid or offer including prioritizing each received bid or offer on the basis of price, lot size and time received by said central processor, said
- b. display means in said remote terminals coupled to said central processor for receiving said prioritized bids and offers and displaying at least a part of all bids in descending price order and all offers in ascending price order.

4. A system as in claim 3 further including:

- a. a movable cursor on said remote terminal display for identifying said member's bid or offer, and
- b. keyboard means in said remote terminal for modifying said member's bid or offer identified by said movable cursor by entering data through said keyboard modifying said selected bid or offer.

5. A system as in claim 2 further including:

- a. means coupled to said recording means in said central processor for accessing relevant information relating to at least a part of said stored bids and offers for a particular commodity contract, and
- b. means coupled to said accessing means for determining the breadth of the market for that commodity contract by displaying the number of bids for any particular number of offers based on said relevant information.

6. A system as in claim 2 further including:

- a. means coupled to said recording means in said central processor for accessing relevant information relating to said stored bids and offers for a particular commodity contract, and
- b. means coupled to said accessing means for displaying bid or offer lot sizes, last sales price, daily price ranges, and volume of trades of said commodity contracts occurring over any predetermined period of time.

7. A system as in claim 6 wherein said display means displays the variations in lot size, last sales price, daily price ranges, and volumes of trades of said commodity contracts that occur between various ones of said predetermined periods of time.

8. A system as in claim 2 further including printing means at each remote terminal coupled to said central processor for printing the execution of each transaction initiated by a particular terminal including date, time, lot size and price of said commodity contract.

9. A system as in claim 2 further including:

- a. means in said central processor for establishing trading limits in dollar volume for any particular remote terminal, and
- b. means in said clearing system coupled to said remote terminals for rejecting any bid or offer from said remote terminal that exceeds the trading limits established for each of said terminals.

10. A system as in claim 2 further including:

- a. means in said compliance system for accessing said storage means in said central processor, and
- b. means coupled to said accessing means for detecting patterns of trading which may be manipulative by displaying times of receipt of said bids and offers, the agent or principal making said trades, or the history of trading of said agent or principal.

11. A system as in claim 2 further including:

- a. a printer coupled to said central processor, and
- b. means selectively coupling said central processor storage to said printer for printing the volume of trading of any commodity contract over any predetermined period of time.

12. A system as in claim 2 further including:

- a. a portable hand-held terminal for receiving and generating buy and sell data for features commodity contracts,
- b. a modem coupled to said portable hand-held terminal for converting said generated data to information capable of being transmitted to said trading system and converting said received data to information capable of being used by said portable terminal, and

c. telephone lines coupling said modem converted information to and from said trading system.

13. A system as in claim 12 wherein said portable hand-held terminal further comprises:

- a. a display,
- b. a keyboard containing commodity keys, buy and sell keys, numerical entry keys and control keys,
- c. means for generating said member identification code uniquely identifying a particular hand-held terminal, and
- d. means for storing said transaction in said member remote terminal and only displaying said transaction at said portable terminal.

14. An automated system for transacting a sale of a particular futures commodity contract in predetermined volumes or lot sizes by members of the trading system as principals or agents for others wherein bids to purchase or offers to sell are made by said principals or agents for said particular commodity contract, said system comprising:

- a. remote terminals for initiating and transmitting transaction data including buyer's bids and seller's offers,
- b. a central processor for receiving said buyer's bids and seller's offers thereby forming a trading system,
- c. means in said central processor for completing a transaction by comparing received bids with received offers to find a matching bid and offer,
- d. means coupled to said trading system and said remote terminals for storing predetermined trading constraints and approving only those bids and offers coming within said constraints thereby forming a clearing system,
- e. means coupled to said trading system and said clearing system for storing predetermined criteria representing fraudulent trading practices and comparing said transaction data with said predetermined criteria thereby establishing a compliance system for enabling detection of said fraudulent trading practices, and
- f. means in said central processor for notifying the remote terminals of a completed transaction when a matched bid and offer are found.

15. A system as in claim 14 further including:

- a. a storage means in said central processor and
- b. means coupled to said storage means for storing said received bids and offers according to time, price and lot size for a particular commodity contract.

16. A system as in claim 15 further including:

- a. means in said central processor for matching said bids and offers on a priority basis where first received bids and first received offers are matched, and
- b. means coupled to said matching means for completing said transaction of said matched bids and offers on a first received in time basis.

17. A system as in claim 14 wherein said received bids and offers are stored in respective memory queues according to commodity contract by time, lot size, and price.

18. A system as in claim 17 further including means in said central processor for reporting to said remote terminals last sales of a commodity contract by time, lot size, and price.

19. A system as in claim 17 further including means in said central processor for reporting to said remote ter-

minals bids and offers by type of commodity contract as received by time, quantity, and price.

20. A system as in claim 17 further including means in said central processor for notifying remote terminals of filled and unfilled orders.

21. A system as in claim 17 further including memory means in said central processor for maintaining a complete trading history of each trading system member.

22. A system as in claim 14 further including:

- a. means for identifying each exchange member by an electronic code,
- b. means in said clearing system for storing limits of trade for each member, and
- c. means in said central processor coupled to said trade limit storing means and said exchange identifying means for rejecting any proposed trade from a member that exceeds the established position limits.

23. A method of transacting a sale of a particular futures commodity in varying volumes or lot sizes by members of a futures trading exchange as principals or agents for others wherein bids to purchase or offers to sell are made by said principals or agents for said particular commodity, said method comprising the steps of:

- a. receiving in a central processor buyer bids and seller offers on a particular commodity from remote terminals,
- b. storing in said central processor said bids and offers in the form of time, price and lot size of each of said received bids and offers,
- c. comparing said received bids and offers and matching equal bids and offers on a first come, first served basis according to the time of receiving said bids and offers thereby storing a trading system,
- d. storing buy and sell constraints on each member of said exchange thereby forming a clearing system,
- e. coupling said clearing system to said trading system for approving execution of a transaction only when said transaction falls within said predetermined buy and sell constraints,
- f. executing the buy and sell transaction for a particular commodity for which said offer and bid have been matched and approved by said clearing system,
- g. storing predetermined compliance criteria necessary to detect illegal trade practices thereby forming a compliance system,
- h. coupling said compliance system to said trading system and said clearing system for detecting any illegal trade practices as indicated by said stored predetermined criteria, and
- i. confirming the execution of an approved transaction immediately to both buyer and seller at the remote terminals whose bid and offer are matched.

24. A method as in claim 23 further comprising the steps of:

- a. identifying by code at said remote terminals whether an agent or a principal has made said bid or offer, and
- b. recording said identity code in said central processor whereby said agent or principal may be identified.

25. A method as in claim 24 further comprising the steps of:

- a. prioritizing each received bid or offer on the basis of price, lot size and time received by said central processor, and



A2

US005101353A

# United States Patent [19]

[11] Patent Number: **5,101,353**

Lupien et al.

[45] Date of Patent: **Mar. 31, 1992**

## [54] AUTOMATED SYSTEM FOR PROVIDING LIQUIDITY TO SECURITIES MARKETS

[75] Inventors: William A. Lupien, La Canada, Flintridge, Calif.; John P. McCormack, West Boxford; H. E. C. Schulman, Boston, both of Mass.

[73] Assignee: Lattice Investments, Inc., Cambridge, Mass.

[21] Appl. No.: 358,873

[22] Filed: May 31, 1989

[51] Int. Cl.<sup>5</sup> ..... G06F 15/20; H04Q 00/00

[52] U.S. Cl. .... 364/408; 340/825.26; 340/825.27

[58] Field of Search ..... 364/408; 340/825.26; 340/825.27

### [56] References Cited

#### U.S. PATENT DOCUMENTS

4,334,270	6/1982	Towers	364/300
4,412,287	10/1983	Braddock, III	364/408
4,674,044	6/1987	Kalmus et al.	364/408
4,677,552	6/1987	Sibley, Jr.	364/408
4,694,397	9/1987	Grant et al.	364/408
4,751,640	6/1988	Lucas et al.	364/408
4,903,201	2/1990	Wagner	324/408

#### OTHER PUBLICATIONS

Expert Systems in Finance Planning; May 1988, vol. 5, No. 2; B. Humpert Constraint Logic Programming and Option Trading; Catherine Lasser; Ken McAloon; IEEE Expert 1987.

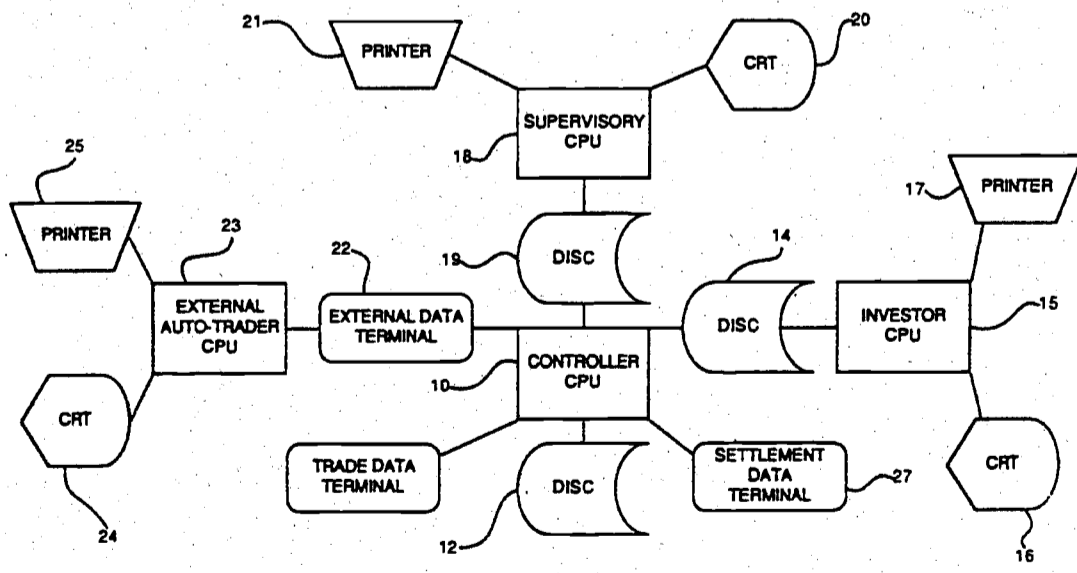
Primary Examiner—Dale M. Shaw  
Assistant Examiner—Xuong M. Chung

Attorney, Agent, or Firm—Peter E. Rosden

### [57] ABSTRACT

An automated system for managing one or more large investor portfolios containing both cash and numerous, diversified securities in a real time environment provides added liquidity to the securities markets while maintaining predetermined portfolio objectives for each portfolio. The disclosed system uses data processing equipment to place buy and sell orders on securities markets and with automated brokers to execute trade directly between users of the system and external markets. Holders of such large, diversified portfolios have usually been long-term investors. The system allows active market participation by such investors whereby they provide added liquidity and depth to the securities markets while overcoming problems caused by trader identification and the inability to enter, change or execute orders in a real time environment. The system monitors and analyzes a variety of factors which effect trading decisions in a vast number of securities. Such factors include other security trades, price and size quotations and financial ratios for particular securities. This information is further analyzed in relationship to each investor portfolio using the system to determine what transactions might benefit the portfolio by seeking to provide an incremental return while accommodating the basic portfolio objectives. These objectives may be changed at the election of the investor at any time. Orders representing such transactions are entered by the system and executed in real time either internally between system users or externally with computerized brokers and/or stock exchanges and markets.

16 Claims, 9 Drawing Sheets



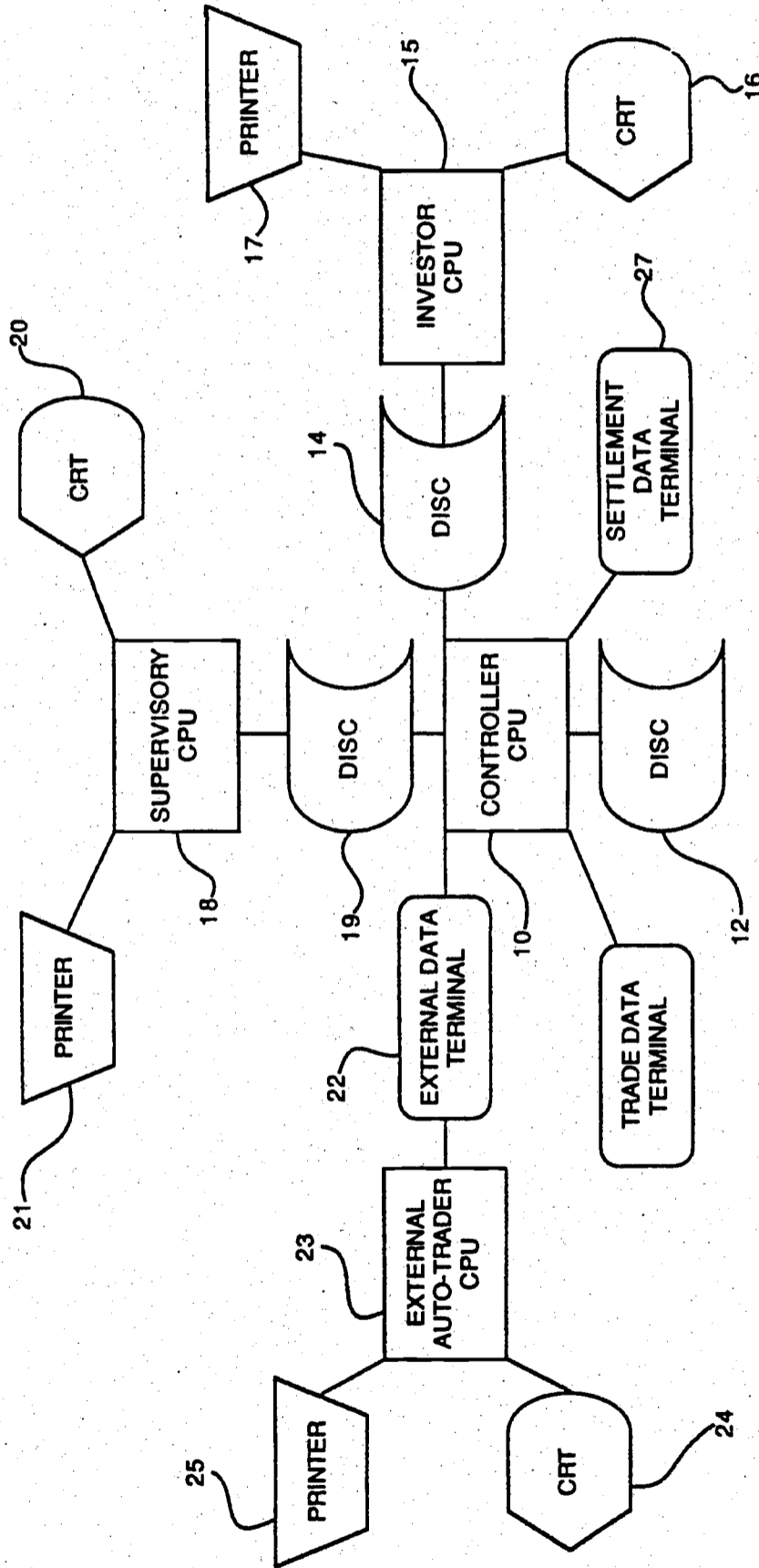


FIG. 1

FIG. 2

Date 10/20/89		C L I E N T N A M E		DJI 3,153.75	
Time 14:56:01 EST		EQUITY TRADER		Change +15.34	
Vol 184 (216)		PENDING TRADES		Tick +153	
Ranked by Value - Ascending					
S A L E S			P U R C H A S E S		
SYM	Bid	Ex	Ask	Ex	Ask
ABC	16.1	*	16.3	*	16.1
DEF	21.	N	21.1	*	16.3
G	25.	M	25.2	N	16.1
HI	20.1	M	20.3	*	16.3
JKL	22.	*	22.1	*	16.1
STU	30.1	P	30.2	*	16.3
VWXZ	10.6	*	10.7	N	16.1
Size Order LIMIT 50x100 50 16.4 * 600x150 100 22. N 120x 15 100 25.3 * 20x200 200 20.3 * 190x300 200 22.4 substitute H * 86x130 300 30.3 N 685x999 1000 10.7					
Scroll up for 2, dn for 12 other orders Total: 21 orders, 55,000 shares, \$2,210,000. 78% @ 5.3%					
Total: 1 orders, 5,000 shares, \$ 80,000. 100% @ 1.3%					
Sort: Size: nearness to Execution-Right/Wrong side: Mkt move: Symbol: Value: F1 SYM(Stock Detail): F3 SYM(Cancel Order): F8 SYM(Executions): F10(Cancel ALL) * System Orders F9 (List of Cancellations) (C) MJT					



FIG. 3

Date		10/20/89		C L I E N T N A M E		DJI 3,153.75								
Time		14:56:01 EST		EQUITY TRADER		Change +15.34								
Vol		184 (216)		CANCELLED TRADES		Tick +153								
Ranked by Value - Ascending														
S A L E S				P U R C H A S E S										
SYM	Bid	Ex Ask	Ex	Size	Order	Limit	SYM	Bid	Ex Ask	Ex	Size	Order	Limit	
C	16.1	*	16.3	*	50x100	50	BBT	36.1	*	36.3	M	50x15	10	36.1
F	21.	N	21.1	*	600x150	100	substitute WGT active list							
E	25.	M	25.2	N	120x15	100								
H	20.1	M	20.3	*	20x200	200								
J	22.	*	22.1	*	190x300	200								
M	10.1	N	10.2	N	55x30	500								
S	30.1	P	30.2	*	86x130	300								
VXZ	10.6	*	10.7	N	685x999	1000								
Scroll up for 2, dn for 22 other orders														
Total: 32 orders, 855,000 shares, \$12,210,000.														
Total: 1 orders, 1,000 shares, \$ 36,125.														
Sort: Size: nearness to Execution-Right/Wrong side: Mkt move: Symbol														
F1 SYM(Stock Detail):F3 SYM(Cancel):F7 (Pending):F8 (Executions):F10 (Cancel														
* System Orders (C) MJT														

FIG. 4

Date 10/20/89		C L I E N T N A M E		D J I 3,153.75	
Time 14:56:01 EST		E Q U I T Y T R A D E R		Change +15.34	
Vol 184 (216)		Executions		Tick +153	
Ranked by Value - Ascending					
Trade S A L E S		Trade B U Y S		Size %	
(000)	Price Bid Ask	(000)	Price Bid Ask	(000)	Cost
SYM	5.0 16. 16.1	5.0	25.2 25.3	50x1	-1.3
CDA	10.0 21. 21.1	10.0	25.2 25.5	50x1	-1.3
FED	10.1 25. 25.2	10.1	25.2 25.5	50x1	-1.3
H	20.0 20.1 20.1	20.0	25.2 25.5	50x1	-1.3
IG	20.4 22.1 22.1	20.4	25.2 25.5	50x1	-1.3
LKJ	50.7 10 10.1	50.7	25.2 25.5	50x1	-1.3
ONM	20.0 30.3 30.2	20.0	25.2 25.5	50x1	-1.3
RQP	30.0 30. 30.1	30.0	25.2 25.5	50x1	-1.3
UTS	100.0 10.7 10.6	100.0	25.2 25.5	50x1	-1.3
ZXWV					

Scroll up for 2, dn for 12 more trades  
 Total: 23 trades,  
 155,000 shares, \$4,190,000: Cost -0.35%

Total: 1 trades,  
 10,000 shares, \$252,500: Cost -1.3%

Cost - to Last: from Prev Close: to Current Quote Right/Wrong side:  
 Sort: Shares: Value: Cost-Prev cls, Last, Bid, Ask: Symbol: Ind: Mkt mve  
 F1 SYM(Stock Detail):F3 SYM(Cancel Order):F7 (Pending):F10 (Cancel ALL):(C) MJT

FIG. 5

Date		10/20/89		C L I E N T N A M E		DJI	
Time		14:56:01 EST		EQUITY TRADER		3,153.75	
Vol		184 (216)		SYSTEM ORDERS - BEST PERFORMING STOCKS		Change +15.34	
				Ranked by Change from Close - Descending		Tick +153	
S A L E S				P U R C H A S E S			
SYM	Bid	Ex Ask	Ex	Size	Order	Change	
CBA	16.1	* 16.3	*	50x100	100	+4	
FEA	21.	N 21.1	*	600x150	150	+4	
V	25.	M 25.2	N	120x 15	100	+1	+4
IH	20.1	M 20.3	*	20x200	200	+3	+3
BKB	22.	* 22.1	*	190x300	300	+3	
ACS	29.2	N 29.3	*	10x 50	50	+4	
STU	30.1	P 30.2	*	86x130	130	+4	
BNDS	10.6	* 10.7	N	685x999	1000	+1	+2

Scroll up for 2, dn for 25 other orders	
Total: 35 orders,	Total: 4 orders,
755,000 shares, \$21,540,000.	107,500 shares, \$ 1,548,000.

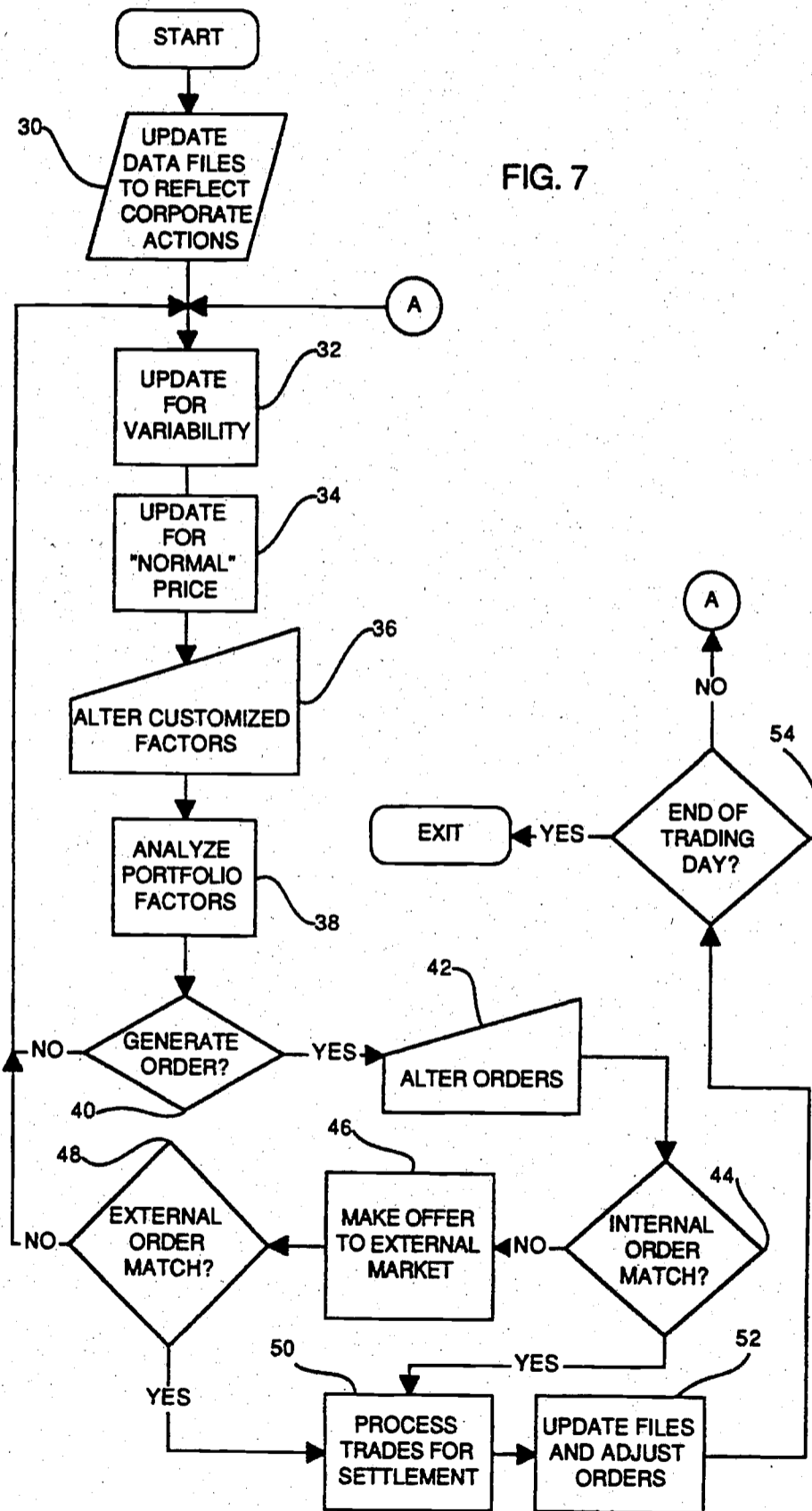
To EXECUTE - TYPE your size over Order size, Hold CTRL down & hit TAB

Sort: Size: nearness to Execution-Right/Wrong side: Mkt move: Symbol: Value:  
 F1 SYM(Stock Detail):F3 SYM(Cancel Order): F8 (Executions): F10(Cancel ALL)  
 \* System Orders F9 (List of Cancellations) (C) MJT

FIG. 6

Date	10/20/89	C L I E N T N A M E		DJI	3,153.75
Time	14:56:01 EST	EQUITY TRADER		Change	+15.34
Vol	184 (216)	Order Form - XYZ Widget Corp of America		Tick	+153
Hi	16.3	Lo	16.1	Open	16.1
Last	16.3	+	1	Vol	300
Bid	Ask	Size	Value(000)	System Ask	ORDER - ACTIVE
* 16.1	16.3	50x100	80x163	would execute	(substitute BBT)
* 16.	16.4	100x10	160x16	100% @ 1.3% cost	Price
N 16.1	16.3	100x100	161x163	P/Earn Yld/Div	Size
M 16.	16.3	1x15	2x24	15.3	Val
P 16.	16.3	1x1	2x2	1.11	Limit
				0.50	L
				P/Bk	P/CF
				1.4	8.1
				11.6	2.01
Last	6	10	\$16.3	11:34	50
Market	1	\$16.2	10:44	1	\$16.2
Trades	10	\$16.2	10:05	25	\$16.1
					9:57
Our Trades:	bght	5,000	\$16.3	10:54	#AG0054
in XYZ	bght	2,500	\$16.1	9:57	#AG0054
	bght	5,000	\$16.1	10/19	#MX7564
F1 + SYM (Stock Detail)	- F3(Cancel Order): F5(Submit Order): F10(Cancel ALL)				
* System Orders-Scroll	within boxes- F7(All Pending): F9(Cnxled List) (C) MJT				

FIG. 7



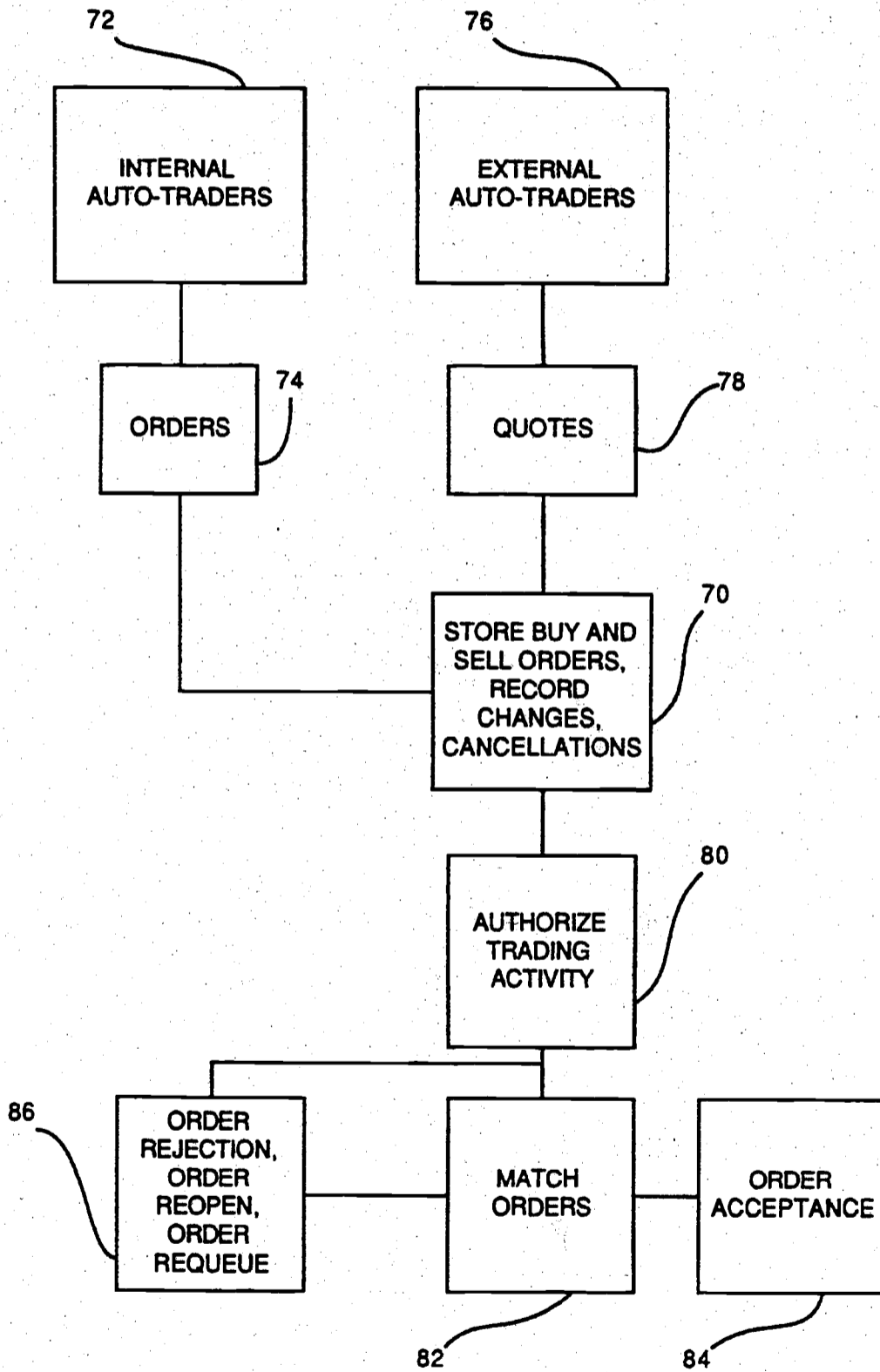
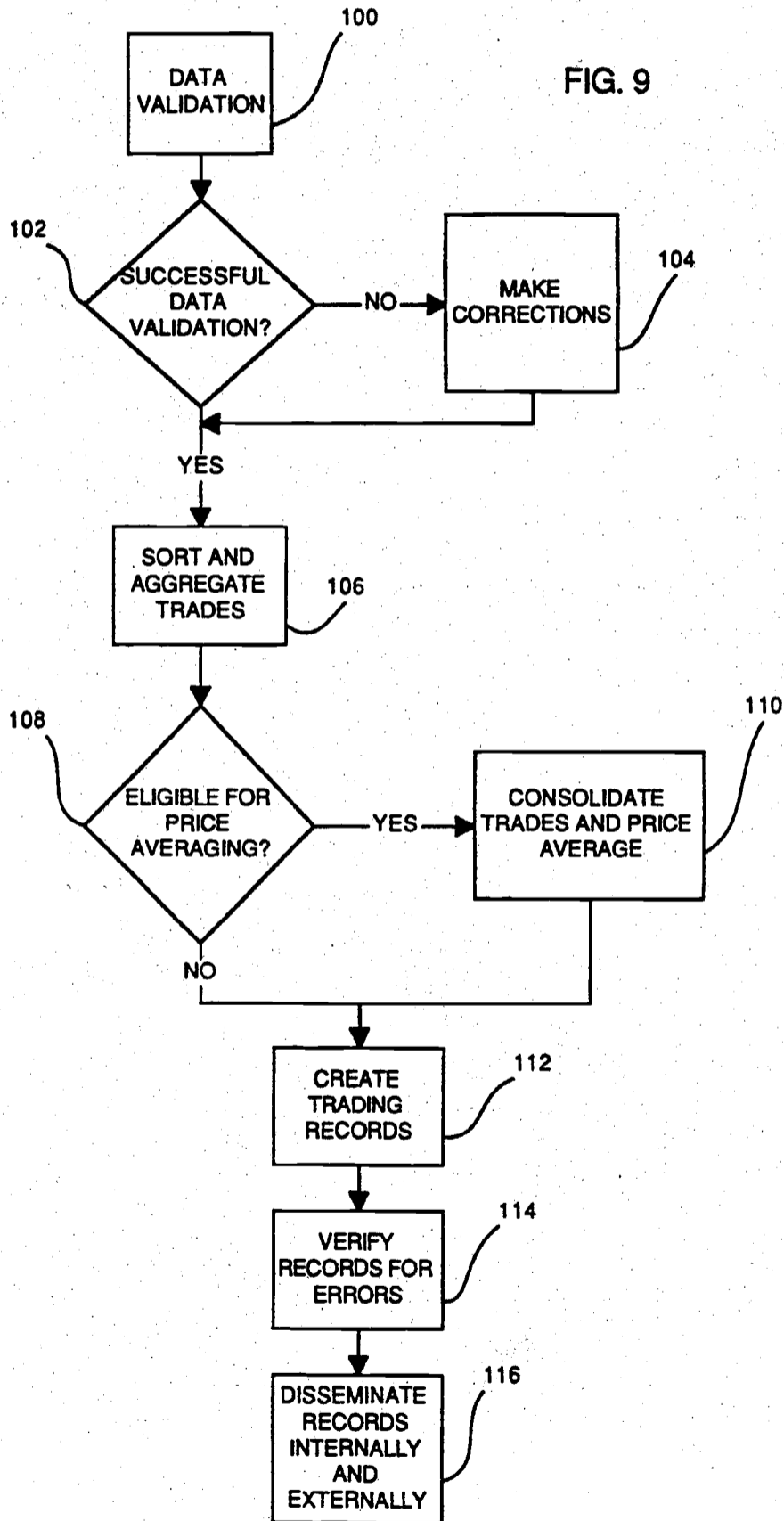


FIG. 8

FIG. 9



## AUTOMATED SYSTEM FOR PROVIDING LIQUIDITY TO SECURITIES MARKETS

### TECHNICAL FIELD

The subject invention generally relates to automated systems for trading securities in financial markets and, more particularly, to apparatus and a method for broadly increasing liquidity and depth in such markets by trading portions of normally dormant portfolios including those with numerous and diverse securities. The invention seeks to accomplish this without substantially increasing the risk of loss to holders of those portfolios by maintaining an approximation of the desired investment mix in those portfolios while reacting to market pressures so as to generate incremental returns to portfolio holders.

### BACKGROUND OF THE INVENTION

For many years the institutional holdings of securities have been increasing. Institutions now hold in excess of forty percent of the market value of American equity securities. Investment managers of large portfolios generally believe that it is prudent either to invest assets in core or index portfolios which remain relatively stable or, if actively investing, to do so in a small enough number of securities that they can properly monitor the progress of the companies whose securities they own. If they pursue the second alternative, they may, in many instances, take positions exceeding five percent or more of a corporation's capitalization. Since there are few corporations that have a total turnover of their capitalization greater than two hundred and fifty percent on an annual basis, or an average of one percent per trading day, investment managers find themselves holding positions representing five or more days of trading volume. These are large and unwieldy positions relative to the capital available to those responsible for making markets in these securities. Hence, any order to trade such large positions may either remain unexecuted due to the absence of buyers or sellers large enough to be the contra party or, if execution is forced, may cause large, temporary swings in market prices through the effect of supply and demand forces. Large swings in prices reflect unrealistic market values to the general public and may cause inappropriate or even harmful reactions thereto. Strains are placed on the liquidity and depth of securities markets and instability may result. The absence of just this type of liquidity and depth was identified in the Report of the Presidential Task Force on Market Mechanisms (January 1988), also known as the "Brady Report", as a fundamental cause of the financial market freefall which occurred on Oct. 19, 1987. No automated trader system has specifically addressed these problems in institutionally dominated markets, and some automated systems, such as portfolio insurance, may even have contributed to the problems. A distinction is drawn here between automated traders which are decision makers and automated trading systems which are message switching systems that allow traders to execute orders.

Other potential difficulties also accompany major securities position changes by institutional holders. For example, it is in the interests of the large institution to maintain both anonymity and to not disclose information concerning the total size and price limit on an order when engaging in substantial transactions both to retain privacy and to avoid other traders front-running the

order, thus adversely affecting prices received or paid. Identification of trader interest can result simply by allowing an order to remain open and unexecuted for periods of time as may occur during periods when individual specialists and traders try to assemble bids or offers for large orders or even with preexisting automated trading systems where orders remain in the system until actively cancelled.

Another problem is the inability to quickly enter, cancel or alter the desired terms of securities orders in a real-time environment whether using a computer-directed trading system or not. This difficulty has further exacerbated liquidity problems in the securities markets and has, consequently, made many users reluctant to use automated trading systems. It has also meant that large institutional investors have not had the opportunity to increase the return on their investments through short term trading. Most of their portfolio remains static and/or idle over substantial periods of time, especially when compared to the equivalent value of securities held by individuals of which a portion is that there are many individual decision makers. Institutions, because of their size, reflect an aggregation of the holdings of many individuals subject to the authority of relatively few decision makers. The flow of any particular security to the marketplace from the "institutional market/sector" tends to gyrate widely when compared with the flow of that same security from the "individual market/sector", especially since institutions often react to similar kinds of stimuli, such as research, newsletters and other information services, in making market decisions and, consequently, place disproportionately sized orders at any given time.

The existence of problems such as those discussed above has hindered the development of effective automated trading systems and has caused trading volume by users of such systems to remain relatively low. As a result, such systems often remain under-utilized and, in some cases, have had to cease operations altogether. Although a number of patents, such as U.S. Pat. Nos. 3,573,747 to Braddock et al., 4,334,270 to Towers, 4,412,287 to Braddock III, 4,554,418 to Toy, 4,556,066 to Towers, 4,674,044 to Kalmus et al., and 4,751,640 to Lucas et al., disclose automated systems useful in trading and valuing securities portfolios, none of these patents recognize or solve all of the problems outlined above. What is needed is an automatic system for trading securities held by institutions which constantly and anonymously provides depth and liquidity to the market by presenting a flow of buy and sell orders in a wide variety of securities in a real time environment without significant changes in the pattern of returns generated by the securities utilized in the original portfolio in a manner that seeks to provide an incremental profit in return.

### SUMMARY OF THE INVENTION

The present invention is an automated securities trading and portfolio management system for use by investment managers. The system is designed to increase liquidity in the secondary markets for securities and to generate incremental returns for security portfolios. Although the system of the invention works well with all diversified portfolios, it is particularly beneficial when used with large portfolios including large numbers of securities, such as those maintained by institu-



tional investors. The invention achieves these effects by using a portion of the portfolio's holdings to offer liquidity to the market. The system contains portfolio balancing controls which seek to ensure that the risk and return characteristics of each underlying portfolio are retained throughout the liquidity generating process. The system monitors security trades, price and size quotations and various portfolio characteristics as well as other factors in real time as disclosed herein. In response to this monitoring process the system enters, alters or cancels buy and sell orders and/or sets thereof through its own network, other networks and/or with computerized brokers and/or computerized stock exchanges.

According to the present invention, data concerning a portfolio or set of security holdings resides on computer files. These files include, among other variables, each client's current and "normal" holdings for each security and its identification data, together with estimates of each security's price variability, cash flows, and a number of investment characteristics such as debt/equity ratios, etc. The computer also holds instructions concerning the maximum and minimum cash positions designated by the client and the deviations allowed from the base portfolio's individual sector, industry and security weightings which may also be determined by the client. Through real time analysis of the data, the present invention tracks how close each security, sector, and the overall portfolio is to the limits designated by the client. To the extent that the limits have not been reached, the present invention will issue buy and/or sell orders as the function thereof as well as the security's volatility, current price and recent price history. It will also take into consideration the closeness of the overall cash position to its limits as well as positions, offsetting or otherwise, already achieved in other markets. The resulting orders will be broadcast to other market participants logged into the computer executing this program, or series of programs, the placed on one or more computerized exchanges, brokerage services, market access networks or displayed through its own network. The division of orders among those sources of executions will be based upon a series of rules including probability of execution and control of pending orders.

In order to take maximum advantage of this invention, any client using it should have a diverse inventory of securities in its portfolio. The average specialist unit makes markets in approximately 25 to 30 securities, whereas, this invention, due to the use of a central processing unit as controller, can follow an essentially unlimited number of securities and, due to direct electronic connections to computerized brokers, computerized exchanges, broker dealers market access networks and its own network, can do so in a real time environment. In addition, the system can execute multiple trades per second which is far in excess of what any individual market trader could achieve. Hence, one aspect of the system of this invention is that it works so fast and assimilates so much information that the need for and the possibility of human intervention by way of approval of each trade made is unnecessary. A significant advantage of the system of this invention is that it functions to provide liquidity and depth to securities markets by making available portions of large diversified securities portfolios to the market in return for a relatively small incremental profit which these portfolios would not otherwise earn. The system of this inven-

tion determines, by application of various investment criteria to individual securities, industries and market sectors, when a small profit may be achievable in a short period of time by buying or selling a particular security in a user's portfolio considering competitive purchase and sale orders in the open market place. The potential profit achievable is a function of the particular security's price volatility and trading volume. The risk assumed is that, as compared to the core portfolio, the provision of liquidity results in the over- or underweighting of securities which may generate opportunity losses. In other words, the portfolio would have been invested in the particular stock regardless. To buy additional shares in one security, offset by a comparable sale in another security, subjects the portfolio to the risk that the over-weighted security will underperform the unaltered core portfolio, while the underweighted security overperforms it. In any two securities this may happen, but if the differences in weightings are spread over many securities, and the net difference is small (i.e., the cash is controlled), the risk is minimized. Overweighted securities which underperform should generally balance overweighted securities which overperform. If that were to happen exactly, the institution achieves the performance of its core portfolio together with the proceeds extracted from other market participants who traded with the institution at the price offered by the institution. Risk borne by the portfolio using this system arises from the variability in performance of the traded portfolio when compared with the untraded portfolio.

As orders are executed, market quotes change or trades occur in the markets, the system which represents the present invention will update market data, portfolio holdings, including cash, and recalculate purchase and sale orders in all relevant securities. A record of all activity is maintained on the system, including all transactions and unexecuted orders. At the end of the trading day, a file of trade advices is transmitted to (or is available for) the broker's clearing agent, as well as the client's custodian banks.

It is a primary objective of this invention to provide previously unavailable liquidity and depth to securities markets.

It is a further objective of this invention to provide an incremental return to holders of broadly diversified portfolios using the system without altering the pattern of returns from the client's original portfolio. This objective is achieved by trading securities which would otherwise remain "idle" in a portfolio in an environment that provides anonymity during trading as well as small changes in overall market exposure through offsetting positions in many individual securities. "Idle" securities are those which are held by an institution in a static core portfolio and which have a low probability at any moment in time of entering the flow of market transactions.

It is yet another objective of this invention to provide an incremental return to users of this system while simultaneously allowing them to select and alter basic investment characteristics of their portfolios. The system selects and executes trades based on an analysis of transactions and the imposition of controls which leave the basic characteristics of the underlying portfolio of securities selected by the investment manager intact.

It is still another objective of this invention to provide a system which permits investment managers to selectively communicate directly with and/or execute trades

with other portfolio holders using the system and/or brokers and/or exchanges.

It is yet a further objective of this invention to provide a system for entering, executing and/or cancelling securities purchase and sale orders instantaneously and anonymously in a real time environment.

It is another objective of this invention to capture, as profit, a portion of the impact upon markets of orders entered thereon by other institutional investors. This impact may be large as a result of gaps in competition and inadequate liquidity. The system takes advantage of securities trading at a short-term premium or discount resulting from supply and demand imbalances by trading them and then making offsetting transactions elsewhere in the portfolio. Despite the trading activity, the fundamental investment characteristics of the underlying portfolio remain basically unchanged.

A further objective of this invention is to provide additional depth and liquidity to markets due to the large number of the securities held in portfolios which use the system of the invention. The system will operate to rigorously apply portfolio theory to the securities trading process and to evaluate the appropriate prices for purchase or sale orders for a security given its underlying trading characteristics and its recent behavior as well as that of similar securities.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects, aspects and advantages of the invention will be better understood from the following detailed description of the invention with reference to the drawings, in which:

FIG. 1 is a block diagram of the hardware for carrying out the data processing and operational methodology of the securities liquidity provision system of the present invention;

FIG. 2 is a reproduction of data shown on a display screen relating to all orders pending on a particular day for a particular client using the system;

FIG. 3 is a reproduction of data shown on a display screen relating to all trades cancelled on a particular day by a particular client or his trading process;

FIG. 4 is a reproduction of data shown on a display screen relating to orders executed for a specific client on a specified day using the system;

FIG. 5 is a reproduction of data shown on a display screen relating to all orders in the system;

FIG. 6 is a reproduction of data shown on a display screen relevant to a single order placed using the system;

FIG. 7 is a schematic flowchart depicting the data processing, storage and operational steps of the invention for an internal user of the system;

FIG. 8 is a block diagram illustrating the order matching process as it relates to internal and external users of the system of this invention; and

FIG. 9 is a schematic flowchart depicting the data processing storage and operational steps of the invention for processing the settlement of trades.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

For a more detailed understanding of the invention, reference is first made to FIG. 1 of the drawings. This figure illustrates in block form an overview of an arrangement for implementing the system of the instant invention. The heart of the system is controller central processing unit (CPU) 10 which may be any type of

digital computing apparatus, such as a main frame or mini-computer. The controller CPU executes trades and manages orders and portfolios. It also provides status and transaction reports to system users. It acts partially as an order matching device to bring buyers and sellers together, and it collects and stores data on disc 12 in the form of transaction reports from various securities markets as well as the flow of price quotations made by participants in those markets made available through a service such as a securities information vendor. Disc 12 could be any sort of fast access, mass storage device such as one or more hard discs. The information collected thereon would include data on transactions occurring both internally and externally of the system of this invention. The controller CPU disseminates, or institutional investor clients can request, relevant portions of the collected internal data periodically to separate on-line storage devices 14 for each client which may also be any sort of mass storage device such as a hard disc drive, tape drive or magnetic drum. External market data is available to clients from securities information vendors. These storage devices may be located either at the site of controller CPU 10 or at each client's location. These storage devices hold data on the portfolio(s) of each client along with that client's investment strategy, goals and risk profile. Each client can have its own computer terminal CPU 15 which is connected to storage device 14 and to controller CPU 10 by any of a variety of means, such as direct wire, satellite or telephone connections. These terminals may be any of a wide variety of computers including personal computers, main frames or mini-computers, depending on the needs of each client. The data in storage device 14 may be displayed at each client location on an associated CRT display 16 and/or a hard copy printer 17 in a format determined by controller CPU 10 or the client's CPU 15. Algorithms operating either at each client CPU 15 or at controller CPU 10 and customized for each client function to analyze the data in storage device 14 so as to create buy and sell orders for that client. Alternatively, each client may develop its own algorithms to perform the transaction decision-making function and may use this invention only for its trading, order management and reporting facilities, discussed below.

Controller CPU 10 also transmits internal order, quote and transaction data to supervisory CPU 18 through storage device 19 which may be any sort of mass storage device, such as a hard disc drive, tape drive or magnetic drum. External data is available to storage device 19 through securities information vendors. This data is available for display on an associated CRT display 20 and/or a hard copy printer 21. Supervisory CPU 18 monitors selective aspects of the invention through time, handles queries concerning particular orders, executions, cancellations or system statistics, allows intervention if needed and displays and alerts the human operator to unresolved cancellations of executions.

Controller CPU 10 is further connected with the CPU'S 23 of external automated brokers, exchanges and markets such as INSTINET and the CINCINNATI Stock Exchange and others also for purposes of transmitting order and transaction data which may be displayed at these external locations on associated CRT displays 24 and/or a hard copy printer 25. CPU 23 provides client users of the system an opportunity to execute sales and purchases external to the system

rather than limiting them to transactions with other clients. The function of these automated brokers and exchanges within the system is explained more fully below.

Within a specified period of a transaction, all executed transactions internal to the system are reported as output through the registered broker/dealer operating the system to a trade data terminal 26 and then to the central reporting facility. Similarly, but only at the end of each trading day, all trades involving each individual security are aggregated, average-priced where appropriate and electronically reported through settlement data terminal 27 for trade settlement to the clearing agent.

Clients and brokers using the system have the ability to view information pertaining to all pending orders and all of their own executed and cancelled orders ranked by various criteria as demonstrated in the various screen or window formats shown in FIGS. 2 through 6. A sorting function allows the user to concentrate on the most important orders according to the selected criteria. This display function allows users to manage their orders and to review how their decision and trade processes are working, how their orders are interacting with the market, and what other market participants are doing.

General market information, supplied by a securities information vendor at the client's site, is contained in the top box of all screens illustrated in FIGS. 2 through 6. Date, time and the day's market volume is displayed on the left hand side, the level and change in one of the broad market indices is placed on the right-hand side along with the tick figure. Tick is the net number of trades that occurred last on a price rise or decline. The middle portion of the top box on all screens displays the client's name, the type of screen being used and the type and kind of sort for the displayed data. All screen segments may be differentiated by color.

The bottom portion of all screens contains prompts that enable the user to change the way the data is displayed or ranked, to move to other screens, to alter orders or to respond to the orders of other system or market participants. To accept instructions, the system makes use of function keys available on most keyboards and on the position of the cursor to highlight the desired function or sorting attribute.

FIG. 2 illustrates a screen displaying all pending orders for an individual user. Clients can view their orders ranked by size (as displayed), nearness to execution, price move for the day, symbol, etc. The screen is divided so that Sales appear on one half of the screen, Purchases on the other. For each order, the security's symbol, best bid, market or exchange displaying that best bid (an "\*" means the best bid resides on the system represented by the current invention), similar information for the ask price, the multiple of 100 shares represented by the best bid and ask, the size of this client's order in multiples of 100 shares and the current limit price associated with this order.

The one order listed on the Purchase side of the screen in FIG. 2 indicates that this client has an order to buy 5,000 shares of the security represented by the symbol XYZ at a limit price of \$16.125 (all prices are displayed as whole dollars plus the numerates of the appropriate fraction). The best bid for the stock is \$16.125 for 5,000 shares. That bid resides on the system represented by this invention, and is obviously this order. The best offer happens to be on the Midwest Stock

Exchange, it is for 10,000 shares at a price of \$16.375. The client had a substitute order for the security BBT which currently resides on the Cancelled order list. A substitute order is an order for another security, the purchase or sale of which would substantially equally satisfy the objectives of the portfolio. At the bottom of this section, the system totals the number of pending live Purchase orders, the number of shares and the dollar value represented by these orders and what percentage of these orders could be done and at what cost, as measured from the client's limit price, should the client not insist on the displayed limit price, but accept the best terms offered by the other side. In this case, if the client were to go to the Midwest Exchange and pay \$16.375, he could, subject to prior sale, purchase his 5,000 shares from the 10,000 offered. The cost represents a 1.3% premium compared to the limit bid of \$16.125 which the client is currently advertising.

FIG. 3 illustrates the same information as FIG. 2 but for all trades cancelled on a particular day by the particular client or his trading process.

FIG. 4 illustrates essentially similar data but, in this case, relates to orders executed on a specified day. The buy side of the screen shows that this client has purchased 10,000 shares of the security ZYX at a price of \$25.25. The current bid is \$25.375 for 5,000 shares, the ask price is \$25.625 for 100 shares and the cost, as measured from the execution price of \$25.25 to the current ask (what a purchaser would have to pay currently) is a negative cost (i.e., a profit) of 1.3%. Again there is summary information at the bottom of this segment of the screen.

FIG. 5 illustrates similar data for all orders on the system. In this case, the securities are ranked by move from the previous night's closing prices. A security symbol, bid, market, ask, market, size of the bid and ask, the size of the order residing on the system and the change for the day in percent terms are all displayed. Between the size of the order on the system and the percent change for the day is the measurement in eighths from the best ask for sales, bid for purchases, and the limit price for the order on the system represented by this invention. For instance, the system has an order to purchase 15,000 shares of FEA which is up 4% from the previous night's close. The best bid is \$21 on the New York Stock Exchange, according to the client's securities information vendor. The system order has a price of \$20.875 attached to it, so the screen displays a "-1" in the space between the order size and percent move to inform the user that the system order is the best available price less one eighth.

FIG. 6 illustrates information displayed on a screen relevant to a single order. The top left hand side of the working section of the screen gives the high, low, open and last trade prices for this security, along with its change for the day (up an eighth, previous close to last sale) and volume. Shown below are the best and next best bid and ask residing on the system, and the best bids and offers represented by the other markets and exchanges as reported by the client's securities information vendor. Below this section is a segment of the screen which contains information on past trades. The top portion of this screen segment contains shares, price and time for the last 6 market trades in this security obtained from the client's securities information vendor, and below that are listed the client's trades in this security, giving action, size, price, time or date and client account involved in the trade. To the extent that the

data resides on the client's computer and is accessible by the current invention, the user can scroll up and down through this historical information. To the right of this screen segment there is room for system or market alert messages.

In the middle of the screen of FIG. 6, the system supplies price sensitive information concerning this security. All basic information is obtained from the client's data base vendor who supplies data on companies' historical income and balance sheets as well as expected earnings. Reported here are the per share earnings and price/earnings ratio (\$1.11 and 15.3, respectively), yield and per share dividend, price/book ratio and book value as well as the price/cash flow ratio and per share cash flow data.

The final section of the screen of FIG. 6 contains information about the client's order for this security—WGT—which is currently on the system. As shown, the order is Active (as opposed to Cancelled), the security has a beta of 1.2 (relationship with the market that states that this security moves 20% faster than the market), and has the security BBT as a substitute order. Currently, the client is bidding for 5,000 shares at a price of \$16.125. The value of the order is for \$80,000 and the order is a limit order. Other ways of limiting the price paid would be a market or industry beta-adjusted order, or a price which floated as a function of the bid or ask price. Below this the same information appears for all accounts that are participating in this order. To the left of the overall order information, the system notes that the Ask price on the system would execute 100% of this order at a cost of 1.3% from the present limit price.

The functioning and interrelationship of the elements of the system shown in FIG. 1 will be further explained by reference to the data storage and processing steps for an individual internal client as illustrated in the flow chart of FIG. 7. For the purposes of this discussion of the functioning of the invention, its operating during a typical single trading day will be used. FIG. 7 shows the data processing and operational steps which occur during such a day as regards an internal user of the system. Before the start of each trading day controller CPU 10 updates its data files at input step 30 with data from disc 12 covering relevant securities market information on corporate actions, such as recapitalizations, stock splits, dividends or interest payments, and closing prices from the previous day. During the trading day it updates its files from storage devices 14 and/or discs 12 with data covering internal market quotes, executions and other internal data, as well as with data continuously input during the trading day from the client's securities information vendor's quote and trade data feeds covering current external quotes, trades and other market data. Using this information, each security in the total inventory of securities covered by the system is updated in step 32 for variability which, in this case, means for the standard deviation or variance of its price fluctuations. Another adjustment is then made in step 34 to reflect the "normal" price of each security in the inventory of securities covered by the system. Normal price is an estimate made of a security's current price and is calculated as an exponentially weighted average of recent trades and/or quotations adjusted for overall market movement. It differs from current market price as a function of trading activity in the security which pushes the current price to one side or another of its normal price.

Since clients have differing risk profiles at different times, the present invention provides added flexibility by permitting the client or manager to make manual changes or changes by electronic means in step 36 to his original criteria covering risk profile and the tolerated variance from the base portfolio by sector, industry, cash and other factors. Such changes may be entered at any time during or after the trading day.

Using all of the resulting data, in step 38 each security is analyzed with respect to the customized criteria established for each individual client based on the following factors:

- (1) Variability;
- (2) Current holdings of that security in the particular portfolio against the portfolio's base position in that and related securities;
- (3) quoted bids and offers;
- (4) the cash position of the portfolio;
- (5) the exposure of the portfolio to various industries and sectors; and
- (6) purchase and/or sale orders displayed by others in automated brokerage or exchanges to which the present invention is linked.

The resultant analysis will be used in step 40 to generate buy and sell orders and/or sets of orders at specific prices for transmission by the system both internally to other clients and externally to outside broker dealers, exchanges and/or others for each security in the portfolio as to which the present invention deems it appropriate. The price of purchases and sales is dependent on interrelationships between inventory in the portfolio, the "normal" price for that security and its actual market price at the time the decision is made. The size of the purchase orders generated by the invention is greater the further the current actual price is below that security's "normal" price. The size of the purchase orders, if any, is smaller the further the actual price is above the security's "normal" price. Also, the buying limit, or size of order, per security becomes more (less) stringent as other securities become more (less) attractive to hold or as that security's sector becomes over-(under-) invested or as cash reserves fall (rise) from normal. The size of the sale order generated by the present invention is greater the further the current actual price is above that security's "normal" price. The size of the sale order, if any, will be smaller the further the actual price is below the security's "normal" price. Thus, the selling limit or size of order per security becomes more (less) stringent as other securities become less (more) attractive to hold or as that security's sector becomes under (over) invested or as cash reserves rise (fall) from normal. The size of the buy or sell order can be limited for low price stocks and will be smaller for each difference between the current and "normal" prices the greater a security's variability. Further, the size of the invention's buy or sell order will be larger if such a transition would help to offset a current position imbalance in the portfolio's stock, industry, sector or cash exposure. To the extent that an acceptance of the invention's buy or sell order will aggravate a current imbalance, the size of that order will be restricted. If a decision is made in step 40 to enter no order, control of the program is transferred back to block 32 for analysis to proceed on the next security in the portfolio. It should be understood that the analysis of individual securities in individual portfolios is an ongoing, continuous process wherein the controller CPU 10 causes alterations of bids and offers in direct relationship to changes

in the portfolio criteria and the receipt of continuously updated current market data from reading quote and trade tapes made available through trade data terminal 26. While this process is described as a flow, the system is "event driven" in that an event such as a transaction

5 of events or an "out of pattern" action by other market participants elsewhere will interrupt the flow and trigger a response on the part of this invention's trading and balancing algorithms. This response will be based on the rules discussed above.

A particular advantage of this invention is that clients running their own balancing algorithms may in step 42 alter any order on the system by changing, cancelling or adding to it. What differentiates this capability, as implemented by this invention, from others that allow the keyboard or computerized entry of orders into computerized securities trading systems is that the system of the invention allows computers to alter and receive confirmation of order changes on national markets with a delay of only seconds. For orders that have been placed outside of the system due to direct connection with automated brokers and/or exchanges, such as INSTINET and the CINCINNATI Stock Exchange, through external data terminal 22, the speed of the cancellation or altering process depends on the response time of these other computers. By comparison, orders placed on other electronic order routing systems, such as the Designated Order Turnaround (DOT) system of the New York Stock Exchange, for example, although entered by computer, still generally depend for execution on human specialists or traders who must ultimately react to the order. Hence, undesirable and unexpected delays are inherent. This invention substantially removes such problems. Manual alteration of orders, although not usual due to the speed of operation of the system and the reliance on trading algorithms, is also available to clients at step 42.

That portion of the invention that receives, handles and executes orders for the purchase and sale of securities and reports transactions to the central reporting facility, if appropriate, and to the clearing agent is operated by a registered broker/dealer. That portion of the invention which analyzes price and determines orders is operated by a registered investment adviser. Orders are executed by the system on a price/time priority basis within the system in step 44, although orders could also be executed on a price/size/time priority basis. All orders generated are forwarded to controller CPU 10 which presents them together with those from other clients for display to each client or client process in a manner described below. If a purchase order matches a sale order (in whole or in part) created for another client portfolio the controller will match the two and a trade will occur which will be reported to the markets as well as to each client's portfolio trading algorithm. If orders are not executed within the system, control passes to block 46 where controller CPU 10 decides, based on recent trading history, where and how much of each order to place on which external automated market, broker, exchange and/or its own network. Orders placed other than on its own network are submitted on a price/probability of execution basis. Further, if an order has been published to a market, broker or market access network, internally executed transactions between clients are done on a subject to cancellation basis. As long as an order remains unexecuted, it is subject to cancellation or alteration by the system in step 38 or by the client's process or manually in step 42.

In the absence of an external order match control of the program is transferred from block 48 back to block 32 for continuing analysis. The order matching procedure of steps 44, 46 and 48 is discussed in further detail below with regard to FIG. 8.

If a trade is executed internally in step 44 or externally in step 48, control is transferred to block 50 which governs settlement procedures. All internal trades executed for clients by the present invention are immediately reported in the appropriate manner to the central reporting facility via trade data link or terminal 26 so as to disclose them to the markets and are written to files in the storage devices 14 of each client for processing at the end of each day. They can be viewed selectively based upon various levels of secure access during the trading day. At the end of the day, all purchase and sale transactions for each portfolio in each security are average-priced at the client's instruction so that there is only one sale report and one buy report per security per client. These reports are then forwarded to the clearing agent and, if appropriate, to each client's custodian. Internal reports for record-keeping and research purposes are also made. Further detail concerning settlement procedures is provided in connection with the discussion of FIG. 9 below.

As the trading day progresses, the system updates its trade and quotation files according to steps 30 and 52 and then returns to step 32 to make additions, alterations or cancellations of buy and sell orders according to the succeeding steps as explained above. Securities which are not performing according to their historical norms are flagged for special analysis by the system. As trades are executed for each client's account, the relevant portfolio's holdings are updated in real time along with industry and sector weightings, cash exposure and the profit or loss and commission statistics. Similarly, variability and "normal" prices are also adjusted. The present invention's speed in issuing or updating orders in response to changes in quotations made by other market participants will be a function of the current position of the portfolio versus its guidelines and its recent trading activity. The further away from its base position or the less its recent trading activity, the slower will be the invention's adjustment by means of new or changed orders to price quotations of which the resulting trades will be more stabilizing or profitable to the client, and the faster will be its response to other price quotations.

If the trading day has not ended, step 52 requires return to step 32 to allow factors effecting future trading to be reassessed and new trading decisions to be implemented. If the trading day has ended, the program is exited.

Reference is now made to FIG. 8 for an illustrative overview in block diagram form of the means by which controller CPU 10 interacts with internal and external participants using the system of this invention for purposes of order matching. This process was referred to above in flow diagram steps 44, 46 and 48. An order is an instruction to buy or sell a security at a certain price or better. Orders may be any of the types commonly known such as market, limit, fill or kill, etc. Users may either be internal auto-traders (the customized client process described above) or external auto-traders (automated exchanges or brokers). An

auto-trader is a computer process which enters orders directly with the system at block 70. Auto-traders represent their security orders directly to each other through block 70 for potential execution. Internal auto-traders 72 are processes or internal clients which do not have to communicate outside of the system of the invention to execute a trade or to place or change an order 74 with controller CPU 10, whereas, external auto-traders 76 must complete their trading transaction outside of the system of the invention, making their orders on the invention subject to cancellation. Examples of external auto-traders include the INSTINET and CINCINATI Stock Exchange automated trading systems. Orders are placed by external auto-traders at the highest bid and lowest offer which they have outstanding on their own "books" and which, when supplied to controller CPT 10 at block 70, automatically become treated as orders. These orders are cancelled and replaced when the quote changes. An authorization list 80, stored and enforced by controller CPU 10, defines which subset of users may trade with each auto-trader. For instance, the system might prohibit trading between selected clients.

The system of this invention matches orders in block 82 on a price-time priority basis. A match occurs when a buy order and a sell order agree on security name, price, size and terms of the trade. If a match is detected, both the buy and sell sides of the order are at block 84. In the case of external auto-traders, acceptance is tentative and becomes final only when confirmation from the external auto-trader is received by the system. Since external auto-traders must themselves confirm a match there will be a limited period of time before acceptance or rejection, and, therefore, the tentative acceptance procedure is necessary. By contrast, internal auto-traders accept matches immediately in real time without tentative acceptance. If either side of the trade rejects the match, the order is reopened at block 86 while the order of the rejecting side is newly time-stamped and moved to the rear of its price-priority group. The order of the accepting side is not requeued.

External auto-traders can be rated by order throughput, i.e. by volume of orders executed. An external auto-trader producing three times the execution volume could be given three times the order flow from the order handling process when quotes are identical. Order placement will be biased by the relative sizes of the best bid and/or offer of different external auto-traders. The invention will move orders to the auto-trader which has matching side size relative to other external auto-traders and order size will move away from the auto-trader which has same side size relative to other external auto-traders. The system could recognize volume of orders executed or quote size varying time horizons which could allow it to indicate the presence of the other side in a remote system. These additional factors increase throughput and decrease additional costs.

Both internal and external auto-trades may cancel an order, replace it with a new order on different terms. However, cancellation is problematic when an order has been placed with an external auto-trader. The cancellation in this case is accepted subject to prior execution. If the external auto-trader has a defined cancellation mechanism, the cancellation is effected when the external acknowledgement is received. If there is no definite mechanism or too much time elapses, the cancellation is effected by the system's internal rules. An execution report which is subsequently received from

the remote system and which cannot be matched will be refused and an alarm transmitted to supervisory CPU 18 for display on CRT 20 and/or hard copy printer 21 for human resolution.

Orders residing on both the present invention and external computerized brokers, exchanges and/or markets are subject to cancellation due to prior execution in such other systems. If the client desires, an order may be transmitted to such other systems to match against order residing thereon. However, the auto-trader methodology of the invention also provides for other types of special auto-traders which fulfill specific functions. Such special auto-traders resemble "floor brokers" who place orders on remote systems subject to various terms. If it is in the interest of clients using this invention, their auto-traders will ask these special auto-traders to place sell orders at or near the offer, buy orders at or near the bid on a remote system. These orders would then be displayed on that system to the extent that they matched the interests of other system clients. The order manager auto-trader would assign any trades done on the remote system to system clients using a price/time priority basis. Another type of special auto-trader can take any order and pass it through to a remote system. These orders would be represented in addition to those of the right and wrong side auto-traders. This type of special auto-trader could be used by a human trader communicating by terminal to gain unfiltered access to a market.

Trade reports from remote systems would be matched to outstanding tentative executions just as the original orders were matched. Partial order matches or partial executions cause the contra side order to split into an order of the correct size and an order holding the remaining size. Rejection of a match triggers appropriate fusion of previously split orders.

As noted above, an internal auto-trader may issue an order as good or better than an external quote which is in tentative match. The internal quote is matched as soon as the external match is rejected. The match system can recognize that a better match is possible and attempt to cancel the external order before it is accepted. In addition, the match process is able to "chain" matches so that all of the matches are done or none are done. This would, for instance, allow an order for a security denominated in currency "a" to be executed in a market trading in currency "b" if the "b" to "a" exchange rate were acceptable. Further, the system could be modified to include an intelligent order manager which executes profitable trades that the base system would not itself execute. For instance, an all-or-nothing order for 16,000 shares of IBM would fail if the system had only 15,000 shares available. The intelligent order manager would, upon the client's standing or contemporaneous instruction, execute the full order and find the other 1000 shares later if the overall trade looked profitable or if customer satisfaction required execution.

Reference is now made to FIG. 9 which illustrates in schematic flowchart form the trade settlement procedures used by the present invention to handle order matches at the end of each trading day. This flow chart examines in greater detail the activity undertaken by the system which was referred to above in step 50 of FIG. 7. After an order has been matched and accepted by both sides, controller CPU 10 validates all data concerning the trade in step 100. Proper identification for each security, broker, customer account, exchange code, transaction date, settlement date, price and all

other aspects of the trade are checked to ensure accuracy. Validation procedures are flexible enough to allow exception overrides, as well as easy additions and deletions to each data item's possible value list. Validation can best be accomplished using a relational data base language. If validation fails in step 102, control is transferred to step 104 where corrections may be made either by human intervention or, preferably, in an automated fashion through the use of databases. After either successful validation or correction of errors, control passes to step 106 in which the trades are sorted and aggregated by security. Each trade is then tested in step 108 to see if it is eligible for price averaging. Various factors could preclude any particular trade from eligibility. For example, average pricing would rarely be done between clients who both participated on the same side of a trade. An important aspect of this invention occurs in step 110 where, at the client's instruction, eligible purchases (sales) in the same security are consolidated and priced on an average basis for each client. This procedure results in one buy and/or one sell order being generated for any particular customer at an average price regardless of the actual number of trades executed to accumulate or sell the shares of that particular security during that day. The advantageous impact of this aspect of the invention becomes apparent when it is understood that the invention is specifically designed to generate large numbers of trades for a given client, possibly in the same security, on any given day. When the average price processing is complete, data concerning both the trades which were average-priced and those which were not, are written into a record-keeping system in step 112, again rechecked for errors in step 114 and then disseminated in step 116 both internally for accounting purposes within the system and externally to a clearing agent and settlement house.

What is claimed is:

1. An on-line interactive investment processing system for providing added liquidity to markets for investment securities and for managing in a real time environment the interaction of one or more large, institutional portfolios of investment securities with each other and with the securities markets, wherein each portfolio has an inventory including numerous and diverse securities and each portfolio has separate portfolio objectives represented by a specified desired mix of investments in securities and cash reserves through generation of trading decisions in the form of buy and sell orders on behalf of each of those portfolios comprising:

first storage means for collecting and storing securities transaction data and price quotation data both from a plurality of securities markets external to the system and from buy and sell orders and transactions generated internal to the system;

second storage means, for analyzing the data stored in said first storage means and for substantially simultaneously transacting multiple buy and sell orders representing a plurality of securities, wherein said controller means presents orders representing such transactions first only internally to other investors using the system for real time matching and execution and wherein buy and sell orders are executed on a price/time priority basis among internal investors;

third storage means coupled to said controller means for collecting and storing data for each in-

vestor portfolio concerning that particular portfolio and for storing buy and sell orders on behalf of that particular portfolio;

investor computer means for maintaining each investor portfolio wherein said investor computer means is coupled to said second storage means for analyzing data concerning the portfolio of that particular investor and for generating buy and sell orders for transmission to said second storage means on behalf of that portfolio in order to retain the portfolio objectives while also providing liquidity of the securities market;

third storage means coupled to said controller means for collecting and storing data concerning the portfolios of all investors using the system;

supervisory computer means coupled to said third storage means for supervising and ensuring the proper functioning of the system;

external data terminal means coupled to said controller means for linking said controller means to external automated securities brokers and exchanges, for transmitting transaction data to external automated securities brokers and exchanges and for transmitting orders remaining unexecuted after first being presented internally to other investors using the system to external automated securities brokers and exchanges for matching and execution in a substantially real time environment;

trade data terminal means coupled to said controller means for reporting all executed sales internal to the system to a central reporting house; and

settlement data terminal means coupled to said controller means for reporting all trades involving individual securities for settlement purposes to an external organization.

2. The system of claim 1, further comprising means for consolidating multiple transactions in identical securities within a single day for any particular investor and for assigning a single average price to all buy transactions of that particular investor for each such security and for assigning a single average price to all sell transactions of that particular investor for each such security.

3. The system of claim 1, wherein the portfolio objectives of any particular investor portfolio may be altered at will by that particular investor.

4. In the system of claim 1, means for submitting buy and sell orders for securities to external automated securities brokers and exchanges for execution on a price/probability basis.

5. The system of claim 1, wherein buy and sell orders completed by said controller means include initiation means, execution means, alteration means and cancellation means which perform the respective functions.

6. The system of claim 5, wherein said investor computer means sorts and displays orders of each investor according to criteria established by that investor.

7. The system of claim 6, wherein said investor computer means continuously analyzes and displays on command the trading decisions of each investor in relationship to the portfolio objectives of that investor and interaction of those decisions with the market and other participants in the market.

8. The system of claim 1, wherein said investor computer means instructs said controller means which securities to buy and sell.

9. The system of claim 1, further comprising automatic substitute order means for automatically deter-

mining when a transaction other than that specified by said controller means will satisfy the portfolio objectives of a particular investor.

10. A method, performed by a computer system including at least three storage devices maintaining multiple databases, a supervisory computer, a controller, and at least three data terminals, for managing a plurality of internally linked investor portfolios, each having an inventory including numerous and diverse securities traded in securities markets at varying prices which fluctuate upwards and downwards and each having separate portfolio objectives represented by a specified desired mix of investments in securities and cash reserves comprising the computer-performed steps of:

updating data files maintained in a mass storage device connected to a controller central processing unit on a daily basis to reflect corporate actions relating to all managed securities;

updating data files maintained in a mass storage device connected to an investor central processing unit on an ongoing basis with current market information concerning the variance of the price fluctuations of each managed security;

updating data files maintained in a mass storage device connected to an investor central processing unit on an ongoing basis with current market information concerning the normal price of each managed security;

analyzing and altering the desired mix of investments in securities and cash reserves for each investor based on changes in portfolio objectives and according to algorithms customized for each investor as implemented by a central processing unit;

analyzing said variance data, said normal price data and said portfolio objectives according to algorithms developed and maintained within a central processing unit;

generating one or more sets of buy and/or sell orders for securities at specific prices by a controller central processing unit;

offering all buy and sell orders first through internal client investor central processing units to other internally linked investors for real time matching and execution;

electronically executing the buy and sell orders which have been first offered to other internally linked investors;

offering any buy and sell orders remaining unexecuted after having been offered to said other internally linked institutional investors through external central processing units to external automated traders for substantially real time matching and execution; and

electronically executing the buy and sell orders which have been offered to external automated traders.

11. The method of claim 10, further comprising the step, after said step of generating, of determining what other transaction(s), might be automatically substituted by a controller central processing unit for any particular buy and/or sell order which would similarly satisfy the portfolio objectives without causing a significant change in the specified desired mix of investments in securities and cash reserves of the portfolio.

12. An on-line interactive event-driven investment processing system for providing added liquidity to continuous auction markets for investment securities and for managing in a real-time environment the interaction of one or more large portfolios of investment securities with each other and with the securities markets, wherein each portfolio has an inventory including nu-

merous and diverse securities and each portfolio has separate portfolio objectives represented by a specified desired mix of investments in securities and cash reserves through generation of trading decisions in the form of buy and sell orders on behalf of each of those portfolios comprising:

first mass storage means within a central processing unit for collecting and storing securities transaction data and price quotation data both from a plurality of securities markets external to the system and from buy and sell orders and transactions generated internal to the system;

controller means for accessing data stored in said first storage means, for analyzing the data stored in said first storage means and for substantially simultaneously transacting multiple purchases and sales of a plurality of securities for one or more of the investor portfolios;

second mass storage means coupled to said controller means for collecting and storing data for each investor portfolio concerning that particular portfolio and for storing buy and sell orders on behalf of that particular portfolio;

investor computer means for maintaining each investor portfolio wherein said investor computer means is coupled to said second storage means for analyzing data concerning the portfolio of that particular investor and for generating buy and sell orders for transmission to said second storage means on behalf of that portfolio in order to retain the portfolio objectives while also providing liquidity to the securities market;

third mass storage means coupled to said controller means for collecting and storing data concerning the portfolios of all investors using the system;

supervisory computer means coupled to said third storage means for supervising and ensuring the proper functioning of the system;

external data terminal means coupled to said controller means for linking said controller means to external automated securities brokers and exchanges and for transmitting orders and transaction data to external automated securities brokers and exchanges;

trade data terminal means coupled to said controller means for reporting all executed sales internal to the system to a central reporting house; and

settlement data terminal means coupled to said controller means for reporting all trades involving individual securities for settlement purposes to an external organization.

13. The system of claim 12, wherein said controller means presents orders representing such transactions both to other investors using the system and to external automated securities brokers and exchanges.

14. The system of claim 13, wherein all buy and sell orders for securities are presented first only internally to other investors using the system for real time matching and execution and, if unexecuted, are thereafter presented to external automated securities brokers and exchanges through said external data terminal means for matching and execution in a substantially real time environment.

15. The system of claim 14, wherein buy and sell orders for securities are executed on a price/time priority basis among internal investors.

16. The system of claim 15, wherein buy and sell orders for securities are submitted to external automated securities brokers and exchanges for execution on a price/probability basis.

\* \* \* \* \*





A3

# United States Patent [19]

[11] Patent Number: 5,946,667

Tull, Jr. et al.

[45] Date of Patent: Aug. 31, 1999

## [54] DATA PROCESSING SYSTEM AND METHOD FOR FINANCIAL DEBT INSTRUMENTS

[75] Inventors: Robert Stanley Tull, Jr., Levittown, Pa.; David M. Weisberger, London; John Vincent H. Fox, Esher, Surrey, both of United Kingdom; Myriam Joelle Karsenty, New York, N.Y.

[73] Assignee: Morgan Stanley Group, Inc., New York, N.Y.

[21] Appl. No.: 09/071,437

[22] Filed: May 1, 1998

### Related U.S. Application Data

[63] Continuation of application No. 08/223,797, Apr. 6, 1994, abandoned.

[51] Int. Cl.<sup>6</sup> ..... G06F 17/60

[52] U.S. Cl. .... 705/36; 705/35; 705/37

[58] Field of Search ..... 705/35, 36, 37, 705/30, 31, 400; 707/104, 101, 530, 531

### [56] References Cited

#### U.S. PATENT DOCUMENTS

4,674,044	6/1987	Kalmus et al.	705/37
4,677,552	6/1987	Sibley, Jr.	705/37
5,038,284	8/1991	Kramer	705/37
5,101,353	3/1992	Lubien et al.	705/37
5,126,936	6/1992	Champion et al.	705/36
5,132,899	7/1992	Fox	705/36
5,270,922	12/1993	Higgins	705/37
5,297,032	3/1994	Trojan et al.	705/37
5,644,727	7/1997	Atkins	705/40
5,682,466	10/1997	Maeda et al.	706/46

### OTHER PUBLICATIONS

Eligin; "SPDR Web Ensnares Both Active, Passive Fund Managers"; *Corporate Cashflow*; v14 n13; pp. 5-6; Dialog: File 485, Acc#00440032.

Friedman et al.; "It's a Bond, It's a Stock, It's... A Lyon?"; *Business Week*; Aug. 6, 1990; p. 66.

Chiappinelli, "Reinventing a Security: Arguments for a Public Interest Definition," *Washington and Lee Law Review*, vol. 49, Sections 957-985 (Summer 1992).

Steiner, "New Amex 'Spiders' Mimic S&P Index," *The Wall Street Journal*, Feb. 22, 1992.

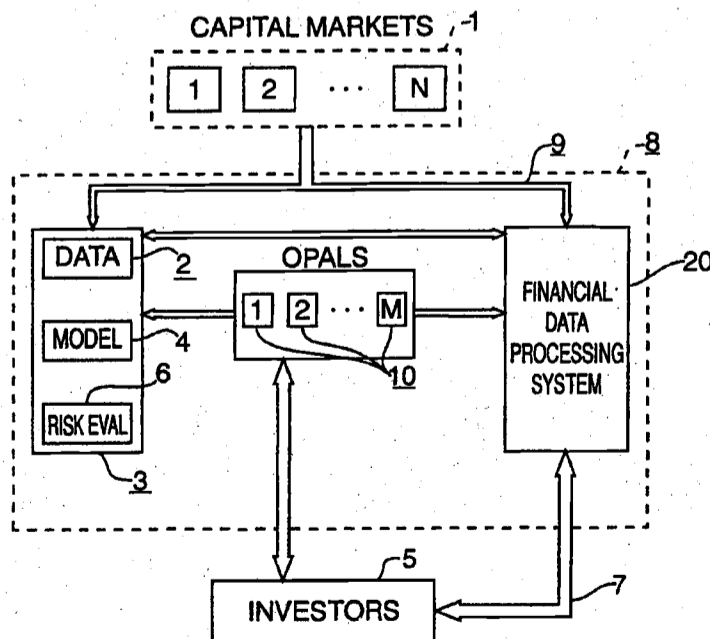
Wilcox, "EAFE is for Wimps," *The Journal of Portfolio Management* (Spring 1994), pp. 68-75.

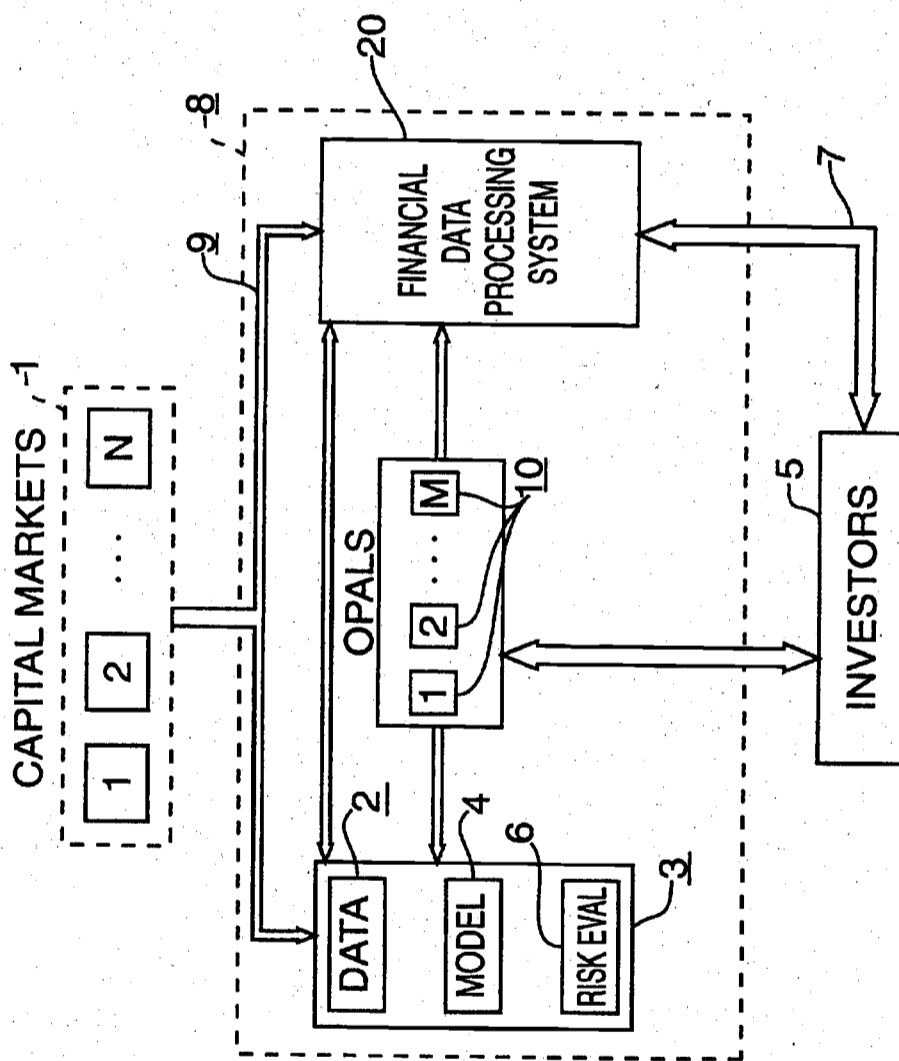
Primary Examiner—Stephen R. Tkacs  
Attorney, Agent, or Firm—Pennie & Edmonds LLP

### [57] ABSTRACT

A data processing system and method is disclosed for implementing and control of a financial debt instrument which is issued for a limited period of time and is traded as a listed security. The debt instrument is based on an underlying basket of stocks optimally selected to track an established capital market and its price also reflects accrued investment income and maintenance expenses. The data processing system receives input from the capital market and periodically evaluates the performance of the financial debt instrument, reporting its price to customers. Also disclosed is a data processing system for administering an investment group of such debt instruments designed to track the performance of several domestic and foreign markets, estimate their return and provide current price information to customers.

39 Claims, 7 Drawing Sheets





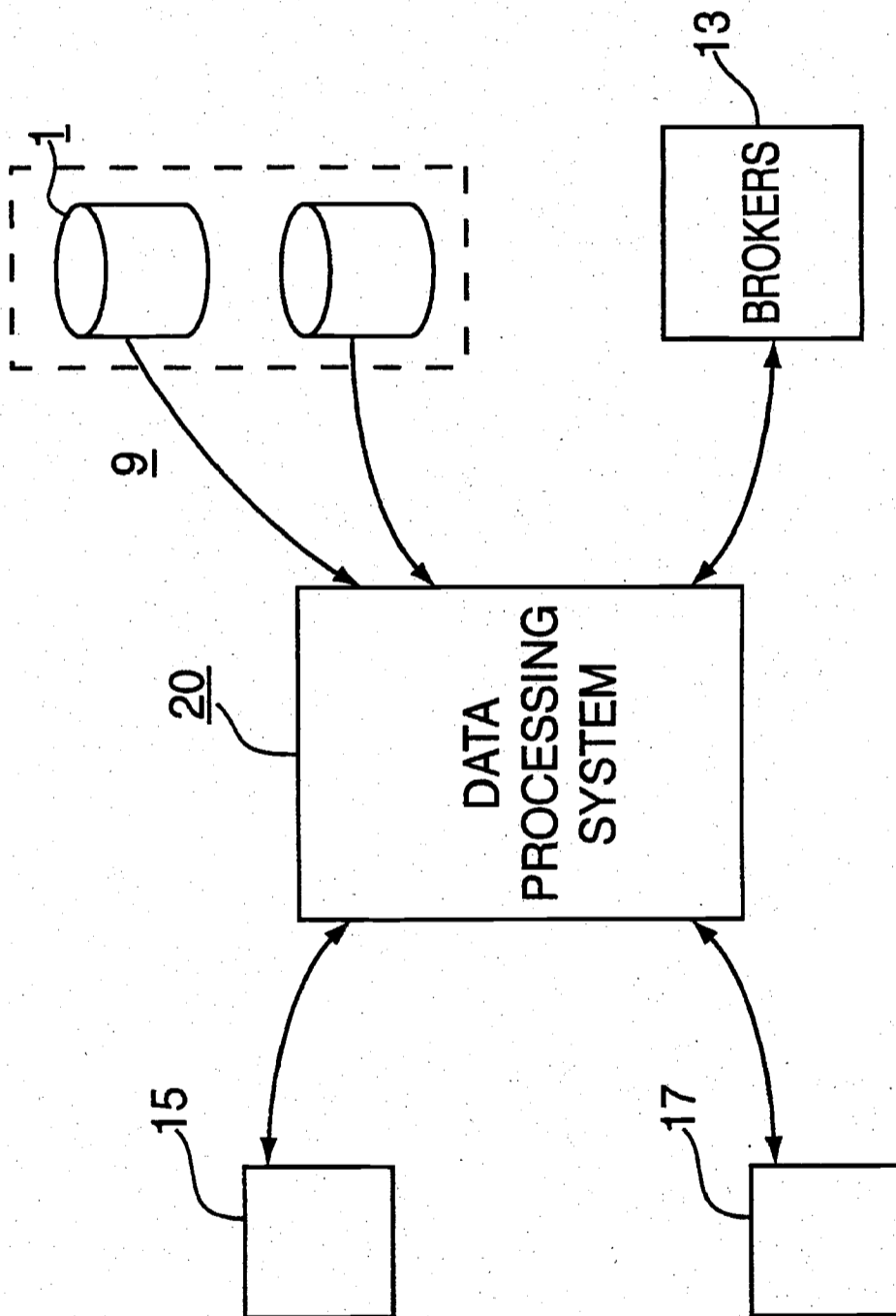


FIG. 2

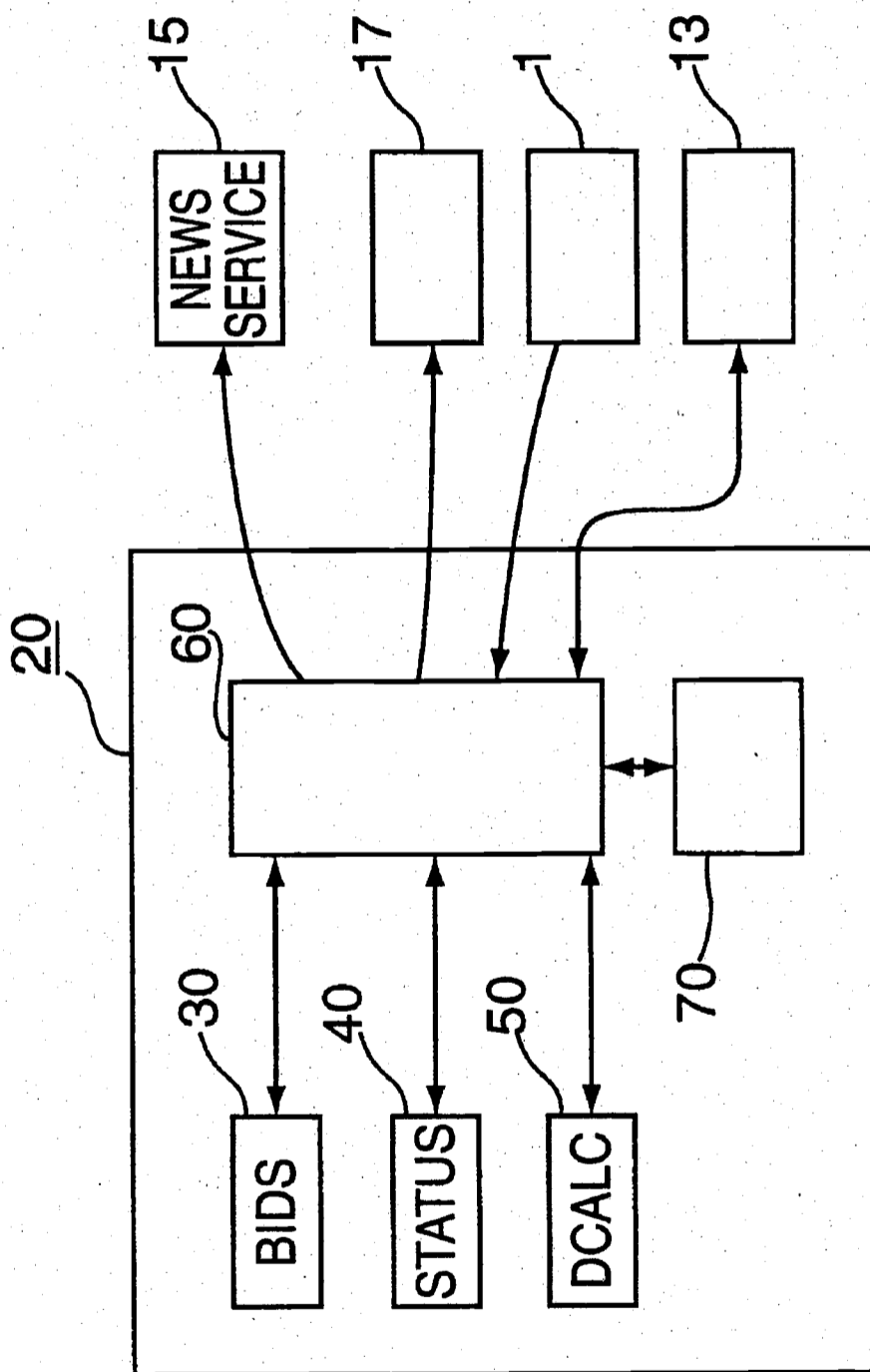


FIG. 3

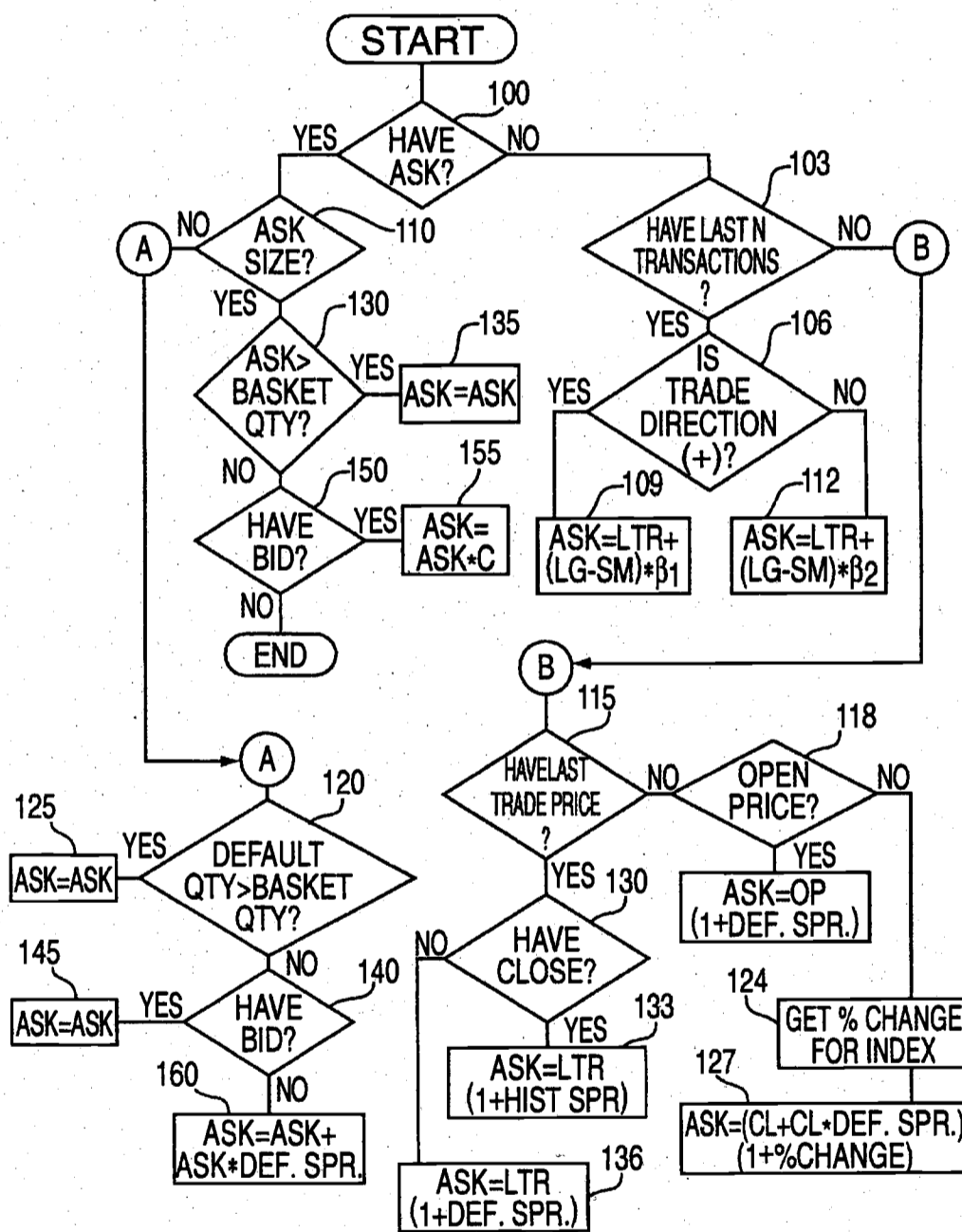


FIG. 4

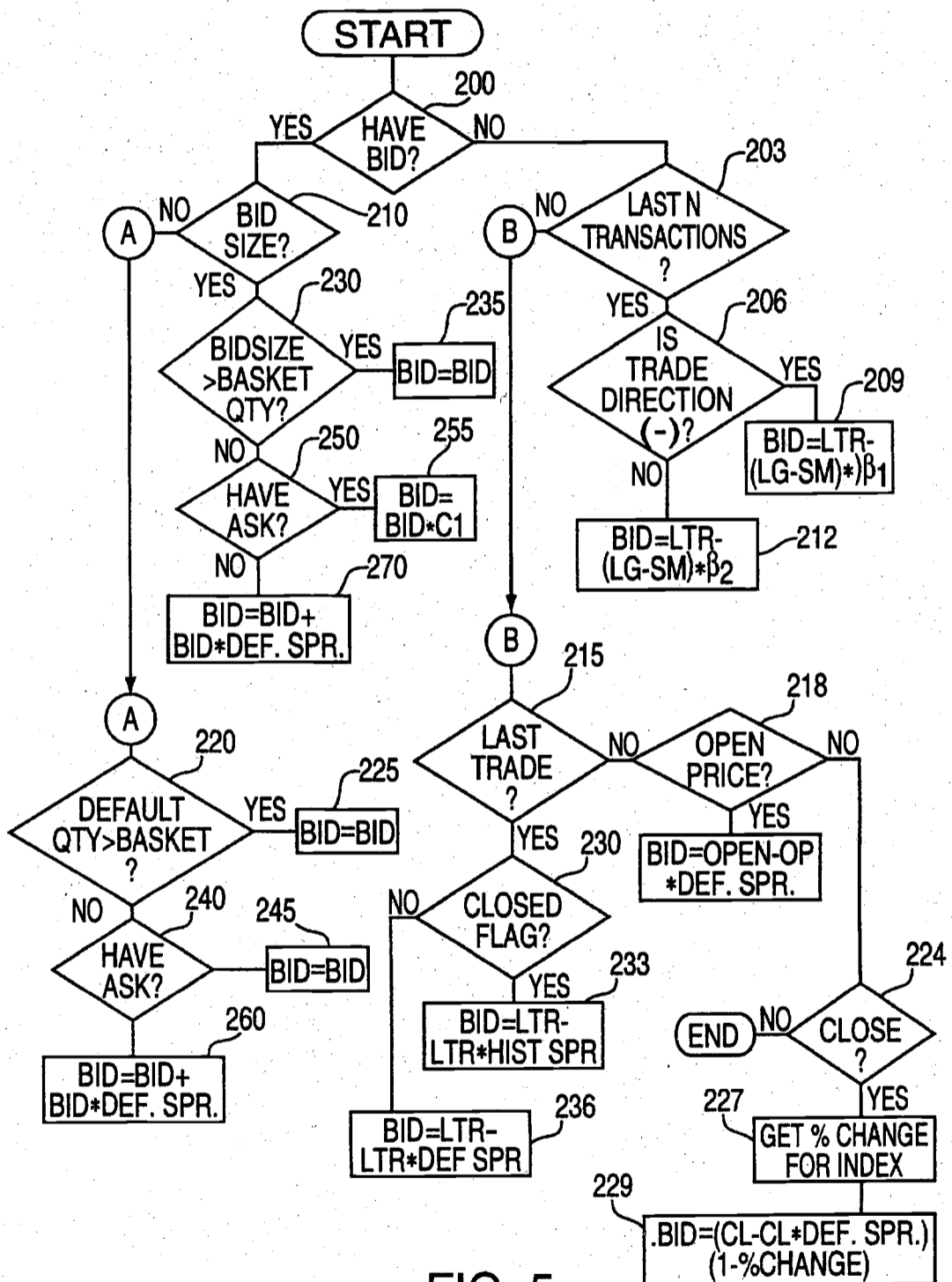


FIG. 5

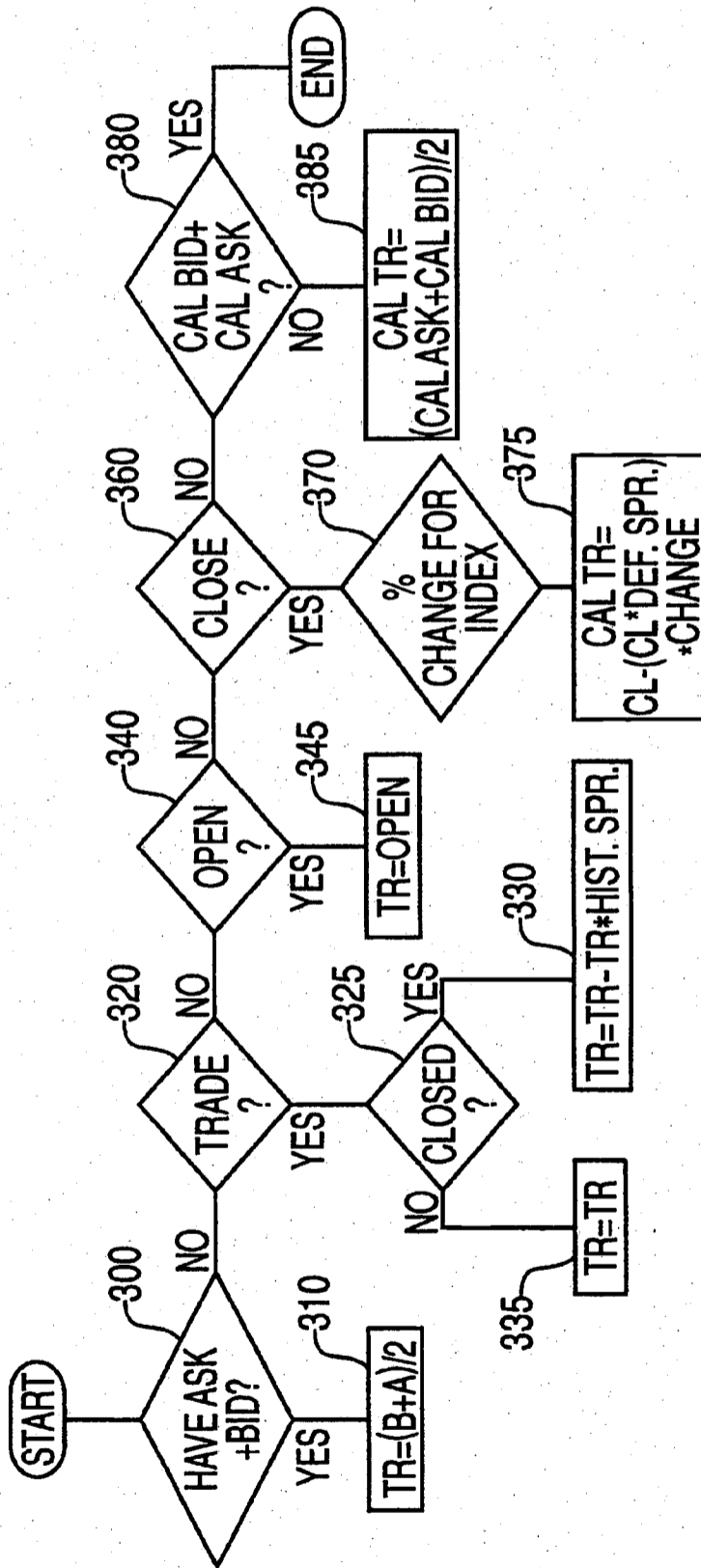


FIG. 6

SYMBOL	COMPANY	INDEX : WSCI JAPAN (PRICE AS OF 7/1/99)		LOCAL CURRENCY		VALUE DESCRIP.	
		SHARES	US DOLLARS	PRICE	VALUE	% OF BASKET	% OF NORMAL BSKIND
		NUMBER	DAILY VOLUME	PRICE	VALUE	PRICE	VALUE
OVERALL TOTALS		595,800	5,115			643,066	100.00%
JAPAN		595,800	5,115			643,066	100.00%
BASKET: 215,050		266,152					
6462842	INDUSTRIAL BANK OF JAPAN	8,000	23.30	2,930.00	23440	3.65%	3.43%
6250241	DAIICHI KANCYO BANK	10,000	16.70	2,100.00	21000	3.27%	3.27%
6356280	FUJI BANK	9,000	18.21	2,290.00	20610	3.20%	3.30%
6598714	DAIICHI KANCYO BANK	11,000	12.41	1,560.00	17160	2.67%	2.58%
9858526	MITSUBISHI BANK	9,000	14.85	1,880.00	16920	2.63%	2.94%
6900643	SUNITOMO BANK	11,000	11.61	1,460.00	16060	2.50%	2.71%
6895404	TOYOTA MOTOR CORP	3,100	25.77	3,240.00	10044	1.56%	2.16%
6843108	TOKYO ELECTRIC POWER	6,000	12.41	1,560.00	9360	1.46%	1.52%
6429104	NOMURA SECURITIES	10,000	7.38	978.00	9280	1.44%	1.44%
6572707	HITACHI LTD	6,000	11.89	1,470.00	8820	1.37%	1.53%
6894081	MATSUSHITA ELECT IND'L	6,000	11.37	1,430.00	8590	1.33%	1.43%
6791773	BANK TOKYO	1,000	66.41	8,350.00	8350	1.30%	1.08%
6483469	SEVEN ELEVEN	3,000	21.55	2,710.00	8130	1.26%	1.31%
6895341	SANSAI ELECTRIC POWER	6,000	10.74	1,350.00	8100	1.26%	1.36%
6499367	TOKAI BANK	20,000	2.87	361.00	7220	1.12%	1.24%
6597067	NIPPON STEEL	7,000	7.94	998.00	6986	1.09%	1.15%
6640400	KYOWA SAITANA BANK	10,000	5.21	655.00	6550	1.02%	1.10%
6597885	MITSUBISHI HEAVY	5,000	9.54	1,200.00	6000	0.93%	0.92%
6598776	TOKYO MARINE & FIRE	4,000	11.93	1,500.00	6000	0.93%	0.97%
6356575	NEC	5,000	9.54	1,200.00	6000	0.93%	0.92%
6597885	FUJI PHOTO FILM	2,000	23.70	2,980.00	5960	0.93%	0.92%
6471071	MITSUBISHI CORPORATION	4,000	9.31	1,170.00	5850	0.91%	0.91%
6493745	YASUDA TRUST	4,000	11.29	1,420.00	5670	0.88%	0.84%
6842860	JAPAN AIRLINES	6,000	7.52	945.00	5520	0.86%	0.84%
6597261	MITSUBISHI TRUST	4,000	10.34	1,300.00	5200	0.81%	0.68%
6493745	KIRIN BREWERY	8,000	5.15	647.00	5176	0.81%	0.81%
6866449	NISSAN MOTOR	4,000	9.62	1,210.00	4840	0.75%	0.69%
6356945	BANK YOKOHAMA	6,000	6.36	800.00	4800	0.75%	0.72%
6055708	FUJITSU LTD	4,000	9.54	1,200.00	4800	0.75%	0.72%
6895448	ASAHI GLASS	9,000	4.21	528.00	4761	0.74%	0.74%
6661768	TOKYO GAS	8,000	4.61	580.00	4640	0.72%	0.73%
6435145	OSAKA GAS	3,000	11.85	1,490.00	4470	0.70%	0.72%
6499260	HONDA MOTOR	1,000	35.55	4,470.00	4470	0.70%	0.53%
6821506	PANUC	1,000	35.31	4,440.00	4440	0.68%	0.41%
6462944	KYOCERA	1,000	34.68	4,360.00	4360	0.68%	0.81%
6640381	SONY	1,000	34.20	4,300.00	4300	0.67%	0.88%
6821448	ITO YOKADO	3,000	11.29	1,420.00	4260	0.66%	0.59%
6800602	NIPPONDENSU	4,000	8.43	1,060.00	4240	0.66%	0.71%
6858946	DAIWA SECURITIES	3,000	10.90	1,370.00	4110	0.64%	0.64%
	SHARP	4,000	8.11	1,020.00	4080	0.63%	0.54%
	SUNITOMO CORPORATION	4,000	8.11	1,020.00	4080	0.63%	0.54%

FIG. 7



## DATA PROCESSING SYSTEM AND METHOD FOR FINANCIAL DEBT INSTRUMENTS

This is a continuation of application Ser. No. 08/223,797, filed Apr. 6, 1994 now abandoned.

### FIELD OF THE INVENTION

The present invention relates to a data processing system and method for managing financial debt instruments designed for investors whose objective is to track the performance of certain security markets within a limited period of time. More particularly, the invention relates to an integrated financial management system for implementing investor participation in domestic and foreign capital markets through positions in indexed vehicles which are packaged as debt instruments.

### BACKGROUND OF THE INVENTION

The capital markets of the world have undergone unprecedented transformations during the last decade in response to changing economic, political and financial conditions which have led to closer contacts between the economies of different countries and thus to a largely internationalized capital marketplace. As a result of this global investment environment, traditional investment devices such as stocks and bonds have been supplemented with more versatile investment vehicles. The advent of computerized trading and other forms of advanced information processing has created a new family of investment products, such as commodity options; international capital, real estate, and currency funds; "unmanaged" index funds; financial futures contracts, and other so-called derivative instruments.

In spite of these alternatives, certain investment strategies remain prohibitively expensive to pursue for a number of investors. In particular, many investors employ a technique known as market timing, which involves investing in the equity markets at the perceived time of market growth and divesting at a later time of perceived market contraction. This strategy is usually based on timing the business cycles for the economy as a whole which tends to avoid the risk associated with owning individual stocks. Due to the fact that economic cycles of different countries frequently run in opposite directions, it would be especially beneficial for market timers to participate in a particular capital market for a limited time and to be able to redistribute investments to other markets at appropriate times in the perceived cycles. Despite the globalization of the economic and political ties between different countries, however, there are numerous problems associated with a foreign market trade, so that only a few investment vehicles exist which would allow the investors to participate in the global financial markets at a reasonable cost.

Another investment approach is to seek undervalued stocks. The goal is to counteract the business cycles so that the selected individual stocks, perceived to be undervalued, have an opportunity to appreciate. Such investment approach involves hedging one investment in a perceivably undervalued stock with a countering investment to limit the impact of the business cycle on this stock. Clearly, the investment hedging strategy is best applied on a global scale, which allows the investors to limit their risks. As discussed above, however, such approach is presently not available to most inventors due to the difficulties associated with trading on foreign markets.

Among the various investment options, significant popularity in last years have achieved the mutual funds which

offer a variety of investment options tailored to specific customer needs. Different funds are designed to invest in particular types of stocks, in specific industry sectors, or track the performance of broader market indicators. Some funds offer income which is free of federal, state or local taxes, dependent on the residence of the investors. Mutual funds are particularly attractive because they provide the investors with the opportunity to participate in the capital markets for a relatively low fee compared to a direct investment in stocks. These investors' fees are in part used to finance research directed to selecting a specific investment portfolio for each fund.

Recently, professionally managed mutual funds have come under criticism due to the fact that a large number of such funds were outperformed by general equity market indicators, such as the S&P 500 index. The S&P (Standard & Poor's) 500 index is a relative valuation of the stocks of 500 large companies, indicative of the performance of the U.S. equity markets. To some degree, the performance of such funds is determined by the total investments in the fund. Some small funds are capable of focusing on a particular investment strategy which may lead to superior performance over a limited period of time. As the investment return of such funds rises, however, more investors are attracted to the fund, leading to a less flexible investment structure and frequently to a worsened performance. For this reason, many funds are being closed to new investors after they reach certain level of assets.

The unsatisfactory performance of many managed funds has created substantial interest in unmanaged investment products that track the overall performance of the equity markets. Such products include indexed stock funds that invest in the stocks of the S&P 500 companies and, therefore, directly track the performance of the S&P 500 index, unencumbered by asset research fees and transaction costs. Other investment vehicles have been offered to track the performance of select foreign markets.

Several investment products have been proposed in the past in this respect. One approach is represented by the Toronto Index Participation Units ("TIPS"). TIPS is an open end unit trust structure which was designed to follow the Toronto 35 Index.

Another relatively recent approach is offered by the Standard & Poor's Depository Receipts™ ("SPDRs"). The SPDRs are financial instruments devised to package equity into a single listed security. They represent ownership in a SPDR Trust, a unit investment trust which holds a portfolio of common stocks that tracks the price performance and dividend yield of the S&P 500 index. SPDRs are like open end unit trust that is rebalanced daily to the S&P 500 Index and may trade at a premium or discount to the S&P 500 futures. SPDRs may be held like a stock for a long time and entitle the holder to quarterly cash distributions corresponding to the dividends that accrue to the S&P stocks in the underlying portfolio, less expenses. While the SPDRs provides desirable diversification and convenience, they are only offered in one capital market.

The above-described investment products do not provide the desired diversity and level of service. Notably missing are investment products which track the performance of one or more foreign markets. At least in part, the reason for this lack of financial products is that no financial management system has been able to combine resources such as computer data processing systems, economic forecasts, market models and a global communication network to enable the creation of such products and provide real time analysis and reports

on the performance of the financial product. Furthermore, no financial product on the market has been packaged as a debt instrument which in many jurisdictions provides appreciable tax and other advantages to the investors.

It is therefore felt that there is a need to provide an integrated financial management system for implementing investor participation in domestic and foreign capital markets through positions in indexed vehicles which are packaged as debt instruments. The financial management system is to offer a full range of services including administering, monitoring and reporting on the return of the financial instrument, providing investors with cost effective and versatile options to participate in different capital markets.

#### SUMMARY OF THE PRESENT INVENTION

It is an object of the present invention to provide a financial management system to develop and administer a financial debt instrument traded as a listed security to investors desiring to track the performance of a domestic or foreign capital market.

Another object of the present invention is to provide a system and method for optimized selection of shares the performance of which is designed to track the performance of the related equity index over a limited period of time.

It is another object of the present invention to provide a data processing system for administering information on each share of a selected basket of shares which is representative of a capital market.

It is a further object of the present invention to provide data processing means for determining a price for a basket of shares which is packaged as a debt instrument so as to reflect the current aggregate value of the shares and accrued income and expenses associated with all shares in the basket.

Yet another object of the present invention is to provide a data processing system and method to rebalance a basket of shares which is representative of a capital market and is designed to track its performance if the tracking error associated with an index value of the capital market exceeds certain threshold.

It is yet another object of the present invention to provide a computer system for maintaining financial debt instruments that represent positions in one or more capital markets and which generates reports on the return of each financial debt instrument to the investors.

These and other objects of the present invention are realized in a specific embodiment of a financial management system incorporating means for implementing, coordinating, supervising, analyzing and reporting upon financial debt instruments designed to track the performance of established capital markets. The financial debt instrument of the present invention comprises a basket of stock shares the return performance of which is representative of a capital market over a predetermined limited period of time. The debt instrument is sold as an Optimal Portfolio Listed Security ("OPALS") which may provide in many jurisdictions tax and other advantages to the investors. The data processing system of the management system of the present invention provides continuous monitoring of the price of the OPALS and reports this price to customers over a communication network.

The basket of shares underlying the debt instrument of the present invention is selected through a mathematical programming function which uses input to forecast of economic and financial variables, risk allocation factors and data about individual stocks in the market. The programming function

then suggests a basket of stock shares which are optimally selected to track the investment return of the capital market over a predetermined period of time. Thus, the present invention provides investors with a convenient, cost-effective and mathematically rigorous means of reducing the level of uncertainty about their investment return.

In the preferred embodiment, the financial management system of the present invention packages the optimally selected baskets of shares as debt instruments which are traded as OPALS. The debt instruments are issued in different series which track the performance of domestic or foreign capital markets over different predetermined periods of time. Each OPALS is secured by the shares, or an Equity Linked Obligation ("ELO"), secured by the underlying basket of stock shares which are purchased and held by the financial management system. Upon maturity, the OPALS is redeemable to the investors, or may be rolled over into a new debt instrument, designed to track the same or a different capital market. The period of time for which such OPALS are issued is between about one and ten years, preferably between one and five years, and may vary with the selected capital market or the prevailing economic conditions.

During the life period of an OPALS the data processing system of the present invention provides continuous monitoring of the trade transactions of the stocks represented in the underlying basket of shares. The system combines current trade information with historical data representing financial characteristics of each stock in the basket to generate the current price of each stock at any time. The data processing system uses the financial characteristics, such as the value of the historical, default or minimum spread between ask and bid prices of the stock and its last N trade transaction, to estimate information about trade transactions which have not closed and thus provide an accurate estimate of the price of the stock.

Based on the information on each stock, the data processing system computes the current aggregate value of the basket of shares. This aggregate value is further modified to reflect clearing, custody and other management costs and income accrued from the basket of shares to generate a composite price for the debt instrument which is the listed price at which the OPALS are traded. Because the OPALS are traded as single securities, investors gain exposure to an entire market by making one payment only. Furthermore, the OPALS securities receive book-entry settlement so that an investor willing to sell the security can send one set of instructions to an operator of the financial management system. The OPALS will settle in about five business days after the trade date, regardless of the local market settlement cycle. This is made possible by the pricing model used in administering the OPALS which model is implemented by the data processing system of the present invention.

During the life of the security, the pricing of each OPALS is monitored and analyzed. Based on the analysis, if necessary, an OPALS is then rebalanced to account for differences between the performance of the constituent shares and that of the associated capital market index. The cost of rebalancing is automatically included in the price of the security by the data processing system.

Another aspect of the present invention is that the data processing system, which monitors the performance of the basket of shares underlying an OPALS also provides the capability to generate reports to the investors on the price of the security, on the present and expected return of the investment and other information. Such reports, which may have different levels of details are expressed in both U.S.

dollars and the local market currency and are valuable to investors who follow the market cycle and wish to optimize their investment strategy.

From the standpoint of the investors, the OPALS financial debt instrument provided by the financial management system of the present invention is superior to other investment vehicles in that: (1) It provides the capability to implement several global portfolio decisions using a single investment; (2) it provides access to international equity markets on a country by country basis, avoiding problems associated with investor asset restrictions or the inconvenience of trading individual stocks; (3) it is a cost-effective investment with low administration costs for trading and processing shares underlying the debt instrument.

The structure and complexity of the system of the present invention suggests that it would be best implemented on a real time computer system. As described in its preferred embodiment below, the management system and its data processing part provides a real time update of all the components which comprise the OPALS, and supervises, analyses and periodically reports on the investment activities associated with the financial debt instrument.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing features of the present invention may be more fully understood from the following detailed disclosure of a specific preferred embodiment in conjunction with the accompanying drawings, in which:

FIG. 1 illustrates in a block diagram form the financial management structure of the present invention and its connections to the capital markets and investors.

FIG. 2 illustrates in a block diagram form the connections between the data processing system and other components of the financial management structure.

FIG. 3 shows in more detail the structure of the data processing system.

FIG. 4 is a flow chart of the computation of the current ask price for each stock in the basket.

FIG. 5 is a flow chart of the computation of the current bid price for each stock in the basket.

FIG. 6 is a flow chart of the computation of the current trade price for each stock in the basket.

FIG. 7 illustrates the information for a basket of shares which is reported to the system operators.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Discussing briefly in overview the financial management structure of the present invention, its fundamental objective is to facilitate the access of investors to world capital markets by providing and administering a new financial debt instrument that increases the ease and diminishes the cost of investing.

The financial management structure of the present invention is operated according to the data processing methods and systems disclosed next. FIG. 1 illustrates in a block diagram form the financial management structure 8 of the present invention which links capital markets 1 and the investors 5, who wish to participate in one or more of these markets. Capital markets 1 may represent the stock market of different countries or an index associated with the performance of such markets. In a preferred embodiment of the present invention financial management structure 8 comprises a modeling system 3, financial debt instruments 10

traded to investors as single securities and a data processing system 20 designed to administer the transactions associated with debt instruments 10.

Modeling system 3 selects an optimized basket of shares which is representative of a particular capital market. This selection is done using a programming function which receives and stores data about each stock in the capital market, correlates the available data with economic forecast models to suggest an optimal basket of stock shares which can model the performance of the overall market, and predicts the future correlation of the selected stocks in the basket with the index of the market to ensure that they will track the market index closely.

Based on the information from the modeling system 3, financial management structure 8 creates one or more financial debt instruments 10 which are designed to be traded as Optimized Portfolio Listed Securities ("OPALS"). Each OPALS 10 is packaged as a financial debt instrument which is characterized in that it can be traded as a single security and, for a limited period of time which is typically between one and five years, tracks a market index associated with the capital market. During their existence term, OPALS 10 generate income to their holders based on the performance of the underlying shares in accordance with a prespecified payment schedule. Such income is comprised of dividends on the shares in the basket of shares underlying each OPALS 10, proceeds from the sale of rights accruing to such shares, and income received from lending such shares. Upon maturity of the OPALS 10, its holder (a participating investor 5) is entitled to receive the entire basket of shares underlying the OPALS.

The OPALS financial instrument 10 operates with respect to investors 5 as an open market fund which can be traded by brokers either at the value of the underlying shares or above or below this value dependent on the current market situation or other factors. OPALS 10 are issued in series which track the performance of one or more capital markets over different predetermined periods of time. An important feature of OPALS 10 of the present invention is that each of them is packaged as a debt instrument so that income received on the shares that support the OPALS may be passed to the investors in a tax neutral manner in most jurisdictions. Notably, OPALS 10 are structured so that where permitted they may be traded in a local currency which feature may create additional benefits to the investors.

During the existence term of an OPALS 10, financial management structure 8 fully administers the debt instrument using data processing system 20. Data processing system 20 continuously monitors the price of the underlying basket of shares using input from a global communications network 9 connected to the capital market place. Based on this information, data processing system 20 computes the aggregate value of the entire underlying basket of shares and the current price of the OPALS 10 by further including the accrued income and the appropriate maintenance expenses.

Data processing system 20 additionally reports over communications network 7 to the investors 5 the prices of all issued OPALS which can be traded on request. Furthermore, system 20 provides the capability of trading and settling of the OPALS 10 independent of the local settlement cycles because it uses in the pricing structure of the OPALS a market impact factor which incorporates the characteristics of local trading patterns.

The individual components of the management system 8, their interactions and the advantages offered to the investors are considered in detail next.

### The Modeling System

Still in reference to FIG. 1, the optimized basket of shares underlying an OPALS 10 is selected in a preferred embodiment of the present invention by modeling system 3. In order to adequately follow a market index, for small capital markets it may be necessary to purchase shares of all stocks. In larger markets, however, it would be more cost efficient to purchase only a subset of all stocks which subset is representative of the market as a whole. An advantage of this approach is that it avoids the costs associated with the transactions and monitoring on a daily basis of large numbers of stocks. Factors such as capitalization, the industries representation, the liquidity the local shares and others are used in the stock selection process.

This selection is done in accordance with one embodiment of the present invention using a mathematical programming function which employs data means 2 for receiving and storing data about each stock in the capital market; portfolio modeling means 4 which correlate the available data with economic forecast models to suggest an optimal basket of stock shares; and risk evaluation means 6 predicting the future correlation of the selected stocks in the basket with the market valuation. Risk evaluation means 6 employs a multi-factor risk model and relies on optimization techniques to ensure that the subset of stocks underlying an OPALS will track the market index as closely as possible. The cooperation between data means 2, modeling means 4 and risk evaluation means 6 results in a basket of stock shares whose weighing further reflects liquidity considerations, industry exposure and market capitalization.

In a specific embodiment, modeling system 3 determines the optimal basket of stocks by sorting the stocks of the capital market in a descending order of market values and storing the sequence in a computer memory. For each stock of the portfolio, modeling means 4 then computes the associated volatility or beta factor using well known techniques. Modeling means 4 then stores in a memory (not shown) the beta factor of each individual stock. The list of beta values is then added and divided by the number of all beta values to obtain the average beta value for the stocks in the model basket of shares. If the average beta for the basket of shares is greater than unity, the programming function operated by modeling means 4 will review the portfolio and add or substitute stocks with lower beta factors to bring the average to or less than about 1. This selection of substitute stocks can be made by an operator using the optimization software to select the shares to be deleted from or added to the composite of basket of shares to adjust the tracking tolerance.

Another step used in the selection of the model portfolio involves analysis of the capitalization of the stocks in the selected portfolio. Capitalization may be defined as the value obtained by multiplying the total number of outstanding shares of a stock by the current price of the stock. Risk evaluation means 6 computes the capitalization of each stock in the model basket, adds them up and divides the result by the number of stocks in the portfolio to obtain the average model capitalization. Risk evaluation means 6 next determines or obtains from an outside source the average capitalization value for the particular market which is being followed and compares the result to the computed capitalization of the model basket. Should there be a discrepancy between the two values which is above a predetermined threshold, the program implemented by means 6 may be directed to substitute either new stocks from the capital market or change the weighing of the stocks represented in the basket.

Data means 2, modeling means 4 and risk evaluation means 6 may be implemented in a specific embodiment of the present invention as computer processes which are capable of creating and exchanging messages. A separate computer can be provided for each of these processes or they can run on a single multiprocessing system. Modeling system 3 operates in accordance with a mathematical programming optimization function which uses a set of user defined constraints on the current financial reports of the stocks received from the capital markets over communications network 9 and stored in data means 2. Other constraints include the level of certainty regarding future events and the predicted future values of economic variables. Such constraints are typically defined by human experts and are used by the risk evaluation means 6.

The operation of modeling system 3 above is merely illustrative of the considerations used to define an optimal basket of stock shares which represent a capital market over a limited period of time.

Alternatively, modeling system 3 may be implemented using commercially available sources for optimized portfolio selection and risk and investment analysis. Such sources include packages which are available from the Harvard Business School in Cambridge, Mass., or vendors such as Barra International in San Francisco, Real Decisions Corporation in Darien, Conn. and others.

### The Data Processing System

FIG. 2 illustrates in a block diagram form the connections between the data processing system 20 and other components of the financial management structure as well as the communications network providing a link to the capital markets. As shown, data processing system 20 receives input over communications network 9 from the capital markets 1 and has a two-way connection with brokers 13 which handle trade transactions of the OPALS.

Data processing system 20 is also connected over a communications network to investors 5. In a preferred embodiment of the present invention this communication may be established over an international news report service 15 such as Reuters. Additionally, all trade transactions and other information concerning the basket of stock shares underlying the OPALS are communicated on-line to desktop terminals 17 of the operators of the financial management structure 8. Terminals 17 further receive information about the current price of all OPALS which are administered by the management structure 8.

FIG. 3 shows in more detail the structure of the data processing system 20 which is designed in accordance with the present invention to administer an OPALS debt instrument. In a preferred embodiment illustrated in FIG. 3, data processing system 20 comprises a processor unit 60, database 70 which stores data about the basket of shares underlying the OPALS and three computer applications: 30 called bids, 40—called status, and 50—termed dealc. The applications 30, 40 and 50 interact with processor 60 to compute the current price of the OPALS. As shown in FIG. 3, data processing system 20 also receives input from the capital markets which input comprises raw transactions data for each stock.

Based on the information from the capital market, application 30 first computes the aggregate ask, bid and trade prices for the stocks underlying the OPALS. Next, application 40 receiving input from application 30 computes the overall value of the basket of shares which includes the sum total of all ask prices and the sum total of the bid and trade prices. Finally application 50, receiving input from both applications 30 and 40, adds to the aggregate value of all

shares the accrued income and maintenance costs to determine the overall price of the OPALS as traded to the investors.

In addition to the dynamic values which are reported on-line to the data processing system from the capital market there are static variables which are used to determine the final prices for the OPALS. Such static values include finance charges and commission rates as well as the historical and default spread values between the ask and bid prices for the stocks of the underlying basket. These static values are computed and periodically updated using an OPALS maintenance facility (not shown) which is part of processor 60 and stores data in data base 70.

In a preferred embodiment of the invention, applications 30, 40 and 50 of data processing system 20 are processes running on workstations which are interconnected by a local area network to a computer file server 60. A specific advantage of this configuration is the relatively low cost of implementation.

In another preferred embodiment of the present invention, data processing system 20 can be implemented on any computer capable of multiprocessing, or multitasking where the individual processes can be synchronized and can exchange messages while running. Examples include general purpose "time-slice" minicomputers and mainframes, symmetrical multiprocessor computers, and multiprocessor and single-processor transaction processing computers.

The data processing system 20 of the present invention may also be implemented using several architectures which differ in the interconnections between the process components and the exchange of information between them. Specifically, processor 60 may be connected, either directly or through a data communications gateway, to a host computer, which in turn may connect directly to operator terminals. In this embodiment the terminals 17 of the operators may be connected to both the host and to processor 60, so that an operator may have access to all running processes.

#### Computation of the Price of an OPALS

The operation of data processing system 20 is best understood by considering the interaction of applications 30, 40 and 50, processor 60 and database 70. Due to the fact that information about a large numbers of stocks from different capital markets must be processed simultaneously, each stock of each OPALS being administered by the data processing system must be uniquely identified to enable such interaction. The identification of each security has a specific system description which is stored in database memory 70 and may appear as follows:

INDEX = MSCI ID = AMBGN E = FRA CNTRY = GFR CURR = DEM  
RIC = GDAX REX = IDN QUAN = 50.0 DQUAN = 50.0

where:

TABLE OF INPUT INDICES	
INDEX	which market index this basket is following
ID	The stock identifier.
E	The exchange code identifier.
CNTRY	The country code. This code maps to the spread file where the specific spreads are assigned to specific countries.
CURR	The local trade currency.
RIC	The symbol identifier for the select index.

-continued

TABLE OF INPUT INDICES	
REX	The exchange identifier for the select index.
QUAN	The quantity of the particular stock in the basket.
DQUAN	The default quantity of the particular stock in the basket.

Additionally, data processing system 20 comprises a set of configuration files which are stored in database 70 and comprise various static variables used by the applications. Examples include the default spread and the historical spread files, in which for each country an exchange identifier is associated with the default and historical spread factors for the ask and bid prices of each stock.

FIGS. 4-6 are flowcharts which illustrate the program steps executed by application 30 (bids) to calculate the ask, bid and trade prices for each stock in a basket of shares underlying an OPALS. These individual stock prices are made available to processor 60 and database 70 for subsequent use.

Specifically, FIG. 4 illustrates the instruction sequence executed by application 30 to compute the ask parameter for a particular stock. (To avoid confusion with the ask prices in the capital market which are posted on the communications network, the value computed by the processing system 20 is termed an ask parameter in the sequel). In step 100 the program checks whether there is an ask price posted on the communications network and if there is such price the program proceeds to step 110 to check whether there is an ask size specified. If such ask size is specified, application 30 proceeds to step 130 in which it computes whether the ask size is greater than the basket quantity of the stock. If the ask size is greater than the basket quantity, the next step is 135 where the value of the ask parameter for the stock is set equal to the market ask price. If the ask size is less than the basket quantity, the algorithm proceeds to step 150 where it checks whether there is a bid posted on the communications network. If there is such bid posted, in step 155 the value of the ask parameter is set equal to the posted ask price multiplied by a constant C which is close to but greater than 1.

If in step 110 there is no ask size posted, the algorithm proceeds to step 120 where it is checked whether the stock default quantity is greater than the basket quantity. The default quantity is a static parameter which is entered by the operators of the data processing system for each capital market, and is stored in database 70. If the check result is positive, the program assigns in step 125 the ask parameter equal to the posted ask price. If the check result is negative, the algorithm proceeds to step 140 to check whether a bid price has been posted on the communications network. If there is a bid price posted, in step 145 the ask parameter is set equal to ask price plus a multiple of this price which is determined by the default spread value for the stock which is stored in the default spread file discussed above.

If in step 100 there is no ask price for the stock, the algorithm proceeds to step 103 where it is checked whether the system contains in its database data on the last trade transactions of the stock. If the system does have such record, it checks the trade direction (the sign of the trade difference) during the last transactions at step 106. If the trade direction during the last transaction is positive, the ask parameter is set in step 109 to equal the last transaction price

plus the difference between the largest transaction minus the smallest transaction, multiplied by a coefficient beta1. If the last trade direction is negative, the ask parameter is set in step 112 equal to the last transaction price plus the difference between the largest and smallest ask prices in these last transactions, multiplied by a coefficient beta2. The values of the beta coefficients in steps 109 and 112 of the method are preferably in the range of about 0.05 to 0.07 for beta1 and about 0.03 to 0.05 for beta2.

If there is no record of the last N trade transactions, application 30 proceeds to step 115 which determines whether the last trade price is available. If this price is available, at step 130 it is determined whether the trade was closed, which condition is indicated by a closed flag posted on the network. If the transaction is closed, in step 133 the ask parameter is set equal to the price in the last transaction plus the last transaction price multiplied by the historical spread value, which is stored in the historical spread file, also discussed above.

If the last transaction was not closed in step 136 the ask parameter is set equal to the last transaction price plus the same price multiplied by the default spread value which contained in the default spread file. If there is no record of the last transaction price, in step 118 application 30 checks whether there is an open price available. (An open price refers to a price for a transaction which is not closed). If such price is posted, in step 121 the ask parameter is set equal to the open price times the open price multiplied by the default spread value.

If there is no open price available at the time, in step 124 is received the percent change for the associated index. In this case the ask parameter for the stock is calculated to be equal to the last close price plus the same price multiplied by the default spread value, multiplied by a coefficient equal to unity plus the percent change of the market index at step 127.

Finally, if there is no ask, size, bid, trade price or close information for a particular stock, application 30 does not calculate an ask parameter.

The instruction sequence above is an example of the type of situations in which, according to the method and data processing system of the present invention different static parameters may be used.

FIG. 5 shows an analogous flowchart which illustrates the computation of the bid parameter for each stock in the basket. The bid parameter is computed first by checking in step 200 whether there is a bid price posted on the communications network. If there is such price, in step 210 application 30 checks whether there is a bid size posted. If a bid size is posted, in step 230 this size is compared to the basket quantity for the particular stock and if it is determined to be greater than the basket quantity, in step 235 the bid parameter for the stock is set equal to the posted bid price.

If in step 230 the bid size is less than the basket quantity, in step 250 application 30 checks whether there is an ask price posted and if there is such price, in step 255 the value of the bid parameter is set equal to the bid price multiplied by a coefficient C which is close to but less than 1. If there is no ask price posted, the value of the bid parameter is set in step 270 equal to the posted bid price plus the same price multiplied by the default spread which is determined for the stock from the corresponding value in the default spread file.

If next in step 210 it is determined that there is no bid size posted, in step 220 it is checked whether the default quantity of the stock is greater than the quantity which is in the basket. If the result of the test is positive, the value of the bid parameter is set in step 225 equal to the posted bid price. If

the default quantity is less than the basket quantity, in step 240 application 30 checks whether there is a posted ask price.

If such price is posted, in step 225 the value of the bid parameter is set equal to the bid price. If there is no ask price posted, then the bid parameter is set in step 260 to be equal to the bid price plus the same price multiplied by the default spread value for the stock.

Returning back to step 200, if it is determined that there is no bid price posted, then in step 203 the system checks whether it has a record of the last N transactions of the stock. If such record is available, in step 206 it is determined whether the trade direction during the last transaction is negative, in which case the value of the bid parameter is set in step 209 to the last trade price minus the difference between the biggest and smallest trade prices, multiplied by a coefficient beta1. If the trade direction is positive, then in step 212 the value of the bid parameter is set equal to the last transaction minus the difference between the biggest and smallest transaction prices, multiplied by a coefficient beta2. Coefficients beta1 and beta2 are stored in data base 70 and preferably have values between about 0.05 to 0.07 for coefficient beta1, and about 0.03 to 0.05 for coefficient beta2.

If in step 203 it is determined that there is no record of the last N transactions for the particular stock, in step 215 application 30 checks whether there is a record of the last trade price. If such record exists, in step 230 it is determined whether the transaction was closed, as indicated by a close flag posted on the network. If the transaction is closed, in step 233 the value of the bid parameter is set equal to the last transaction price minus the last transaction price multiplied by the historical spread value for the stock. If the transaction is not closed, in step 236 the value of the bid parameter is set equal to the last transaction price minus the same price multiplied by the default spread value. Both the default and the historical spread values for each particular market index and individual stock are contained in the configuration files in data base 70.

Going back to step 218, if it is determined that there is no open price available, in step 224 application 30 checks whether there is a close price posted, and in step 227 if there is such price the application 30 requests the percent change for the associated index. The value of the bid parameter is set equal to the close price minus the close price multiplied by the default spread value, multiplied by a coefficient equal to 1 minus the percent change value in step 229. As in the case of the computation of the ask parameter, if there are no bid, size, ask, trade or close prices, no value for the bid parameter is computed or sent to processor 60.

Finally, the computation of the trade prices is illustrated in FIG. 6. In step 300 it is determined whether a bid and ask prices for a particular stock are available and if the result of the test is positive, the value of the trade price is set in step 310 equal to the average of the bid and ask prices. If there are no bid and ask prices simultaneously posted, in step 320 it is determined whether there is a trade price. If there is a trade price posted, application 30 checks in step 325 whether the trade was closed. In step 330 the trade price is determined to be equal to the trade price minus the trade price multiplied by the historical spread value. Otherwise, in step 335 the trade parameter is set equal to the trade price. If there is no trade price posted for the particular stock, in step 340 application 30 checks whether there is an open price posted. If there is such price posted, in step 345 the value of the trade parameter is set equal to the open price.

If there is no open price posted in step 360 application 30 checks whether there is a close price posted and if the result

of the test is positive, in step 370 application 30 computes the percent change for the associated index. In step 375 the value of the trade parameter is then set equal to the close price minus the close price multiplied by the default spread value and multiplied by the value of the percent change. If in step 360 there is no close price posted, in step 380 it is checked whether the system has calculated bid and ask prices as computed in FIGS. 4 and 5. If such values are computed in step 385 the value of the trade parameter is set equal to the calculated bid price plus the calculated ask price divided by two.

Once the bid and ask prices are calculated, application 30 checks whether the spread between the two values is above the minimum spread value for the stock which value is contained in the default spread file. In case the calculated difference is less than the minimum spread value, application 30 widens the difference by changing both the bid and ask parameter values so that the minimum spread for a particular stock is covered.

Application 30 communicates the computed values of the ask, bid and trade parameters to application 40 (status). As explained above, application status maintains a running total of all bid, ask trade prices, along with the number of stocks which are opened within each basket at a particular time. For each basket of shares, application 40 creates four status configuration files. The first created file is associated with the sum total of all ask prices; the second file contains the sum total of all bid prices; the third file contains a sum total of all trade prices divided by a normalization constant which depends on the round lot size at which the OPALS are normally traded (typically about 10,000); and the last configuration file contains the number of open stocks in the basket. The values computed by application 40 are referred to as the aggregate ask, bid and trade values for the basket of shares underlying an OPALS. These aggregate values do not include any income from the shares of the basket or maintenance or custody charges incurred.

Application 50 (Dcalc) receives the aggregate values which are communicated to processor 60 by the status application 40 and completes the computation of the OPALS price by applying various commissions and custody charges to the overall value of the financial instrument. The values which are calculated and communicated by application 50 are the final prices that are communicated to the investors and the communications networks.

An example of the calculated values on output of application 50 for a specific capital market is illustrated as follows:

32	ap	4266881.50
16	bp	4246657.00
18	tp	425.64
26	pc	0.00
22	cb	0.07
41	bf	424.9
24	af	428.3
8	bfd	261.35
9	afd	263.52
1	tfd	261.8.

where the first column indicates the number of real time records available for the calculation and the remaining entries are defines as follows:

ap	Aggregate ask normalized to one record
bp	Aggregate bid normalized to one record

-continued

tp	Aggregate trade normalized to one record
pc	Percent change between the cumulative clearance price and current tp.
cp	Clearance basis = (clearance/aggregate bid) * 10000
bf	Bid Final = aggregate bid - clearance - (aggregate bid * broker) + dividend + bid finance + (aggregate bid * commission) + (aggregate bid * bid spread)
af	Ask Final = aggregate ask + clearance + (aggregate ask * broker) + dividend + ask finance + (aggregate ask * commission) + (aggregate ask * custody) + (aggregate ask * ask spread).
bfd	Bid Final Dollar = Bid Final/exchange rate.
afd	Ask Final Dollar = Ask Final/exchange rate.
tfd	Trade Final Dollar = Ask Final/exchange rate

The "clearance" entry above refers to the transaction costs to process the settlement of the shares in the specific market by the agent.

As illustrated above, application 50 adds to the aggregate value of the basket of shares underlying the OPALS various correction factors which reflect income and expenses associated with the debt instrument. Such correction factors include the local market settlement costs, the accrued income on the OPALS, fail financing costs and others, as modified by a market impact factor.

Specifically, application 50 will reflect one or more of the following income components into the price of the OPALS.

- A. cash dividends received on the shares in the underlying basket.
  - B. cash dividends that are past the payable date on the underlying shares, but have not yet been received.
  - C. the net present value of cash dividends that are past the record date on the underlying shares, but have not yet reached the payable date.
  - D. in certain markets the net present value of dividends that are passed or at ex date on the underlying shares, but have not reached the record date. This number may be adjusted to reflect ex date dividends that are doubtful of receipt.
  - E. net interest earned on the cash income received on the shares.
  - F. stock loan income earned on the underlying shares.
  - G. stock dividends sold for cash.
  - H. cash proceeds from the sale of rights.
  - I. cash proceeds from the sale of japanese odd-lots.
  - J. cash proceeds from optional dividends.
  - K. withholding tax reclaims received by the corporate issue.
  - L. the net present value of tax reclaims due by the tax issue but not yet received.
- Expenses which are deducted from the income stream earned on the OPALS include for example:

- A. the wholesale income safe-keeping charters accruing to the underlying basket of shares.
- B. third party charters billed to the financial management structure for processing the collection of income derived from the underlying basket of shares.

In another aspect of the present invention data processing system 20 maintains various static variables which are used in computing the price of the baskets of shares underlying the OPALS debt instruments. The maintenance facility (not shown) is implemented by the data processing system 20 and comprises storage means for storing in accordance with

a predetermined protocol one or more of the following parameters: a basket identifier; dividends applied; finance charges on the ask side; the clearance costs in the market; the broker fees on the ask side; the spread value on the ask side; the commission to be applied; the finance charges on the bid side; the custody charges to be applied; the broker fees on the bid side; the spread value on the bid side; and the series number and outstanding shares.

During operation, these values are accessed by application 50 and are used to compute the price of the OPALS. The stored values may be periodically modified by an operator of the financial management structure to more closely reflect the current and expected trading patterns in the capital market.

The price of the OPALS can be rebalanced if necessary to more closely reflect the performance of the relevant capital market index. Rebalancing is effected by the data processing system 20 which compares the investment performance of the OPALS to the index associated with the capital market to evaluate a tracking error for the debt instrument. If the evaluated error is larger than a predetermined threshold, data processing system 20 can suggest a rebalanced portfolio to improve tracking to the related index. On the basis of the evaluated error and the suggested portfolio, in a preferred embodiment of the present invention, management structure 8 initiates rebalancing of the debt instrument by modifying the composition of the underlying basket of shares.

In one embodiment of the present invention rebalancing will occur when the tolerance to the annual tracking error, as defined in the OPALS pricing definition, is exceeded. No additional contributions are required from the investors because the rebalancing costs are reflected as change in the price of the OPALS.

The data processing system 20 of the present invention further provides the capability to generate and distribute information about the OPALS to potential and participating investors. Due to the fact that each stock of each OPALS has a unique identifier, it is possible to obtain complete information about all OPALS issued and administered by the management structure 8. To this end, a system user enters the desired basket identifier into one of the terminals 17 connected to the data processing system 20 of the present invention. All information which is associated with the particular basket identifier can then be retrieved and communicated to the corresponding terminal. Such information comprises the current trading activities of the selected basket of shares underlying the OPALS, as well as other relevant information.

Relevant information for a basket of shares appears on the terminals 17 in a format illustrated in FIG. 7. The user may actually overwrite these values by typing over them and, using an update command typed from the terminal, may send the newly corrected values to the processor 60 for recalculation.

Referring back to FIG. 3, the real time prices of the OPALS are broadcast to customers in the form of investors reports. Such reports may completely characterize the OPALS or represent only select information of interest. Investors may call the OPALS trading operator for dealing prices on the OPALS. The prices will be distributed in both U.S. dollars and the local currency of the capital market.

As discussed above, the OPALS financial instruments of the present invention are traded as debt securities so that an investment in an OPALS may result in a different tax treatment from that of a direct investment in equities for some investors. The tax treatment may depend upon the inventors' country and/or their specific tax profile. Depen-

dent on the jurisdiction, the OPALS are preferably structured to be tax neutral.

The redemption of each OPALS occurs in accordance with a periodic payment schedule during three business days after the record date. Holders of round lot OPALS may at this time instruct the financial management structure to redeem their OPALS and will receive the underlying shares. The shares will be delivered to the holder as soon as local equity market cycles and conditions permit.

The financial management structure can periodically issue new series of OPALS for each equity index, if investors of a minimum predetermined amount of maturing OPALS are interested in purchasing the new series, or sufficient interest among new investors is present. The new series will be available for trading five business days prior to the maturity date of the old OPALS. The investor may elect to invest in new OPALS series which track either the same or a different capital market index. At maturity, the OPALS can also be sold for cash in a secondary OPALS market.

The financial management structure 8 operating in accordance with the present invention provides the infrastructure necessary to issue and administer the OPALS debt instruments 10. This infrastructure creates a buffer between the volatility of the capital markets 1 and the participating investors 5 which feature provides a number of advantages. Such advantages include the fact that the management structure 8 is principle to the settlement risks associated with each local equity market; the fact that various corporate business structures are involved in the design and cost structure of the financial instrument, so that the administrative costs associated with the OPALS are minimized. Still further advantages include the delivery of on-going administrative services from the data processing system. Other advantages include the consolidation of the income flow into scheduled income distributions which permit investment managers to formulate investment decisions to match such predictable cash flows.

An important advantage from the investors point of view is that all costs associated with participation in foreign markets are bundled up into a single security which may be traded in an open market or may be exchanged for cash in the secondary market. As discussed above, investors are periodically provided with reports of the status of their OPALS and, during redemption dates or at the maturity of the product, are entitled to receive the entire basket of shares which underlies their OPALS.

The OPALS financial instrument may thus be useful to investors 5 for various reasons such as the fact that many investors do not have the back office capabilities to process foreign trades themselves; they may not wish to establish global custody relationships or to develop market-specific analytical expertise. Additionally, some investors may be subject to legal restrictions that prevent them from purchasing futures outside their home markets; others may wish to enter markets where no futures or index linked products exist. The OPALS financial debt instrument is the answer for these investors.

The above described preferred embodiment of the system of the present invention is merely illustrative of the principles of this invention. Numerous modifications and adaptations thereof will be readily apparent to those skilled in the art without departing from the spirit and scope of the present invention which is defined in the following claims.

What is claimed is:

1. A data processing system for administering a financial debt instrument which is traded as a listed security and which provides, within a predetermined limited period of



time, a return commensurate with an established capital market, the system comprising:

computer means for selecting one or more securities the return performance of which is representative of a valuation of the capital market over the limited period of time;

means for creating a financial debt instrument as a basket of shares of said one or more selected securities, wherein the price of the debt instrument is based upon the value of the underlying basket of shares;

data entry means for receiving trade information on each of said one or more selected securities in the capital market;

data processing means responsive to the information from the data entry means for determining a price for the debt instrument so as to reflect the current aggregate value of the basket of shares and income and expenses associated therewith; and

output means for communicating said price to users.

2. The system of claim 1, wherein the valuation of the capital market is characterized by an index value of securities of the capital market.

3. The system of claim 2 further comprising;

means for evaluating the performance of the debt instrumentative of the deviation of said investment performance from the index value of the stocks in the capital market; and

means for rebalancing the debt instrument receiving input from the means for computing.

4. The system of claim 2 wherein the means for selecting comprises:

storage means for storing data related to each security in the capital market;

means for correlating the financial performance of each security in the capital market to the index value of securities in the capital market, said means for correlating receiving input from the storage means; and

optimization means for selecting a basket of security shares expected to track the index value of the securities in the capital market over the predetermined limited period of time, said optimization means receiving input from said means for correlating;

wherein said optimization means are operative in accordance with a mathematical programming optimization function using a set of constraints on the current financial reports on the securities, the level of certainty regarding future events and the predicted future values of economic variables.

5. The system of claim 1, wherein the data processing means comprises:

means for storing data associated with financial characteristics of each of said one or more selected securities; first means for computing for shares of each of said one or more selected securities the current ask price, bid price and trade price based upon information from the data entry means and the stored data associated with said financial characteristics of said one or more selected securities;

second means receiving input from the first means for determining the current aggregate ask prices, bid prices and trade prices for the basket of shares; and

means for computing the current price for the debt instrument receiving input from the second means, wherein

the price of the debt instrument corresponds to the computed aggregate prices, and further includes income accrued from the basket of shares and management and trade settlement expenses associated with the basket of shares.

6. The system of claim 5, wherein the data associated with financial characteristics comprises the historical spread between the ask price and bid price for shares of said one or more selected securities; a default value for the spread between the ask price and bid price for such shares; and a minimum value of the spread between the ask price and bid price for such shares.

7. The system of claim 6, wherein the data associated with financial characteristics further comprises a record of the last N trade transactions.

8. The system of claim 1 wherein the limited period of time is longer than one year.

9. In a combination, a data processing system for administering an investment group of financial debt instruments issued in a series on a periodic basis, each debt instrument being traded as a listed security and each series comprising at least one debt instrument and providing, within a predetermined limited period of time, a return commensurate with one of a select group of established capital markets, each series of debt instruments being structured to provide investment advantages to a class of potential customers, the data processing system comprising:

computer means for selecting one or more securities corresponding to each capital market in said select group, the return performance of such selected one or more securities being representative of a valuation of the corresponding capital market in said select group over the predetermined limited period of time;

computer means for creating a financial debt instrument as a basket of shares of said one or more selected securities corresponding to each capital market, wherein the price of each debt instrument is based upon the value of the underlying basket of shares;

means for determining the price to be charged for financial debt instruments in each series, wherein such price is based upon factors comprising the current trading value of the underlying basket of shares; data concerning the expected income and dividend distributions for the underlying basket of shares; the capital market settlement costs; and a market impact factor which reflects the expected trading patterns for the capital market within the predetermined period of time;

data entry means for receiving trade information on each of said one or more selected securities in each capital market of the select group of capital markets;

data processing means responsive to the information from the data entry means for determining a price for the debt instruments in each series so as to reflect the current aggregate value of the basket of shares and income and expenses associated therewith; and

output means for communicating said price for each series to users.

10. The system of claim 9 further comprising means for evaluating an expected investment return for the selected basket of shares in each series of debt instruments over the limited period of time and means for communicating the expected investment return to potential customers.

11. The system of claim 9 further comprising:

means for monitoring trade transactions associated with each basket of shares to record the investment performance of the debt instruments in each series; and

means for reporting to customers a summary of the recorded investment performance of the debt instruments in each series.

12. The system of claim 9 further comprising:

means for comparing the investment performance of the debt instruments in each series to the index associated with the corresponding capital market to evaluate a tracking error for the debt instrument; and

means for rebalancing the debt instruments in each series.

13. The system of claim 9 wherein the data entry means receives input from a global communication network for reporting the trade transactions of each of said one or more selected securities in each of the select group of capital markets.

14. The system of claim 9 wherein the output means communicate said price over a communication network to the potential customers.

15. The system of claim 9 wherein the data processing means comprises

means for storing data associated with each of said one or more selected securities in each basket of shares which data relates to financial characteristics for such one or more selected securities;

first means for computing for each of said one or more selected securities in each basket of shares the current ask price, bid price and trade price based upon information from the data entry means and the stored data related to the financial characteristics of said one or more selected securities;

second means receiving input from the first means for determining the current aggregate ask prices, bid prices and trade prices for the basket of shares; and

means for computing the current price for the debt instruments in each series, said means for computing receiving input from the second means, wherein the price of the debt instruments corresponds to the computed aggregate prices, and further includes income accrued and management and trade settlement expenses associated with the corresponding basket of shares.

16. The data processing system of claim 9 wherein the data processing means further comprises means for storing a record of the last N transactions of each of said one or more selected securities in each basket of shares in the investment group.

17. The data processing system of claim 9 wherein the predetermined limited period of time between at least two series of debt instruments is different.

18. The data processing system of claim 9 wherein the predetermined period of time is longer than one year.

19. A computer-based data processing method for administering a financial debt instrument which is traded to customers as a listed security and which provides, within a predetermined limited period of time, a return commensurate with an established capital market, the method comprising the steps of:

selecting a basket of shares of one or more securities the return performance of which is representative of the returns of the capital market over the limited period of time;

creating a financial debt instrument as a basket of shares of said one or more selected securities, wherein the price of the debt instrument is based upon the value of the underlying basket of shares;

receiving trade information on shares of said one or more securities of the selected basket of shares;

determining a price for the debt instrument in response to the received information so as to reflect the current

aggregate value of the basket of shares and income and expenses associated therewith; and

communicating said price to potential customers.

20. The data processing method of claim 19 wherein the step of selecting comprises the steps of:

designating a set of constraints on the current financial reports on securities in the capital market;

designating a level of certainty regarding future events;

designating predicted future values of economic variables; and

executing a mathematical programming optimization function using the designated set of constraints on the current financial reports on the securities, level of certainty regarding future events and predicted future values of economic variables.

21. The method of claim 19 further comprising the steps of:

comparing the investment performance of the debt instrument to an index associated with the capital market to evaluate a tracking error for the debt instrument; and rebalancing the debt instrument if the evaluated error is larger than a predetermined threshold.

22. The method of claim 19 wherein the step of receiving further comprises the steps of:

storing in a computer memory of records comprising first type of data associated with each security in the basket; receiving and storing records comprising second type of data associated with each security in the basket;

merging the first type of data with the received second type of data into a composite record for each security in the basket.

23. The method of claim 19 wherein the step of determining further comprises the steps of:

combining the composite records for each security into a global record for the basket of shares of securities, the global record reflecting the current aggregate value of the basket of shares of securities and income and expenses associated therewith; and

generating a report containing information from the global record.

24. The method of claim 23 wherein the generated report for each financial debt instrument is determined in both U.S. currency and the local currency of the capital market.

25. The method of claim 23 wherein the generated report for each financial debt instrument comprises a list of the share holdings arranged in a descending order of market value.

26. A data processing system for providing to investors a computer generated information on the current price of at least one financial debt instrument, such instrument being traded as a listed security the price of which is based upon the value of an underlying preselected basket of securities in an existing capital market, the system comprising:

means for storing in a computer memory of records comprising first type of data associated with each security in the basket;

means for receiving and storing records comprising second type of data associated with each security in the basket;

means for merging the first type of data with the received second type of data into a composite record for each security in the basket;

means for combining the composite records for each security into a global record for the basket of securities,

21

the global record reflecting the current aggregate value of the basket of security shares and income and expenses associated therewith; and

means for generating and communicating to the investors a report containing information from the global record.

27. The system of claim 26 further comprising means for updating the records comprising the first type of data.

28. The system of claim 27 wherein the means for updating receive input which is determined by a trader of the financial debt instrument on the basis of information in the received second type of data.

29. The system of claim 26 wherein the report for each financial debt instrument is determined in both U.S. currency and the local currency of the capital market.

30. The system of claim 26 wherein the report for each financial debt instrument comprises a list of the share holdings arranged in a descending order of market value.

31. The system of claim 26 wherein the first type of data associated with each security in the basket relates to a set of financial characteristics for the security.

32. The system of claim 31 wherein the financial characteristics comprise the historical value of the spread between the ask and bid prices for the security, a default value of the spread and a minimum value of the spread.

33. The system of claim 26 wherein the second type of data associated with each security share in the basket relates to the current trade information for the security, such information comprising the current ask and bid prices for the security in the capital market.

34. The system of claim 26 wherein the second type of data associated with each security further comprises information about the last N trade transactions for the security in the capital market.

35. The system of claim 34 wherein the value N of the last N transactions is between one and ten.

36. A data processing method to reduce the uncertainty regarding the future return on a financial investment by creating a financial debt instrument which is traded as a listed security and which provides, within a predetermined limited amount of time, the capability of tracking an index associated with an established capital market using a selected basket of security shares representative of the capital market, the method comprising the steps of:

22

determining using a computer program the price to be charged for the financial debt instrument wherein such price is based upon factors comprising the current trading value of the underlying basket of shares; data concerning the expected cash inflow and dividend distributions for each share of the basket of shares; the expected capital market settlement costs; and a market impact factor which reflects the expected trading patterns for the capital market within the predetermined period of time;

issuing at the determined price the financial debt instrument for the predetermined limited period of time, the debt instrument being redeemable and having a scheduled maturity date; and

determining a redemption value of the debt instrument at the scheduled maturity date based on the aggregate value of the basket of shares, the accrued income and the service expenses associated therewith.

37. The method of claim 36 after the step of issuing further comprising the steps of:

monitoring trade transactions associated with the security shares of the basket to record the investment performance of the debt instrument;

reporting periodically to the purchaser of the issued debt instrument a summary of the recorded investment performance of the debt instrument.

38. The method of claim 37 further comprising the steps of:

comparing the investment performance of the debt instrument to the index associated with the capital market to evaluate the tracking error for the debt instrument; and rebalancing the debt instrument so as to follow the index associated with the capital market if the evaluated error is larger than a predetermined threshold.

39. The method of claim 37 further comprising the steps of:

calculating the return on the financial investment made by the purchaser of the issued debt instrument; and periodically communicating the calculated return to the purchaser.

\* \* \* \* \*



US006035287A

44

**United States Patent** [19]  
**Stallaert et al.**

[11] **Patent Number:** 6,035,287  
[45] **Date of Patent:** Mar. 7, 2000

[54] **METHOD AND APPARATUS FOR BUNDLED ASSET TRADING**

[75] **Inventors:** Jan Stallaert; Andrew Bernard  
Whinston, both of Austin, Tex.; Glenn  
William Graves, Malibu, Calif.

[73] **Assignee:** Omega Consulting, Inc., Austin, Tex.

[21] **Appl. No.:** 08/992,647

[22] **Filed:** Dec. 17, 1997

[51] **Int. Cl.<sup>7</sup>** ..... G06F 17/60

[52] **U.S. Cl.** ..... 705/37

[58] **Field of Search** ..... 705/37

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

4,412,287	10/1983	Braddock, III	364/408
4,674,044	6/1987	Kalmus	364/408
5,077,665	12/1991	Silverman et al.	364/408
5,101,353	3/1992	Lupien et al.	364/408
5,136,501	8/1992	Silverman et al.	364/408
5,689,652	11/1997	Lupien et al.	
5,845,266	12/1998	Lupien et al.	705/37

**OTHER PUBLICATIONS**

Fan, et al., *Creating Electronic Markets*; Dr. Dobb's Journal; Nov. 1998; 5 pages.

Kalakota, et al.; *Worldwide Real-Time Decision Support Systems for Electronic Commerce Applications*; Journal of Organizational Computing and Electronic Commerce 6(1), 11-32 (1996); 22 pages; University of Texas; Austin, Texas.

R.M. Miller; *On Distributing the Intelligence of Economic Process*; IFAC Economics and Artificial Intelligence; 1986; 2 pages; Aix-en-Provence, France.

Adams et al., "Commodity Bundling and the Burden of Monopoly," *The Quarterly Journal of Economics* vol. XC, 475-498 (1976).

Brewer et al., "A Binary Conflict Ascending Price (BICAP) Mechanism for the Decentralized Allocation of the Right to Use Railroad Tracks," Social Science Working Paper 887, California Institute of Technology, Division of the Humanities and Social Sciences, Pasadena, California (Feb. 1995).

Goodwin, Richard M., "Iteration, Automatic Computers, and Economic Dynamics," *Metroeconomica* vol. III, pp. 1-7, (Apr. 1951).

Levin, Jonathan, "An Optimal Auction for Complements," *Games and Economic Behavior* vol. 18, 176-192 (1997).

McAfee et al., "Multiproduct Monopoly, Commodity Bundling, and Correlation of Values," *The Quarterly Journal of Economics* 371-383 (May 1989).

Gjerstad et al., "Price Formation in Double Auctions," pp. 1-32 (Apr. 7, 1997).

McAfee et al., "Analyzing the Airwaves Auction," *Journal of Economic Perspectives* vol. 10, No. 1, 159-175 (Winter 1996).

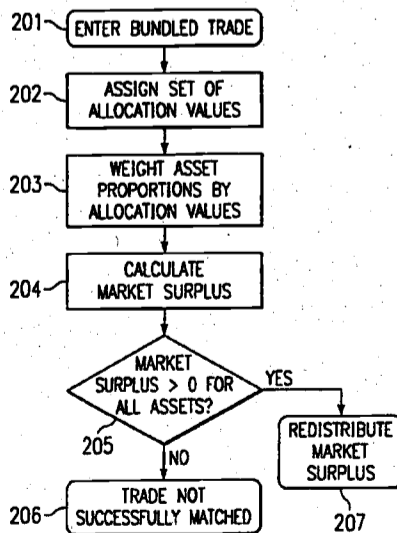
(List continued on next page.)

*Primary Examiner*—Eric W. Stamber  
*Assistant Examiner*—Susanna Meinecke-Diaz  
*Attorney, Agent, or Firm*—Barry S. Newberger; Winstead Sechrest & Minick P.C.

[57] **ABSTRACT**

The present invention allows market participants to exchange bundles of assets, including assets in different asset classes. A market participant may value the bundle as an entity, alleviating the need to attempt to attain a value objective in the aggregate by valuing and trading assets individually. A bundle of assets to be traded is entered, wherein proportions of each asset to be traded in units of a specified bundle size are provided by the market participant. Assets to be acquired by one market participant are matched against the same asset which other market participants are seeking to dispose. An exchange of bundled assets among market participants, in units of the bundles themselves is effected when the exchange satisfies a predetermined set of criteria.

52 Claims, 6 Drawing Sheets



## OTHER PUBLICATIONS

- Weber, Bruce W., "Transparency and Bypass in Electronic Financial Markets," Proceedings of the Twenty-Seventh Annual Hawaii International Conference on System Sciences, pp. 865-874 (1994).
- Domowitz et al., "Auctions as algorithms," *Journal of Economic Dynamics and Control* vol. 18, pp. 29-60 (1994).
- Radosevich, Lynda, "Wired," *Webmaster*, pp. 26-31 (Feb. 1997).
- Branco, Fernando, "Designing Markets: on the Use of Combinational Bids in Multi-object Auctions," pp. 1-25 (May 1997).
- McAfee et al., "Electronic Markets" in *Readings in Electronic Commerce*, pp. 293-309 (Addison Wesley Longman, Inc. 1997).
- Hill et al., "Equity Trading, Program Trading, Portfolio Insurance, Computer Trading and All That," *Financial Analysts Journal*, pp. 29-35 (Jul.-Aug. 1988).
- Rubinstein, Mark, "Market Basket Alternatives," *Financial Analysts Journal*, pp. 20-29 (Sep.-Oct. 1989).
- McCabe et al., "Designing 'Smart' Computer-Assisted Markets: An Experimental Auction for Gas Networks," *Journal of Political Economy* vol. 5, pp. 259-283 (1989).
- Rassenti et al., "A combinatorial auction mechanism for airport time slot allocation," *The Bell Journal of Economics*, vol. 13, pp. 402-417 (1982).
- Domowitz, Ian, "The Mechanics of Automated Trade Execution Systems," *Journal of Financial Intermediation* vol. 1, pp. 167-194 (1990).
- Rothkopf et al., "Computationally Manageable Combinatorial Auctions," pp. 1-26, Rutgers University (Dec. 1995).
- Bikhchandani et al., "Competitive Equilibrium in an Exchange Economy with Indivisibilities," *Journal of Economic Theory* vol. 74, pp. 385-413 (1997).

	BUNDLE 100a	BUNDLE 100b	BUNDLE 100c	BUNDLE 100d
ASSET 1:	1.5 (101)	-3 (101)	0 (101)	-1 (101)
ASSET 2:	0 (102)	0 (102)	-2 (102)	1 (102)
ASSET 3:	-1 (103)	1 (103)	3 (103)	0 (103)
ASSET 4:	-1 (104)	1.5 (104)	1.5 (104)	-1 (104)
BUNDLE SIZE	30 (105)	30 (105)	25 (105)	50 (105)

FIG. 1

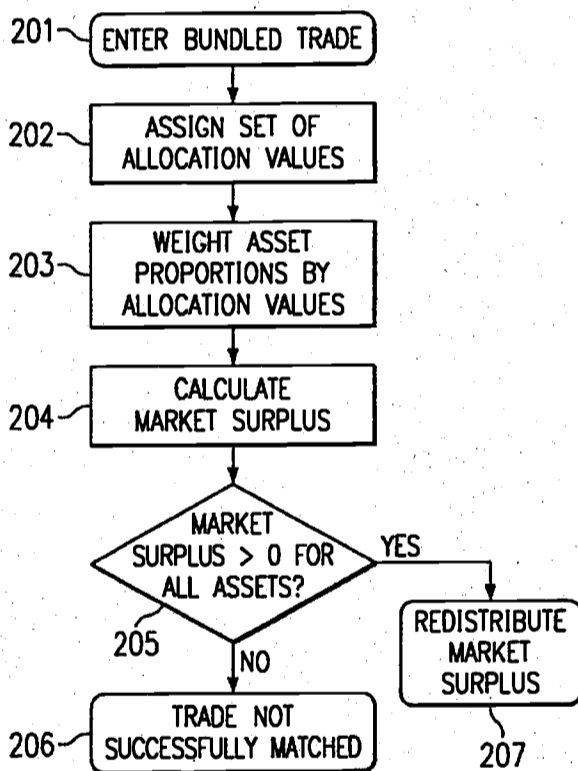


FIG. 2

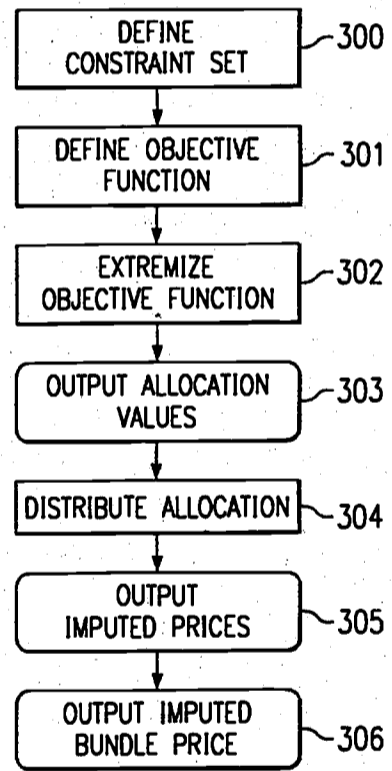


FIG. 3

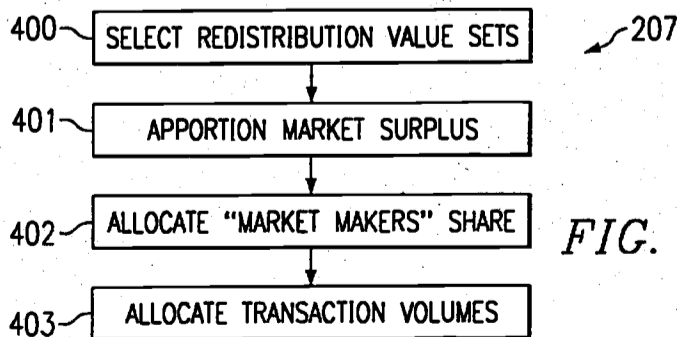


FIG. 4

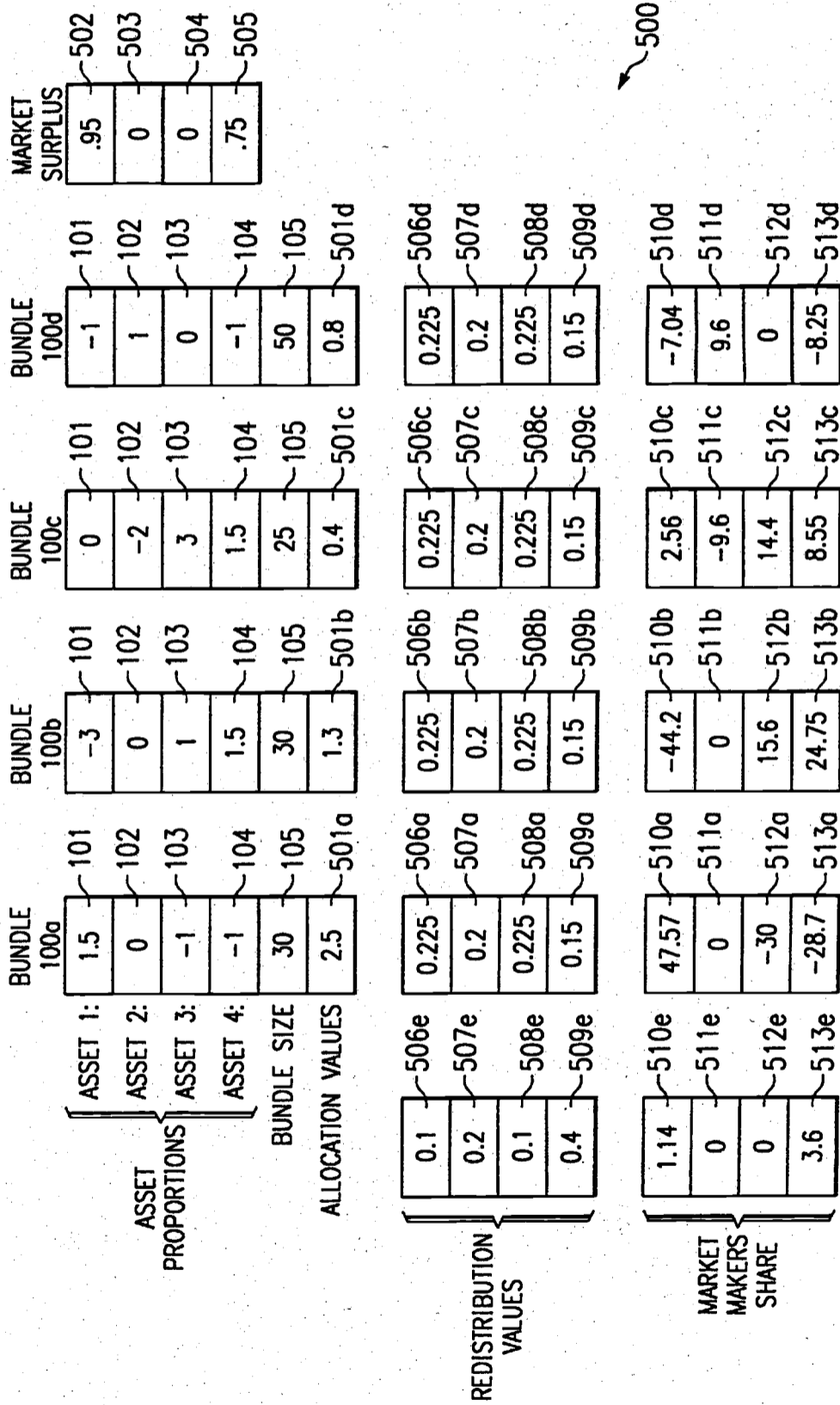


FIG. 5

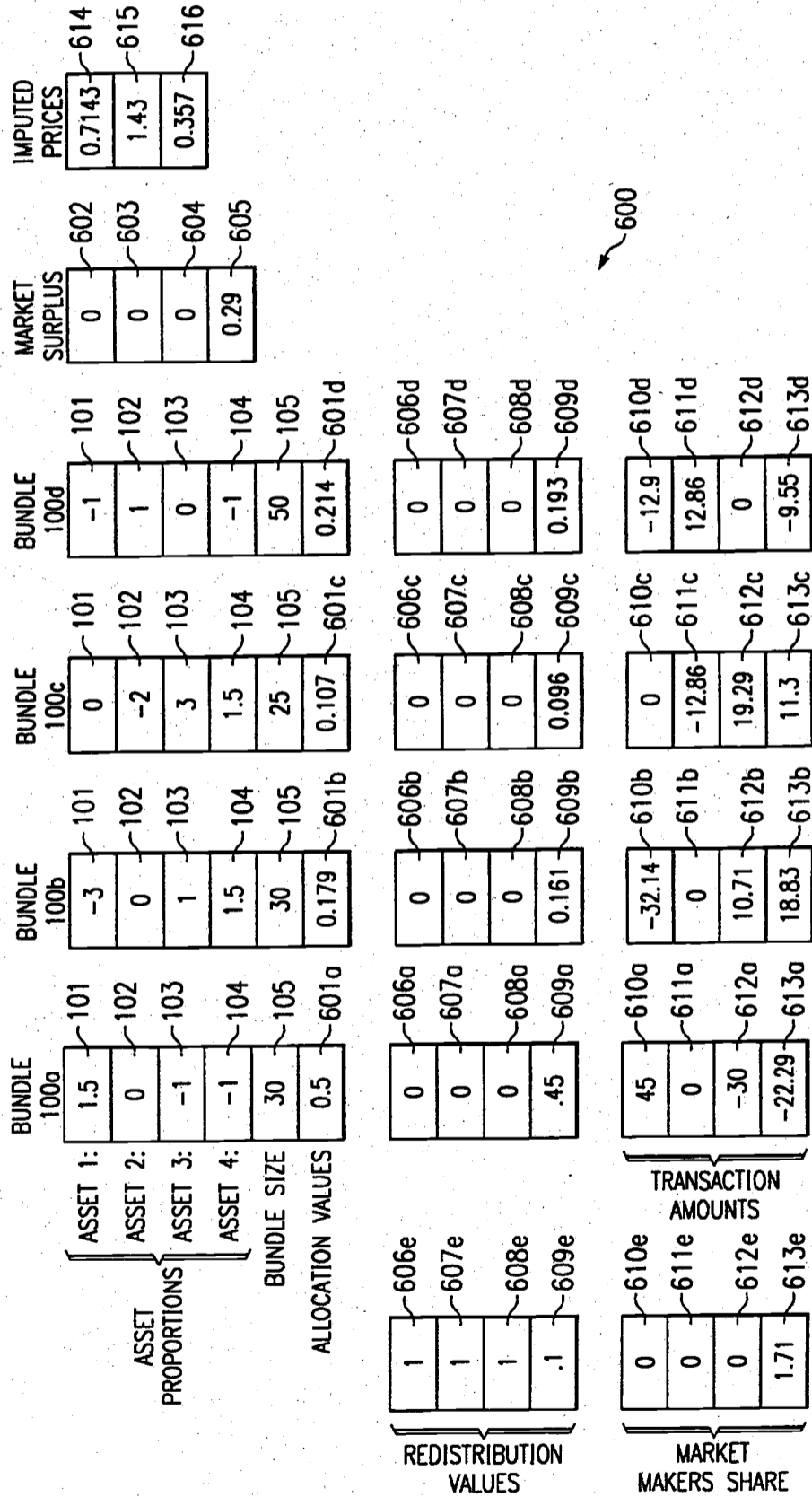
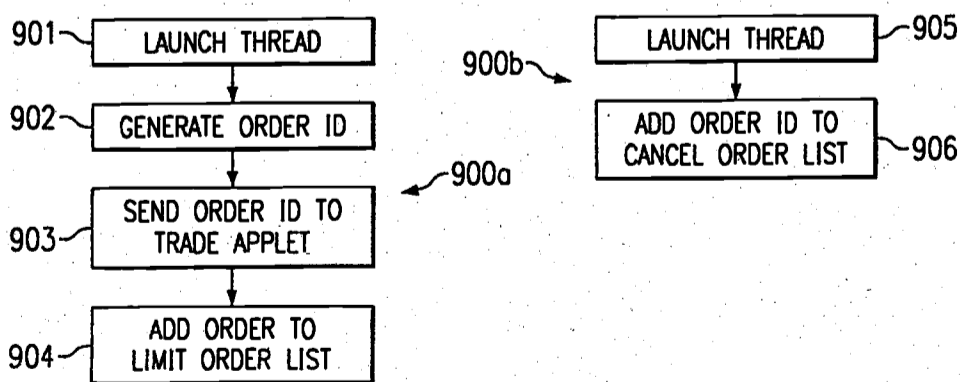
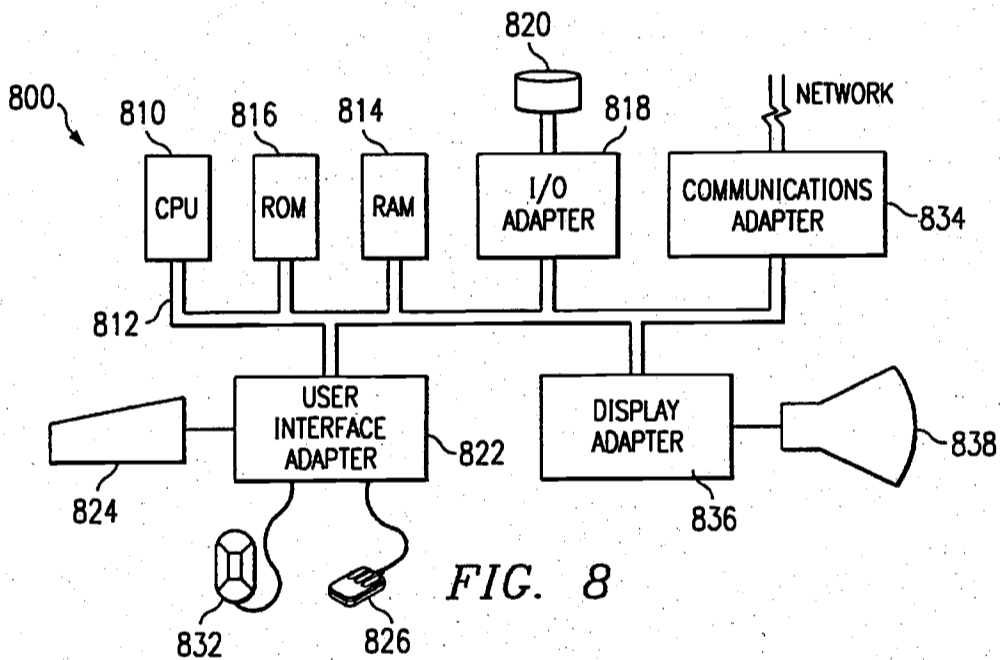
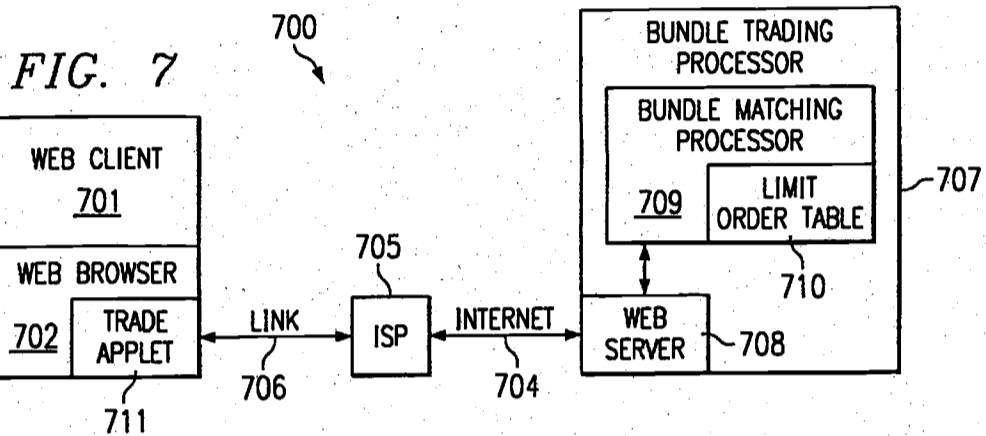


FIG. 6





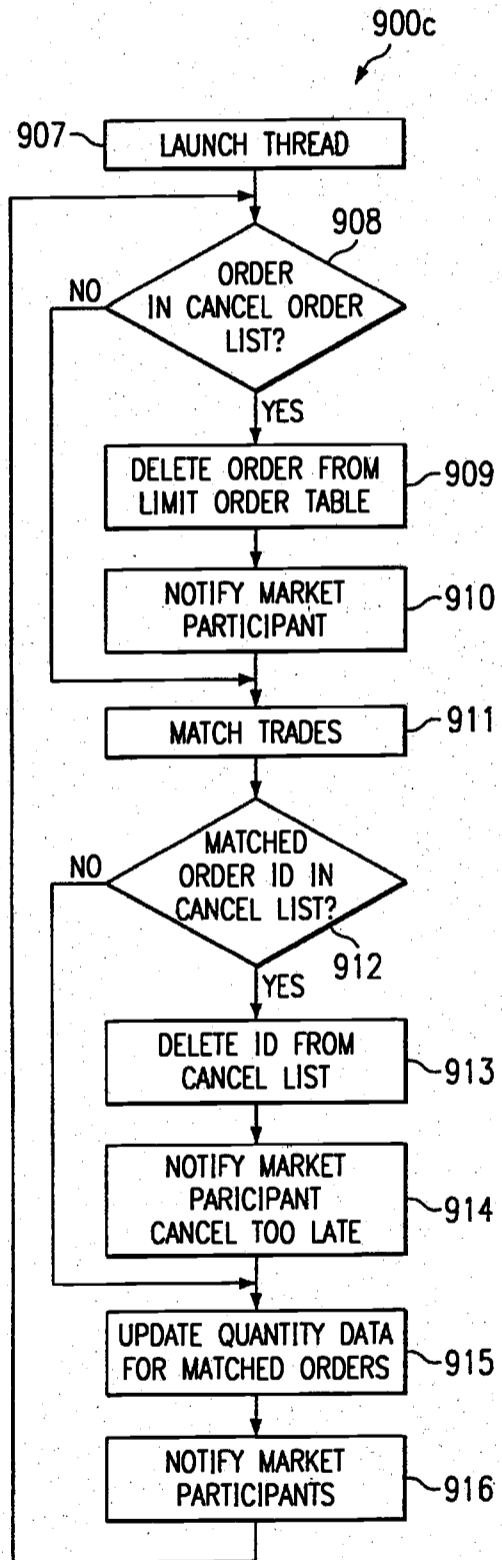


FIG. 9B

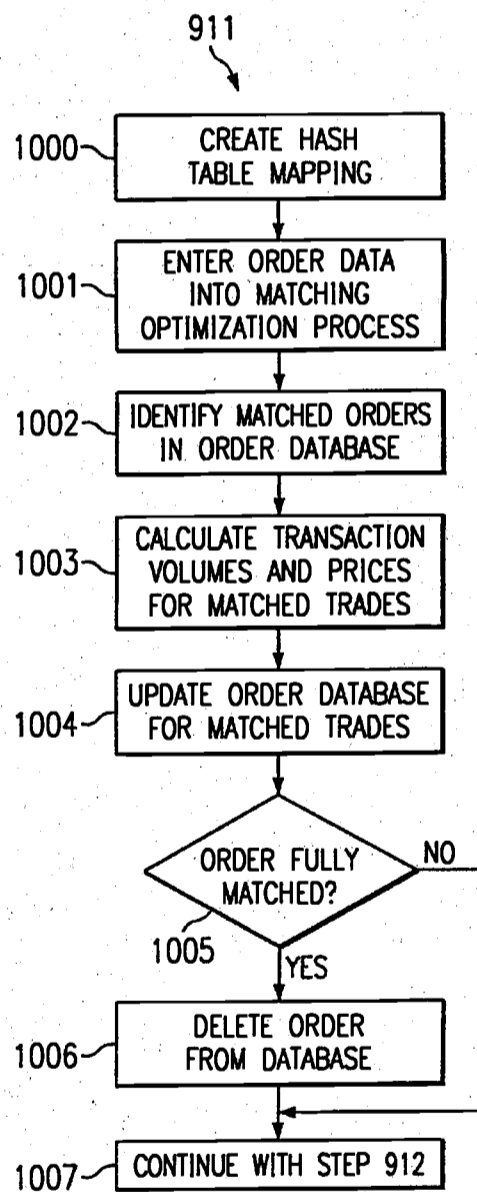


FIG. 10

## METHOD AND APPARATUS FOR BUNDLED ASSET TRADING

### TECHNICAL FIELD

The present invention relates to a method and apparatus for trading assets in bundles.

### BACKGROUND INFORMATION

Data processing systems for the exchange of financial instruments and securities are old in the art. For example, the first subsystem to be employed in commercial practice was Instinet, which began operations in 1969. The Instinet system was a subject of U.S. Pat. No. 3,573,547 issued on Apr. 6, 1971. Instinet permits subscribers to engage in direct trading of securities among themselves on an anonymous basis. In effect, Instinet replaces the telephone and voice communications with communications conducted via the data processing system, with confirmations of trades being automatically transmitted to each party and to the appropriate clearing entity for settlement.

Other electronic data processing systems are exchange based order routing processors. For example, on the New York Stock Exchange (NYSE) is the Designated Order Turnaround System (or DOT) through which member firms transmit market and limit orders directly to the post where a security is traded, thereby dispensing with the messenger services of a floor broker. Limit orders are electronically filed while market orders are exposed to the (market) in front of the specialist's post, and executed either by a floor broker or the specialist. Automated data processing systems for small order execution exist in the dealer markets as well.

Regardless of the implementation, all such data processing systems for asset trading operate on an asset-by-asset basis. A trader (or a broker acting as his agent) may enter an order to acquire or dispose of a particular asset, or a portfolio of assets. In either case, individual transactions are consummated with respect to each of the assets individually. However, in many situations, a market participant does not necessarily derive value for a single asset, but for a basket of assets. In such a circumstance, the acquisition or disposition of assets on a asset-by-asset basis in order to obtain the basket of assets in the right proportion, and at the right price, may prove to be a complicated and time consuming task.

The market participant's problem is further exacerbated when the assets are within different asset classes. Here and throughout, the term asset is used in its broadest sense. An asset may be anything of value, and in a particular context, may be a commodity or other good, securities, or services, as well as money. To illustrate the problem, consider the supply chain problem as applied, for example, to cross docking operations. A typical instance of cross docking arises in the grocery trade.

In the grocery trade, goods are received from a multiplicity of producers and manufacturers for ultimate distribution in retail markets which are widely disbursed. A good flows to the grocer as a unitary item in bulk from the producer or manufacturer. These must then be broken into smaller unit sizes and distributed to the retail outlets, along with other goods from other manufacturers. Thus, the flow of goods from the producers must be warehoused and then redistributed. The facilities for warehousing and introduction of goods into a transportation stream for redistribution are the so-called cross docking facilities.

It is common practice to outsource the cross docking facilities and the transportation for redistribution. Thus, a

grocer must acquire both the cross docking capacity and the transportation services to effect its objective, and these are acquired from different sources, that is, in a fragmented market. Moreover, the value of one of the two requirements is greatly diminished without the acquisition of the other.

The value to the grocer is in the aggregate, or basket, represented by the cross docking capacity and transportation service. In effect the price of one could be traded off against the other. If a ready means of cheap transportation is available, then the acquirer could afford to pay more for the cross docking capacity, or use a cross docking facility with wasted capacity, or vice versa. However, the fragmentation of the market for these services makes it difficult to implement such tradeoffs. An acquirer of the services would be better able to satisfy his requirements if he could obtain them as a bundle. Then he would only need to set the bundle price as his objective price. The bundle trading market would allocate price between the resources exchanged. Such a bundled trading mechanism also would squeeze out inefficiencies associated with the fragmented market for these resources.

A similar situation exists in the securities markets. A trader acquiring or disposing of a portfolio of equities may wish to hedge the acquisition or disposition by offsetting transactions in futures, options, or perhaps foreign currencies. The transactions implementing these acquisitions and dispositions take place in a fragmented market. The different assets are traded in different markets and the transactions may be displaced one from the other both in place and in time. Trading the assets individually in the fragmented market may lead to an overall loss with respect to the basket of assets due to market volatility. Thus, there is a need in the art for a method and apparatus for implementing a mechanism by which a market basket, or "bundle," of assets may be exchanged among market participants.

### SUMMARY OF THE INVENTION

The previously mentioned needs are addressed by the present invention in which market participants will be able to exchange among themselves, a combination of assets as a bundle. An electronic data processing system executing a trade matching mechanism provides the function of a market intermediary, recombining assets from different market participants such that the requirements of participants seeking to acquire a particular asset are satisfied by participants seeking to dispose of the same asset.

Market participants enter their asset bundles into the data processing system. The data processing system operates continuously and market participants can submit new trade orders, or bundles, or cancel open orders, at any time. The data processing system operates continuously to find matches in real-time.

Each bundle contains a plurality of assets to be exchanged. Bundles are specified in terms of a bundle size, and a set of values representing the proportions of each of the assets to be exchanged, in terms of the bundle size. Each bundle may contain a subset of assets which the market participant seeks to acquire, and a second subset of assets of which the market participant seeks to dispose. Acquisition trades may be distinguished from disposition trades using a signature represented by an algebraic sign of each of the proportions of the respective assets within the bundle. For example, assets to be acquired, hereinafter referred to as acquisition assets, may be represented by a proportion having a positive algebraic sign, and assets of which the market participant seeks to dispose, hereinafter referred to as disposition assets, may be represented by a negative algebraic sign.

As bundles are entered, the data processing system matches trades among the plurality of all bundles. The data processing system accomplishes the matching by assigning a set of non-negative numerical values to each bundle of the plurality of bundles entered which are to be incorporated into the match trade. Each of these numerical values represents the proportion by which each participating bundle is represented in the matched trade. That is, the numerical value represents the allocation of any particular participating bundle to the match trade. Then, the proportion of each asset in a particular bundle that is committed to the exchange is represented by the proportion of the asset in the bundle multiplied by the allocation value assigned by the data processing system to that particular bundle.

A trade is matched when the market surplus for each asset to be exchanged is non-negative. The allocation values are chosen by the data processing system so that this matching condition is satisfied. A non-negative market surplus in an asset occurs when the net valuation of the asset among disposing market participants is equal to, or exceeded by, the net valuation placed on the asset by acquiring market participants. The valuations, in turn, are represented by the proportions of each asset in each of the bundles forming the trade.

The data processing system implementing the bundle trading market may be a distributed data processing system.

The foregoing has outlined rather broadly the features and technical advantages of the present invention in order that the detailed description of the invention that follows may be better understood. Additional features and advantages of the invention will be described hereinafter which form the subject of the claims of the invention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

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

FIG. 1 schematically illustrates bundled trades according to an embodiment of the present invention;

FIG. 2 illustrates a flow diagram of a method of bundled trading in accordance with an embodiment of the present invention;

FIG. 3 illustrates a flow diagram of a method of bundled trading in accordance with another embodiment of the present invention;

FIG. 4 illustrates a flow diagram of a method of market surplus redistribution in accordance with an embodiment of the present invention;

FIG. 5 schematically illustrates a matched transaction in accordance with an embodiment of the present invention;

FIG. 6 schematically illustrates a matched transaction in accordance with an alternative embodiment of the present invention;

FIG. 7 schematically illustrates an embodiment of a data processing system according to the present invention;

FIG. 8 illustrates, in block diagram form, a data processing system implemented in accordance with an embodiment of the present invention;

FIGS. 9A and 9B illustrate flow diagrams of distributed data processing threads according to an embodiment of the present invention;

FIG. 10 illustrates a flow diagram of a method of trade matching in accordance with an embodiment of the present invention;

FIG. 11 schematically illustrates the interaction of distributed data processing threads according to an embodiment of the present invention;

FIG. 12 illustrates, in block diagram form, a data processing system in accordance with an embodiment of the present invention; and

FIG. 13 illustrates a flow diagram of a method of allocation distribution according to an embodiment of the present invention.

#### DETAILED DESCRIPTION

In the following description, numerous specific details are set forth to provide a thorough understanding of the present invention. However, it will be obvious to those skilled in the art that the present invention may be practiced without such specific details. Refer now to the drawings wherein depicted elements are not necessarily shown to scale and wherein like or similar elements are designated by the same reference numeral through the several views.

An invention that addresses the problem of market fragmentation will now be described in detail. Refer now to FIG. 1 in which a bundled trade is schematically illustrated. Bundled trade 100 includes four bundles, bundle 100a, bundle 100b, bundle 100c and bundle 100d. Each of bundles 100a-100d may be associated with an individual market participant, but such an association is not essential. A particular market trader might, in principle, offer an unlimited number of different bundles for trade. Entries 101-104 in each of bundles 100a-100d are associated with an asset to be exchanged. Each entry 101, 102, 103, and 104 is associated with an individual asset, assets 1-4, in the embodiment of FIG. 1.

As described hereinabove, assets may incorporate anything of value. Furthermore, it is understood that bundles 100a-100d including only four assets to be exchanged are illustrative only, and that in practice, trade bundles would include a plurality of assets to be exchanged in which the plurality in a representative embodiment of the present invention could include more or less than four assets.

Trade bundles specify the proportion of each asset to be exchanged. The proportions of assets to be traded are represented by the figures within entries 101-104. For example, the asset represented by entry 101, asset 4, in bundle 100a is to be exchanged in 1.5 units of that asset. This value and all the values in entries 101-104 are proportional values. That is, they represent the proportion of each asset to be exchanged in a particular bundle relative to a size of the bundle. The bundle size is represented in entry 105 in each of bundles 100a-100d. Furthermore, the algebraic sign of each of the entry values is a signature that denotes whether the particular asset represented by the entry is an offer to acquire or an offer to dispose. In the embodiment of the invention illustrated in FIG. 1, acquisition offers are represented by entries having a positive algebraic sign and entries representing an offer to dispose have a negative algebraic sign.

It should be noted that an embodiment of the present invention may include assets none of which are money or currency. That is, an embodiment of bundle trading may exchange assets in which all exchanges are barter trades. Therefore, transactions in which in the context of a money exchange would otherwise be referred to as a buy and a sell are herein more generally referred to as an acquisition and a disposition, respectively. Moreover, it should be appreciated that the sign conventions in the embodiment of FIG. 1 signalling acquisition offers and disposition offers may be

arbitrarily selected, and the opposite sign convention may be employed in an alternative embodiment of the present invention. This will subsequently be discussed further when the methods of the present invention are described in detail.

The plurality of the portion values in each of bundles 100a-100d effectively represent limit "prices." This is perhaps most easily seen if one of the assets in a bundle represents a currency. For example, if asset 1, entry 101, in bundled trades 100 represents a currency, then the market participant associated with bundle 100d is willing to pay, that is dispose, of one unit of currency in order to acquire a unit of asset represented by entry 102, asset 2. Note that this market participant would also be willing to give up one unit of asset 4, represented by entry 104, as well. Thus, from the perspective of the market participant associated with bundle 100d, the transaction proposed is a combination of a barter transaction and cash transaction. Recall, however, that an embodiment of the present invention may include bundled trades in which no asset represents a currency. That is, an embodiment of the present invention, as discussed hereinabove, may include only barter trades. It is not necessary that at least one asset be a currency, although alternative embodiments of the present invention may include trade bundles having at least one asset which is a currency, and other alternative embodiments might include a plurality of assets representing different currencies. Because an embodiment of the present invention may include trade bundles that are purely barter transactions, it is more precise to regard the plurality of proportion values in each of bundles 100a-100d as relative valuations, rather than a "price."

The data processing system of the present invention receives the bundled trades and selects bundles from among a plurality of bundles for participation in a particular transaction. Refer now to FIG. 2 in which is schematically illustrated a flowchart of a method in accordance with the present invention. A bundled trade, including each of bundles 100a-100d of FIG. 1, is entered into a data processing system (see FIGS. 8 and 12) in step 201. In an embodiment of the data processing system of the present invention, the data processing system may be a distributed data processing system in which market participants enter trade bundles via a network, such as the Internet, through the intermediation of a data processing server. Such an embodiment will be subsequently discussed in greater detail. The data processing system then matches trades from among a plurality of entered trade bundles. The matching process encompasses steps 202-205 in FIG. 2.

In matching the trade, each bundle that is participating in a particular trade is assigned a relative allocation by the data processing system. In step 202, an allocation value is assigned to each of the bundles included in the match trade from among the plurality of entered bundles. For the purposes of further description of the present invention, it is convenient to introduce the indexed variable,  $x_j$ , to represent the set of allocation values. The index "j" represents the bundle number of bundles in the matched trade. The proportions of each asset in the plurality of assets in each of the bundles are then weighted by the respective allocation value for each of the trade bundles in step 203. It is convenient for the purpose of further discussion to introduce the doubly indexed quantity  $z_{ij}$  to represent the plurality of all asset proportions for all of the asset entries in all of the bundles in the bundle trade. As above, "j" represents the bundle number, and "i" represents the asset associated with the asset proportion " $z_{ij}$ ". The maximum value that i can assume is the number of assets that may be traded in an embodiment of the

present invention, and, as hereinabove noted, the maximum value of j is given by the number of bundles included in the match trade. In this notation, the step of weighting the asset proportions by the allocation values in 203 may be represented as:

$$y_{ij} = x_j z_{ij} \forall i \in \{1, \dots, m\}, j \in \{1, \dots, n\} \quad (1)$$

The weighted asset proportions have been symbolized by the further notation " $y_{ij}$ ". The maximum number of assets that may be traded in an embodiment of the present invention is represented by the symbol "m", and the number of trade bundles in the match trade has been denoted by the symbol "n". A market surplus is then calculated for each asset in step 204. The market surplus for each asset will be denoted by the symbol " $\mu_i$ ". In an embodiment of the present invention, the market surplus for each asset according to step 204 is given by:

$$\mu_i = - \sum_{j=1}^n y_{ij} \forall i \in \{1, \dots, m\} \quad (2)$$

In step 205, if the market surplus for each asset is nonnegative, then the data processing system will redistribute the market surplus in step 207. The step of redistribution, step 207, will subsequently be further described in detail. If the market surplus for each asset is not nonnegative, then the trade match based on the assigned set of allocation values is not a successful match, step 206. The data processing system must then search for another trade match among the plurality of entered trade bundles. In an embodiment of the present invention according to step 205, acquisition offers have a positive algebraic sign and disposition offers have a negative algebraic sign. In an alternative embodiment in which the opposite sign invention is adopted, the condition with respect to the market surplus in a step corresponding to step 205 is that the market surplus be nonpositive.

In the event a trade match is unsuccessful, the data processing system might search among the entered bundle trades using a trial and error process. However, in the data processing system in which the number of entered trade bundles is realistic, such a method is likely to be inefficient and slow. Therefore, a systematic process for finding match trades is to be preferred.

An embodiment of the present invention implementing a systematic process for matching trades will now be described. Refer now to FIG. 3 in which a flow diagram of a method for matching trades by an optimization process is illustrated. In step 300, a constraint set is defined. In an embodiment of the present invention wherein trade matching is accomplished by an optimization process, a member of the constraint set is the requirement that the market surplus for each asset be non-negative, as described hereinabove. In terms of the symbol  $\mu_i$ , the first member of the constraint set becomes  $\mu_i \geq 0$ , in an embodiment in which acquisition assets are represented by positive algebraic sign and disposition assets by negative algebraic sign. In an alternative embodiment having an opposite sign convention, the first member of the constraint set becomes  $\mu_i \leq 0$ . The second member of the constraint set imposes a constraint on the allocation values which are to be determined as a solution to the optimization process. In an embodiment of the present invention, the second member of the constraint set may be  $0 \leq x_j \leq u_j \forall j \in \{1, \dots, n\}$ . The symbol " $u_j$ " has been introduced for convenience and denotes the bundle size, discussed previously, of bundle number "j". In an

alternative embodiment of the present invention, the second member of the constraint set may be taken to be:

$$\sum_{j=1}^n x_j \leq 1 \quad \text{and} \quad (3)$$

$$x_j \geq 0 \quad \forall j \in \{1, \dots, n\}.$$

In step 301, an objective function is defined. In an embodiment of the present invention, an objective function may be a so-called convex combination of the market surpluses of each of the assets, that is, the  $\mu_i$ . It is convenient to introduce the following notation for this convex combination of market surpluses:

$$\sum_{i=1}^m c_i \mu_i, \quad c_i \text{ real} \quad (4)$$

In this expression, the " $c_i$ " are preselected constants representing the weighted contribution that asset " $i$ " makes to the objective function. A preselected set of the  $c_i$  defines a particular embodiment of a bundled trade data processing system of the present invention. Alternative selections define alternative embodiments. Market participants may elect to enter trades into one or another of competing embodiments depending on the preselected set of  $c_i$ . This will subsequently be illustrated by way of example.

The set of allocation values,  $x_j$ , are determined by a step of extremization of the objective function in step 302. The step of extremization, step 302, may be either a maximization or a minimization, depending on the sign convention adopted for the set of asset proportions,  $z_{ij}$ , previously discussed. Thus, in an embodiment of the present invention wherein a positive value for a  $z_{ij}$  is a signature for an acquisition trade and a negative value for a  $z_{ij}$  is a signature for a disposition trade, then the step of extremization, step 302, is a maximization step. Conversely, in an embodiment having a sign convention wherein a negative value of  $z_{ij}$  is a signature of an acquisition transition and a positive value of a  $z_{ij}$  is a signature for a disposition trade, then the step of extremization, step 302, is a minimization step. The extremization step, step 302, determines the set of allocation values,  $x_j$ , outputted in step 303. Note that because the extremization is subject to the constraint set, and the first member of the constraint set requires that the market surplus for each asset be non-negative, step 205 of FIG. 2 is necessarily satisfied, and a satisfactory trade match is obtained.

After the set of allocation values are outputted, it is necessary to distribute an allocation in step 304, among the matched trade bundles such that the bundle having the smallest bundle size,  $u_j$ , in proportion to its allocation value,  $x_j$ , is just exhausted by the matched trade. This can be accomplished by resealing the allocation values,  $x_j$ , according to the following detailed in steps 1300-1302 of FIG. 13:

$$v_j = \alpha x_j \quad \forall j \in \{1, \dots, n\}, \quad (5)$$

where  $\alpha = \min u_j/x_j$ .

The symbol " $v_j$ " represents the actual transaction allocation for bundle number " $j$ ". Transaction asset allocations are then determined by multiplying the asset proportions  $z_{ij}$  by the actual transactions allocations  $v_j$ , in step 1303.

The optimization process also yields the imputed prices of the assets exchanged in step 305. These are the so-called duals known in the linear programming art. The duals

represent the marginal change in the objective function due to a marginal change in the constraints. In an embodiment of the present invention, the constraint set includes the asset proportions. Thus, a subset of the duals represents the marginal change in the asset proportions required to produce a marginal increase in the objective function, Equation (4). That is, those duals represent the "cost," or "price," in unit asset terms, of marginally increasing the aggregated market surplus represented by the convex combination in Equation (4). The asset "prices" are measured in terms of that combination, and are termed the imputed prices of the respective asset. For example, an embodiment of the present invention might include as assets each of the European currencies that will be combined to form the Euro. Preselecting the  $c_i$  in Equation (4) to match that combination, would then yield market surplus in Euros, and the imputed price of each asset would be measured in Euros. Imputed prices will subsequently be illustrated by way of example. In step 305, imputed prices for each asset are outputted, and the imputed price for the bundle, calculated by adding up the imputed asset prices weighted by each asset's proportion in the bundle, are outputted in step 306. It then remains to redistribute the market surplus, as in step 207 of FIG. 2, which will now be discussed in detail.

Refer now to FIG. 4 illustrating a flowchart detailing the market surplus redistribution in step 207 in FIG. 2. In step 400, sets of redistribution values are selected. The set of redistribution values includes a value associated with each asset and each bundle for a total of  $m \times n$  such values. In addition, the set of redistribution values includes an additional " $m$ " values, one for each asset, that is associated with a market participant in the role of "market maker." In an embodiment of the present invention, the data processing system itself may play the role of the market maker. Thus, the set of redistribution values includes  $m \times (n+1)$  values in total. Moreover, each redistribution value must lie in the range of values from zero to one, inclusive, and the subset of redistribution values associated with asset number " $i$ " must add up to one when summed over all match trades plus the redistribution value associated with the market maker for asset number " $i$ ". It is convenient to introduce the notation " $W_{ij}$ " to denote the set of redistribution values. In terms of this notation, the properties of the redistribution values heretofore recited may be written as follows:

$$W_{ij}, \quad i \in \{1, \dots, m\}, \quad j \in \{0\} \cup \{1, \dots, n\} \quad (6)$$

$$0 \leq W_{ij} \leq 1 \quad \forall i, j' \text{ and}$$

$$\sum_{j=0}^n W_{ij} = 1 \quad \forall i.$$

In step 401, the market surplus is apportioned by forming the  $m \times n$  values in accordance with:  $W_{ij} \mu_i \alpha$ ,  $i \in \{1, \dots, m\}$ ,  $j \in \{1, \dots, n\}$ . In similar fashion, the market maker's share is allocated in step 402 in accordance with:  $W_{i0} \mu_i \alpha$ ,  $i \in \{1, \dots, m\}$ . An embodiment having no redistribution would simply have all of the " $W_{ij}$ " equal to zero, and " $W_{i0}$ " equal one.

In an embodiment of the present invention, the market maker may retain this allocation as a fee. A special case of such an embodiment is an embodiment in which one or more of the assets to be traded is a currency, and the market maker retains an allocation in that asset in accordance with step 402. That allocation may be interpreted as a commission. Such an embodiment will be subsequently discussed by way of example.

Transaction volumes are allocated among the matched bundled trades in step 403. In this step, the actual amounts of each asset to be exchanged among the market participants are allocated in accordance with:

$$z_{ij} = W_{ij} \mu_i \alpha_j \quad \{1, \dots, m\}, j \in \{1, \dots, n\} \quad (7)$$

There are two important points with respect to the step of redistribution of the market surplus. From the properties of the asset proportions " $z_{ij}$ " and the redistribution values, " $W_{ij}$ ", as well as the market surpluses " $\mu_i$ ", as discussed hereinabove, each market participant is in a better position with respect to each asset in the bundle than it otherwise would have been in the absence of the redistribution. In other words, a market participant in a dispositional transaction with respect to asset number " $i$ " disposes of less of that asset than it otherwise would have in the absence of redistribution, and a market participant in an acquisitional transition receives a greater amount of that asset than he otherwise would have received in the absence of redistribution. The other point is that the preselected values in an embodiment of the present invention for the  $W_{ij}$  effectively define the structure of the bundled trading market data processing system for that embodiment. Therefore, an electronic market place that is an embodiment of the present invention having a first preselected set of values  $W_{ij}$  may compete with an alternative embodiment of an electronic bundled trading market having a second preselected set of values  $W_{ij}$ . Market participants may select among competing embodiments in accordance with a redistribution defined by the alternative preselected sets of redistribution values. Before discussing an electronic market place embodied in a distributed data processing system of the present invention, two embodiments of the present invention including the step of redistribution, 207, will be described by way of example with respect to bundled trade 100.

Refer now to FIG. 5 in which a bundled trade transaction 500 is illustrated in tabular form. In transaction 500, trade bundles 100a-100d have been matched with the allocation values as shown in fields 501a-501d, respectively. The market surplus associated with each of the assets represented in fields 101-104, assets 1-4, are shown in fields 502-505. As the values appearing in fields 502-505 show, the market surplus for each of the assets represented is nonnegative. Thus, transaction 500 represents the successful match with respect to bundles 100a-100d, in accordance with the previous discussion. In fields 506a-506d are shown the redistribution values corresponding to trade bundles 100a-100d for the asset represented in field 101, asset 1. Similarly, fields 507a-507d represent the redistribution values for the second asset in the transaction, the asset represented in the trade bundles by field 102, asset 2. Likewise, fields 508a-508d and fields 509a-509d represent the redistribution value for the third and fourth assets, those represented by field 103 and 104 in bundles 100a-100d, to be exchanged in transaction 500.

In an embodiment of the bundled trading system of the present invention represented in transaction 500, each trade bundle 100a-100d, participates equally in the redistribution of the market surplus. This is apparent in that with respect to each asset, the redistribution value for each bundle is the same. However, it should be noted that this is not essential, and a different embodiment may have redistribution values such that different market participants, as represented by their bundled trades, receive different redistributions of the market surplus with respect to any or all of the assets in the trade bundle.

In transaction 500, the market maker also participates in the redistribution of the market surplus. Fields 506e-509e

contain the redistribution values for each asset in the transaction that determine the market maker's share of the market surplus with respect to each of the assets. Thus, in field 506e, the market maker receives a ten percent share with respect to the market surplus in asset 1, corresponding to field 101. Similarly, as shown by the values in fields 507e-509e, respectively, the market maker receives a twenty percent share of the market surplus with respect to asset 2, a ten percent share of the market surplus with respect to asset 3, and a forty percent share of the market surplus with respect to asset 4, the assets corresponding to fields 102-104. The market maker's share of the market surplus may be viewed as the market maker's "fee" or "commission." However, as discussed hereinabove, transaction 500 may be a barter transaction, in which none of the assets traded represent money.

The actual amount of assets to be exchanged among market participants, a so-called transaction volume, is then found according to Equation (7). The transaction volume for each bundle with respect to the first asset is given in fields 510a-510d. In transaction 500, negative transaction volumes correspond to assets that are being disposed of in a given bundle, and transaction volumes with a positive value are assets being acquired in a given bundle. Fields 511a-511d, 512a-512d, and 513a-513d are the transaction volumes for each bundle for assets 2, 3, and 4, respectively. The market maker's share of each asset appears in field 510e-512e. Several points with respect to the transaction volumes will now be discussed.

Transaction 500 exhausts the supply of asset 3 in bundle 100a. The market participant with respect to bundle 100a has entered a bundle trade in which it seeks to dispose of 30 units of asset of the third asset, represented by field 104. Field 104 in bundle 100a contains the asset proportion value of -1, and the bundle size of bundle 100a is 30 units, as shown in field 105 in bundle 100a. In exchange, the market participant with respect to bundle 100a acquires 47.57 units of the first asset in the bundle, represented by field 101. Note that market participant with respect to bundle 100a sought 45 units of the first asset in the bundle, in accordance with the asset proportion value of 1.5 in field 101 of bundle 100a, and a bundle size of 30 in field 105 of bundle 100a. Thus, by virtue of the redistribution, the market participant with respect to bundle 100a has obtained slightly more of the first asset than it sought. In addition to the 30 units of the third asset, represented by field 104, the market participant with respect to bundle 100a also had to give up 28.7 units, field 510a, of asset 4, represented by field 104 in bundle trade 100a. The market participant with respect to bundle 100a had offered up to 30 units of asset 4, in accordance with an asset proportion value of -1 in field 104, in bundle 100a, and a bundle size of 30 units, field 105 of bundle 100a. Thus, the market participant with respect to bundle 100a has had to "pay" slightly less in asset 4 than his limit order with respect to that asset, by virtue of the redistribution of the market surplus.

The market maker has received 1.14 units of the first asset, represented by field 101, the value in field 510e. The market maker's allocation is in accordance with Equation 6. The market maker receives no allocation with respect to the second and third assets because, as seen in fields 503 and 504, as there was no market surplus with respect to those assets. With respect to asset 4, the market maker received 3.6 units, as seen in field 513e.

Refer now to FIG. 6 in which transaction 600 in accordance with another embodiment of the present invention is depicted. In transaction 600, allocation values 601a-601d

corresponding to bundles 100a-100d, respectively, are determined in accordance with an embodiment of the present invention using an optimization step, such as step 302 of FIG. 3. In this embodiment, the market surplus with respect to asset 4 has been used as the objective function. That is, in terms of Equation (4), the  $c_i$  corresponding to assets 1-3,  $c_1$ ,  $c_2$ , and  $c_3$ , are all zero and  $c_4$  has a value of 1. The market surplus with respect to three of the four assets included in bundles 100a-100d, corresponding to asset proportions represented in fields 101-103, respectively, are zero, as shown in fields 602-604. For illustrative purposes, asset 4, corresponding to asset proportions included in field 104, may be considered a currency. The market surplus with respect to the currency is shown in field 605 to be 0.29 units of the currency.

In the embodiment of the present invention in transaction 600, the redistribution values associated with each of the noncurrency assets are preselected to be zero with respect to each trade bundle 100a-100d. This is shown in fields 606a-606d, 607a-607d, and 608a-608d. Concomitantly, the redistribution value associated with the noncurrency assets with respect to the market maker is, therefore, 1, as shown in fields 606e, 607e, and 608e. That is, in the embodiment of transaction 600, the market maker plays the role of a market specialist in a traditional exchange with respect to the noncurrency assets. In such an embodiment, the market maker retains his share of the noncurrency assets as an inventory which he may then dispose of as a market participant.

The currency is redistributed according to redistribution values in fields 609a-609e. With respect to the currency, the market maker receives a ten percent allocation of the market surplus, 609e. With respect to the market participants corresponding to bundles 100a-100d, the market surplus in the currency is allocated according to redistribution values preselected in proportion to the respective allocation values for each bundle, 601a-601d. These redistribution values are shown in fields 609a-609d, respectively. This simply says that in the market embodiment of transaction 600, each market participant receives payment, or makes payment, as appropriate, in proportion to the amount of its bundle that is exchanged.

Transaction 600 exhausts bundle 100a with respect to the third asset, in accordance with the asset proportion, field 104, of bundle 100a and a bundle size, field 105, of bundle 100a. This is in accordance with Equation (5), which ensures that at least one bundle included in a matched trade will be exhausted. Market participant with respect to bundle 100a acquires 45 units of the first asset, in accordance with the asset proportion in field 101 of bundle 100a and the bundle size in field 105 of bundle 100a. However, the market participant also has to pay 22.29 units of currency, field 613a, in order to secure the 45 units of the first asset in exchange for its 30 units of the third asset. Nevertheless, due to the redistribution of the market surplus, the market trader with respect to bundle 100a pays less than his limit price of 30 units corresponding to the asset proportion value of -1 for the currency asset, field 104 in bundle 100a, and the bundle size of 30 units in field 105 of bundle 100a.

The assets acquired in bundle 100a are supplied by dispositions in the remaining bundles, bundles 100b-100d. (Of course, bundles with zero units of assets do not participate in the exchange of the corresponding asset, e.g. fields 610c, 611a, 611b, and 612d). Thus, the 45 units of the first asset in bundle 100a, field 610a, are supplied by a disposition of 32.14 units in bundle 100b, field 610b, and a disposition of 12.9 units from bundle 100d, field 610d.

Likewise, the 30 units of asset 3 disposed of by the market participant in bundle 100a are acquired as 10.71 units in bundle 100b, field 612b, and 19.29 units in bundle 100c, field 612c. Similarly for asset 2 in bundles 100c and 100d (fields 611c and 611d). This is a consequence of there being no market surplus with any asset other than the currency, and therefore, there is nothing for the market maker to inventory (zero entries in fields 610c and 612e).

In transaction 600, the optimization step, for example step 302 in FIG. 3, yields imputed prices for assets 1, 2, and 3, as discussed hereinabove. These imputed prices are displayed in fields 614, 615, and 616, respectively. Because the optimization step in transaction 600 maximizes the market surplus in asset 4, which for illustration has been interpreted to be a currency, the imputed prices in fields 614-616 are measured in units of that market surplus, namely, currency units, as discussed hereinabove. In other words, the imputed price of a unit of asset 1 is 0.7143 units of the currency representing asset 4, as shown in field 614. Similarly, the imputed price of asset 2 is 1.43 currency units, field 615 and of asset 3, 0.357 units of currency, field 616.

Consider now bundle 100a in which 45 units of asset 1, field 610a, were exchanged for 30 units of asset 3, field 612a, and 22.29 units of currency, field 613a. Multiplying the imputed price of asset 1 by 45 units and subtracting 30 times the imputed price of asset 3 yields a net price that the market participant with respect to bundle 100a must pay of 21.42 currency units. However, this price does not include the market participant's share of the market maker's commission. The market participant corresponding to bundle 100a enjoys share of the redistribution is proportionately larger, at 45 percent, field 609a, than the redistribution received by the market participants. Thus, the market participant with respect to bundle 100a is responsible for a larger fraction of the market maker's commission. The market participant with respect to bundle 100a is, in fact, responsible for 50 percent of the market maker's commission because its 45 percent redistribution represents 50 percent of the aggregate redistribution to all the market participants. That is, the 45 percent in field 609a represents 50 percent of the redistribution net of the market maker's share. As previously described, the market maker's share is 1.71 units of currency, 613e. Thus, the market participant with respect to bundle 100a is responsible for 50 percent of that, or 0.86 units of currency. Adding this to the net price it must pay with respect to the assets, yields the 22.29 units of currency that the market participant with respect to bundle 100a must pay, as previously discussed, and displayed in field 613a. The transactions with respect to bundles 100b-100d can be interpreted in similar fashion (fields 613b-613d).

Although the embodiment of the present invention represented in transaction 600 is convenient in order to describe the intuitive interpretation hereinabove recited, such interpretation is unnecessary to the implementation of the present invention. A data processing system, such as data processing system 700 in FIG. 7, to be described, performs the method of the present invention by performing method steps such as those previously discussed, and in part made manifest in Equations (1)-(8). A specific embodiment of the present invention is instantiated through the choice of the preselected values appearing therein, and the process steps performed with respect thereto by the data processing system of the present invention. Calculational steps described in association with transaction 600 are for interpretive purposes only, in order to better understand the present invention. They do not necessarily represent literal process steps per-



formed by the data processing system of the present invention, which will now be described.

A distributed data processing system may provide the environment for asset bundle trading according to the method of the present invention. Refer now to FIG. 7 in which is schematically illustrated such an embodiment of a distributed data processing system architecture, data processing system 700. Data processing system 700 utilizes the World Wide Web to effect communication between market participants and the bundle trading market.

The "World Wide Web" (WWW) is a hypertext information and communication system used on the Internet with data communications operating according to a client/server model using a Hypertext Transfer Protocol (HTTP). HTTP is a known application protocol that provides users access to files using a standard page description language referred to as Hypertext Markup Language (HTML). It should be noted that HTML is an application of Standard Generalized Markup Language (SGML), an international standard (ISO 8879) for text information processing. Furthermore, the files that are accessed using HTML may be provided in different formats, such as text, graphics, images, sound, and video, among others. WWW functionality within data processing clients typically has been through the introduction of "web browsers" that allows for simple graphical user interface-based access to network servers. Two commercially available web browsers are Netscape Communicator™ and Internet Explorer™. Although the present invention as embodied in data processing system 700 employs the WWW for communication, such an embodiment is not essential to its practice. Alternative embodiments may employ other communication methodologies.

In data processing system 700, a market participant communicates and interacts with the bundle trading market using its own data processing hardware, web client 701. Web browser 702 incorporated in web client 701 provides the web services to web client 701. Communications between the market participant and the bundled trading market are transported over the Internet 704, the worldwide computer network. Web client 701 accesses the Internet 704, through an internet service provider (ISP) 705 which web client 701 reaches via link 706. Link 706 may be a telephone line to which web client 701 attaches by means of a data modem. Alternatively, link 706 might be a digital link such as Integrated Services Digital Networks (ISDN). In yet another alternative, web client 701 might attach directly to the Internet thereby eliminating link 706 and ISP 705.

In data processing system 700, bundle trading processor 707 is directly connected to the Internet 704 by means of its web server 708. Communications between each market participant's web client, such as web client 701, and the market is handled by web server 708. Trade data is passed from web server 708 to bundle matching processor 709 in which trade execution takes place. Bundle matching processor 709 also passes trade data back to web server 708 for communication to web client 701 whence it becomes available to the market participant. Trade orders for execution are stored in a database, limit order table 710, within bundle matching processor 709. As trade orders are received, they are stored in limit order table 710. Bundle matching processor then updates limit order table 710 as trades are executed. It also notifies traders about the execution via the Internet as previously described. These processes will be described in detail subsequently. Both order submission and transaction data processing are performed using distributed data processing.

Distributed processing in distributed data processing system 700 may be implemented using Java technology. Java is

a programming language that is designed as a distributed and dynamic language. A Java capable web browser can download and execute Java applications, called applets, just as if the applet were an executable resident on the browser's host data processor. Web client 701 in data processing system 700 contains trade applet 711 in web browser 702. The interactions of the market participant, using web client 701, with the bundle trading processor 707 are through trade applet 711. When a trader initially connects to bundle trading processor 707 over the Internet 704, trade applet 711 is downloaded to web client 701. Trade applet 711 receives and processes data sent by bundle trading processor 707, as well as sending orders thereto. In performing these tasks, both trade applet 711 and bundle trading processor 707 may invoke Java methods that are implemented both on the server side, that is, on web server 708, and the client side, that is, on web client 702 through trade applet 711, respectively.

FIG. 8 illustrates a data processing system 800 that may be utilized to implement a web client 702 that executes the methodology of the present invention. Data processing system 800 comprises a central processing unit (CPU) 810, such as a microprocessor. CPU 810 is coupled to various other components via system bus 812. Read-only memory (ROM) 816 is coupled to the system bus 812 and includes a basic input/output system (BIOS) that controls certain basic functions of the data processing system 800. Random access memory (RAM) 814, I/O adapter 818, and communications adapter 834 are also coupled to system bus 812. I/O adapter 818 may be a small computer system interface (SCSI) adapter that communicates with a disk storage device 820. Communications adapter 834 interconnects bus 812 with an outside network enabling the data processing system to communicate with other such systems. Communications adapter 834 may be a modem in an embodiment of the present invention in which link 706 is a telephone line connecting web client 702 to ISP 705 by means of a dial-up connection. Alternatively, if link 706 is an ISDN line, communications adapter 834 might be an ISDN terminal adapter. Input/output devices are also connected to system bus 812 via user interface adapter 822 and display adapter 836. Keyboard 824, trackball 832, and mouse 826 are all interconnected to bus 812 via user interface adapter 822. Display monitor 838 is coupled to system bus 812 by display adapter 836. In this manner, a user is capable of inputting to the system through keyboard 824, trackball 832, or mouse 826, and receiving output from the system via speaker 828 and display 838. Trade data transmitted to web client 701 by web server 708, and processed for outputting by trade applet 711, may be presented to the market participant on display 838.

Similarly data processing system 800 may be utilized to implement bundle trading processor 707. In such an embodiment, data processing system 800 may represent a high-end work station or minicomputer, and may include multiple processors, 810. In a data processing system 800 implementing a bundle trading market, communications adapter 834 may be a network transceiver.

Some embodiments of the invention may include implementations as a computer system program to execute the method or methods described herein, and as a computer program product. According to the computer system implementation, sets of instructions for executing the method or methods are resident in RAM 814 of one or more computer systems configured generally as described above. Until required by the computer system, the set of instructions may be stored as a computer program product in

another computer memory, for example, in disk drive 820 (which may include a removable memory such as an optical disk or floppy disk for eventual use in disk drive 820).

Moreover, as has been previously described, the computer program product can also be stored at another computer and transmitted in a computer readable medium when desired to the market participant's web client 701 by an external network such as the Internet 704. One skilled in the art would appreciate that the physical storage of the sets of instructions physically changes the medium upon which it is stored so that the medium carries computer-readable information. The change may be electrical, magnetic, chemical, or some other physical change. While it is convenient to describe the invention in terms of instructions, symbols, characters, or the like, the reader should remember that all of these and similar terms should be associated with the appropriate physical elements.

Refer now to FIG. 9 in which a flow chart illustrating an embodiment of a method of the present invention in a multithread computer environment is shown. Java is such a multithreading environment. Threads are computational units within a software program that carry out different tasks. Generally, threads are asynchronous. That is, one thread does not need to wait for another thread to complete execution before it can start running.

A bundled trade is entered when a market participant sends an order to bundle trading processor 707. This is effected by trade applet 711 invoking a send order method which causes the launching of thread 900a in step 901. Each time a market participant enters an order, another copy of thread 900a is launched. In step 902, an order identification is generated. The order identification is a unique identifier that identifies each order in the market. The order identification is sent back to trade applet 711 in step 903. A market participant may submit multiple orders and the order identification permits a trade applet, such as trade applet 711, to associate, with the appropriate order, data pertaining to transactions with respect to each order entered. In step 904, the order is added to the order database, limit order table 710. Because a second market participant may enter an order before the thread entering an order from a first market participant has completed executing, it is possible that two orders may be assigned the same order identification. In an embodiment of the present invention, this can be prevented by forcing the send order method of thread 900a to be synchronous. That is, the thread launched by the second market participant's order entry cannot begin execution until the thread launched when the first market participant entered its order completes execution.

A market participant may also delete an order prior to its execution. When the market participant elects to cancel his order, trade applet 711 invokes a cancel order method, launching thread 900b, in step 905. In step 906, the order identification of the order to be cancelled is added to a cancel order list.

A third thread 900c effects the execution of bundled trades. This thread is launched in step 907 when a bundled trading "market", such as bundled trading processor 707, is initiated, and then continuously loops through the limit order database. First, in step 908, orders in the order database are checked to see if they are in the cancel order list. If so, they are deleted from the database in step 909, and the market participant is notified in step 910 through the invocation of methods implemented in the trade applet, such as trade applet 711, as previously discussed. Then, in step 911, trades are matched using the methods of the present invention previously described hereinabove. In step 912, the order

identification of matched trades are compared with the current entries in the cancel order list. If a matched trade appears in the cancel order list, the order identification is deleted from the cancel order list, step 913, and the market participant is notified, again through the trade applet, that his cancellation came too late. In any case, quantities are updated for matched trades, step 915, and the market participants are notified, step 916. As previously described, the trade applet receives the updated data and processes it for outputting to the market participant, for example by means of a graphic display of an order table on display 838.

However, a market participant need not be associated with a human operator. An embodiment of the present invention may be utilized in a purely electronic marketplace in which trades are entered by an automated trading program. An illustrative example might be trading in shares of index funds. The fund's "trader", a software program, seeks to buy or sell, as a bundle, all of the assets forming the index. Bundles are bought and sold as subscribers either acquire or dispose of shares of the fund. Buy orders and sell orders may be entered electronically via the Internet, and the order is entered between the subscriber and the fund closed by using electronic funds transfer. The trade data received via the trade applet might then be stored in RAM 814 or mass storage device 820 for further processing in closing the transaction. From the perspective of the bundle trading market, the market participants in this market are program trading data processing systems.

In FIG. 10, a flowchart is illustrated depicting the data processing of trade matching, step 911, in further detail. In step 1000, a hash table is generated that maps order identifications to bundle indices used in the matching algorithm as described hereinabove with respect to FIG. 2. Step 1001 includes entering the order data contained in the order database into the matching optimization process previously described in conjunction with FIG. 3. The optimization process outputs matched trade bundles identified by a bundle index. The hash table generated in step 1001 is used to identify matched orders in the order database by order identification, step 1002. The transaction volumes and prices are then calculated using the method of the present invention previously described in the method with FIG. 4, in step 1003. In step 1004, the order database is updated based on the transaction volumes. In other words, new  $u_j$  are calculated to account for the part of each bundle "j" exchanged in the transaction. If an order is zero, step 1005, the new value of  $u_j$  for that bundle is zero, is fully matched, the deleted from the database in step 1006. Otherwise, it remains in the database, and may participate in further transactions. After the database is updated, the process continues in step 1007 with step 912.

The operation of a data processing system according to an embodiment of the present invention may be further appreciated by referring to FIG. 11. The operation of the asynchronous threads on the data structures within a data processing system according to the present invention, such as data processing system 700, is schematically illustrated therein.

A new trade bundle, bundle 1101, is to be added to limit order database 1102. Bundles within database 1102 are identified by order identifications, fields 1103a-1103e. The last order identification in database 1102 is "122" in field 1103e. A first thread, corresponding to thread 900a, generates the next order identification, "123" in field 1104. It then adds the new order, bundle 1101 to database 1102.

A market participant may cancel an order before it is executed. An order posted for cancellation, field 1106 con-

taining the order's identification, here shown to be order "102", is added to cancel order list 1107, by a second asynchronous thread corresponding to thread 900b.

The third thread in FIG. 11, corresponding to thread 900c, is the trade matching thread. It monitors both database 1102 and cancel list 1107. Orders within database 1102, such as bundles 100a-100d shown, are continuously matched using the methods of the present invention heretofore described. If an order identification appears in cancel list 1107, for example, order "105," "112," or "104," in fields 1108-1110 respectively, it is deleted both from database 1102 and cancel list 1107 by thread 900c. Matched trades in database 1102 are updated by thread 900c to reflect the exchange of assets resulting from the transaction. Thread 900c also notifies market participants via a trade applet, such as trade applet 711. As previously discussed, notification is made with respect to both matched trades, cancelled orders, and if an order posted for cancellation had been executed before cancellation was attempted.

As previously noted, a data processing system for matching bundle trades in accordance with the present invention is adaptable for a multiprocessor environment. Refer now to FIG. 12 in which an embodiment of a bundle matching processor 709 having multiple processors is illustrated. Bundle matching processor 709 includes three central processing units CPUs 1200a-1200c. These are connected to a system memory 1201 via system bus 1202. Each of CPUs 1200a-1200c may be dedicated to executing, independently and asynchronously, a bundle trading thread in accordance with a method of the present invention. For example, CPU 1200a may execute thread 900a for entering bundle trades, as discussed hereinabove. Similarly, CPU 1200b may execute thread 900c for matching trades, and CPU 1200c may execute thread 900b for deleting bundle trades. System memory 1201 may include limit order table 710. Alternatively, one CPU, say CPU 1200a, may be dedicated to executing two threads, for example, thread 900a for entering bundle trades, and thread 900c for deleting bundle trades. In such an embodiment, one of the other two CPUs, for example, CPU 1200c, may execute thread 900b for matching bundle trades. The remaining CPU may incorporate web server 708, or alternatively web server 708 might be embodied in CPU 1200a. It would be understood by one of ordinary skill in the art that the alternative embodiments represented by the various presentations of the multiprocessor tasks are all embraced within the disclosed methods and apparatus of the present invention. In yet another alternative embodiment, CPUs 1200a-1200c may execute threads in synchronous fashion.

Although the present invention and its advantages have been described in detail, it should be understood that various changes, substitutions and alterations can be made herein without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. In a data processing system, a method of asset trading comprising the steps of:
  - entering a plurality of bundled trades;
  - matching trades among said plurality of bundled trades, wherein each of said plurality of bundled trades includes a bundle size value and each of said plurality of bundled trades includes a set of proportions of each asset of plurality of assets to be traded in units of said bundle size value; and
  - allocating a set of said plurality of assets in response to said step of matching trades, said step of matching trades comprising:

selecting a set of numerical values, wherein said set of numerical values has a same number of members as a number of said plurality of entered bundled trades, said set of numerical values forming a set of allocation values; and

multiplying each proportion of asset to be traded by one of each numerical value of said set of numerical values, said step of multiplying being performed for each bundled trade, thereby forming a set of weighted proportions of assets to be traded, said set of weighted proportions having a number of weighted proportions equal to a number of said assets to be traded, and wherein said step of matching trades further comprises a step of forming a set of transaction allocations, said step of forming a set of transaction allocations further comprising the steps of:

for each bundled trade having a non-zero allocation value, dividing each bundle size by said non-zero allocation value, thereby forming a set of allocation ratios;

finding a smallest allocation ratio of said set of allocation ratios; and

multiplying each allocation value of said set of allocation values by said smallest allocation ratio, thereby forming a transaction allocation corresponding to each bundle trade of said plurality of bundle trades.

2. The method of claim 1 wherein said step of matching trades further comprises the step of multiplying each proportion of said set of proportions of each asset for each bundled trade by a corresponding allocation ratio for each bundled trade, thereby forming a transaction asset allocation for each asset in said each bundled trade, a set of transaction asset allocations being formed for said each bundled trade.

3. The method of claim 2 further comprising the step of negating each of said weighted proportions of said set of weighted proportions thereby forming a set of market surpluses, each market surplus of said set of market surpluses being a market surplus corresponding to each of said assets to be traded.

4. The method of claim 3 further comprising the step of redistributing each market surplus of said set of market surpluses.

5. The method of claim 4 wherein the step of redistributing each market surplus of said set of market surpluses further comprises the steps of:

selecting a first set of redistribution values, said first set of redistribution values including a plurality of redistribution values, wherein each value corresponds with an asset to be traded, a number of said values being equal to a number of assets to be traded;

selecting a plurality of second sets of redistribution values, said plurality of second sets having a number of sets equal to a number of entered bundled trades, and wherein each value in each second set corresponds with an asset to be traded, a number of said values being equal to a number of assets to be traded, and wherein a sum of all redistribution values, from said first set and from said plurality of second sets, corresponding with each asset has a value of one;

multiplying each redistribution value in said first set by each market surplus of its corresponding asset, thereby forming a first set of surplus redistribution values;

multiplying each redistribution value in each second set by each market surplus of its corresponding asset, thereby forming a plurality of second sets of surplus

redistribution values, each said redistribution value corresponding to an asset to be traded, and each set of said plurality of second sets of redistribution values corresponding with an asset bundle; multiplying each surplus redistribution value in said first set of surplus redistribution values by said smallest allocation ratio, thereby forming a set of first transaction redistributions, said first transaction redistributions being retained by a market maker;

5 multiplying each surplus redistribution value in each set of said plurality of second sets of redistribution values by said smallest allocation ratio, thereby forming a plurality of sets of second transaction redistributions, each of said plurality of sets of second transaction redistributions corresponding with an entered bundled trade; and

15 adding each second surplus redistribution value to its corresponding transaction allocation in its corresponding asset bundle.

6. The method of claim 5 wherein each proportion of said set of proportions of each asset to be traded includes an algebraic sign, a first algebraic sign signifying an acquisition offer and a second algebraic sign signifying a disposition offer, said second algebraic sign being opposite said first algebraic sign.

7. The method of claim 6 wherein the step matching trades includes determining that each weighted proportion of said set of weighted proportions has a value having an algebraic sign not equal to said first algebraic sign.

8. The method of claim 5 wherein said step of matching trades includes an optimization step.

9. The method of claim 8 wherein said optimization step further comprises the step of solving a linear programming problem, wherein an objective function,

$$\sum_{i=1}^m c_i \mu_i,$$

is extremized subject to a set of constraints, wherein m is a number of assets to be traded,  $\mu_i$  is said market surplus, corresponding to asset number "i", said market surplus being

$$-\sum_{j=1}^n z_{ij} x_j \quad \forall i \in \{1, \dots, m\},$$

wherein said  $z_{ij}$  are said set of proportions of each asset to be traded, a number "j" corresponding to a bundle trade number of said plurality of bundled trades, said  $z_{ij}$  corresponding to acquisition offers having a first algebraic sign,  $\sigma_1$ , and disposition offers having a second algebraic sign,  $\sigma_2$ , opposite said first algebraic sign,  $\sigma_2 = -\sigma_1$ , said set of constraints comprising:

$$\text{sgn}(\mu_i) = \sigma_2, \quad \forall i \in \{1, \dots, m\}, \text{ and}$$

$$0 \leq x_j \leq u_j, \quad \forall j \in \{1, \dots, n\}$$

wherein said sgn function extracts an algebraic sign of its argument and returns zero if its argument is zero, and n is a number of entered bundled trades in a data processing system using said method of asset trading, and wherein said  $x_j$  are given by a solution of said linear programming problem, each said  $x_j$  being an allocation value corresponding to bundle trade number "j", said  $u_j$  being a bundle size

corresponding to bundle trade number "j", and wherein said  $c_i$  are preselected constants.

10. The method of claim 8 wherein said optimization step further comprises the step of solving a linear programming problem, wherein an objective function,

$$\sum_{i=1}^m c_i \mu_i,$$

is extremized subject to a set of constraints, wherein m is a number of assets to be traded,  $\mu_i$  is said market surplus, corresponding to asset number "i", said market surplus being

$$-\sum_{j=1}^n z_{ij} x_j \quad \forall i \in \{1, \dots, m\},$$

wherein said  $z_{ij}$  are said set of proportions of each asset to be traded, a number "j" corresponding to a bundle trade number of said plurality of bundled trades, said  $z_{ij}$  corresponding to acquisition offers having a first algebraic sign,  $\sigma_1$ , and disposition offers having a second algebraic sign,  $\sigma_2$ , opposite said first algebraic sign,  $\sigma_2 = -\sigma_1$ , said set of constraints comprising:

$$\text{sgn}(\mu_i) \neq \sigma_2, \quad \forall i \in \{1, \dots, m\},$$

$$\sum_{j=1}^n x_j \leq 1, \quad \text{and}$$

$$x_j \geq 0, \quad \forall j \in \{1, \dots, n\},$$

wherein said sgn function extracts an algebraic sign of its argument and returns zero if its argument is zero, and n is a number of entered bundled trades in a data processing system using said method of asset trading, and wherein said  $x_j$  are given by a solution of said linear programming problem, each said  $x_j$  being an allocation value corresponding to bundle trade number "j", said  $u_j$  being a bundle size corresponding to bundle trade number "j", and wherein said  $c_i$  are preselected constants.

11. The method of claim 9 wherein said extremization of said objective function is a maximization, and  $\sigma_1$  is positive.

12. The method of claim 9 wherein said extremization of said objective function is a minimization, and  $\sigma_1$  is negative.

13. The method of claim 10 wherein said extremization of said objective function is a maximization, and  $\sigma_1$  is positive.

14. The method of claim 10 wherein said extremization of said objective function is minimization, and  $\sigma_1$  is negative.

15. The method of claim 9 further comprising the step of determining an imputed price of each asset in said asset bundle using a corresponding dual value.

16. The method of claim 10 further comprising the step of determining an imputed price of each asset in said asset bundle using a corresponding dual value.

17. A data processing system for trading asset bundles comprising:

circuitry for entering a plurality of bundled trades;

60 circuitry for matching bundled trades among said plurality of bundled trades wherein each bundled trade includes a bundle size value, and each bundled trade includes a set of proportions of each asset of said plurality of assets to be traded in units of said bundle size value; and

65 circuitry for allocating a set of assets of said plurality of assets to be traded in response to said circuitry for

21

matching bundled trades, and wherein said circuitry for matching trades further comprises:

circuitry for selecting a set of numerical values, wherein said set of numerical values has a same number of members as a number of said plurality of entered bundled trades, said set of numerical values forming a set of allocation values; and

circuitry for multiplying each proportion of asset to be traded by one of each numerical value of said set of numerical values, said step of multiplying being performed for each bundled trade, thereby forming a set of weighted proportions of assets to be traded, said set of weighted proportions having a number of weighted proportions equal to a number of said assets to be traded; and

circuitry for forming a set of transaction allocations, said circuitry for forming a set of transaction allocations further comprising:

circuitry, for each bundled trade having a non-zero allocation value, for dividing each bundle size by said non-zero allocation value, thereby forming a set of allocation ratios;

circuitry for finding a smallest allocation ratio of said set of allocation ratios; and

circuitry for multiplying each allocation value of said set of allocation values by said smallest allocation ratio, thereby forming a transaction allocation corresponding to each bundled trade of said plurality of bundled trades.

18. The data processing system of claim 17 wherein said circuitry for forming a set of allocation values further comprises circuitry for multiplying each proportion of said set of proportions of each asset for each bundled trade by a corresponding allocation ratio for each bundled trade, thereby forming a transaction asset allocation for each asset in said each bundled trade, a set of transaction asset allocations being formed for said each bundled trade.

19. The data processing system of claim 18 further comprising circuitry for negating each of said weighted proportions thereby forming a set of market surpluses, each of said set of market surpluses being a market surplus corresponding to each of said assets to be traded.

20. The data processing system of claim 19 further comprising circuitry for redistributing each market surplus of said set of market surpluses.

21. The data processing system of claim 20 wherein said circuitry for redistributing each market surplus of said set of market surpluses further comprises:

circuitry for selecting a first set of redistribution values, said first set of redistribution values including a plurality of redistribution values, wherein each value corresponds with an asset to be traded, a number of said values being equal to a number of assets to be traded;

circuitry for selecting a plurality of second sets of redistribution values, said plurality of second sets having a number of sets equal to a number of entered bundled trades, and wherein each value in each second set corresponds with an asset to be traded, a number of said values being equal to a number of assets to be traded, and wherein a sum of all redistribution values, from said first set and from said plurality of second sets, corresponding with each asset has a value of one;

circuitry for multiplying each redistribution value in said first set by each market surplus of its corresponding asset, thereby forming a first set of surplus redistribution values;

circuitry for multiplying each redistribution value in each second set by each market surplus of its corresponding

22

asset, thereby forming a plurality of second sets of surplus redistribution values, each said redistribution value corresponding to an asset to be traded, and each set of said plurality of second sets of surplus redistribution values corresponding with an asset bundle;

circuitry for multiplying each surplus redistribution value in said first set of surplus redistribution values by said smallest allocation ratio, thereby forming a set of first transaction redistributions, said first transaction redistributions being retained by a market maker;

circuitry for multiplying each surplus redistribution value in each set of said plurality of second sets of redistribution values by said smallest allocation ratio, thereby forming a plurality of sets of second transaction redistributions, each of said plurality of sets of second transaction redistributions corresponding with an entered bundled trade; and

circuitry for adding each second surplus redistribution value to its corresponding transaction allocation in its corresponding asset bundle.

22. The data processing system of claim 17 wherein said circuitry for matching bundled trades includes circuitry for optimizing the trade matching.

23. The data processing system of claim 22 wherein said circuitry for optimization further comprises circuitry for solving a linear programming problem, wherein an objective function,

$$\sum_{i=1}^m c_i \mu_i,$$

is extremized subject to a set of constraints, wherein  $m$  is a number of assets to be traded,  $\mu_i$  is said market surplus, corresponding to asset number "i", said market surplus being

$$-\sum_{j=1}^n z_{ij} x_j \quad \forall i \in \{1, \dots, m\},$$

wherein said  $z_{ij}$  are said set of proportions of each asset to be traded, a number "j" corresponding to a bundle trade number of said plurality of bundled trades, said  $z_{ij}$  corresponding to acquisition offers having a first algebraic sign,  $\sigma_1$ , and disposition offers having a second algebraic sign,  $\sigma_2$ , opposite said first algebraic sign,  $\sigma_2 = -\sigma_1$ , said set of constraints comprising:

$$\text{sgn}(\mu_i) = \sigma_2, \quad \forall i \in \{1, \dots, m\}, \text{ and}$$

$$0 \leq x_j \leq u_j, \quad \forall j \in \{1, \dots, n\}$$

wherein said sgn function extracts an algebraic sign of its argument and returns zero if its argument is zero, and  $n$  is a number of entered bundled trades in a data processing system using said method of asset trading, and wherein said  $x_j$  are given by a solution of said linear programming problem, each said  $x_j$  being an allocation value corresponding to bundle trade number "j", said  $u_j$  being a bundle size corresponding to bundle trade number "j", and wherein said  $c_i$  are preselected constants.

24. The data processing system of claim 22 wherein said circuitry for optimization further comprises circuitry for solving a linear programming problem, wherein an objective function,

$$\sum_{i=1}^m c_i \mu_i$$

is extremized subject to a set of constraints, wherein  $m$  is a number of assets to be traded,  $\mu_i$  is said market surplus, corresponding to asset number "i", said market surplus being

$$-\sum_{j=1}^n z_{ij} x_j \quad \forall i \in \{1, \dots, m\}.$$

wherein said  $z_{ij}$  are said set of proportions of each asset to be traded, a number "j" corresponding to a bundle trade number of said plurality of bundled trades, said  $z_{ij}$  corresponding to acquisition offers having a first algebraic sign,  $\sigma_1$ , and disposition offers having a second algebraic sign,  $\sigma_2$ , opposite said first algebraic sign,  $\sigma_2 = -\sigma_1$ , said set of constraints comprising:

$$\text{sgn}(\mu_i) \neq \sigma_2, \quad \forall i \in \{1, \dots, m\}.$$

$$\sum_{j=1}^n x_j \leq 1, \quad \text{and}$$

$$x_j \geq 0, \quad \forall j \in \{1, \dots, n\}.$$

wherein said  $\text{sgn}$  function extracts the algebraic sign of its argument and returns zero if its argument is zero, and  $n$  is a number of entered bundled trades in a data processing system using said method of asset trading, and wherein said  $x_j$  are given by a solution of said linear programming problem, each said  $x_j$  being an allocation value corresponding to bundle trade number "j", said  $u_j$  being a bundle size corresponding to bundle trade number "j", and wherein said  $c_i$  are preselected constants.

25. The data processing system of claim 23 wherein said extremization of said objective function is a maximization, and  $\sigma_1$  is positive.

26. The data processing system of claim 23 wherein said extremization of said objective function is minimization, and  $\sigma_1$  is negative.

27. The data processing system of claim 24 wherein said extremization of said objective function is maximization, and  $\sigma_1$  is positive.

28. The data processing system of claim 24 wherein said extremization of said objective function is minimization, and  $\sigma_1$  is negative.

29. The data processing system of claim 23 further comprising circuitry for determining an imputed price of each asset in said asset bundle using a corresponding dual value.

30. The data processing system of claim 24 further comprising circuitry for determining an imputed price of each asset in said asset bundle using a corresponding dual value.

31. A program product embodied in a computer readable medium, the program product for bundle trading of assets comprising instructions for:

entering a plurality of bundled trades;

matching bundled trades among said plurality of bundled trades, wherein each bundled trade includes a set of proportions of each asset of a plurality of assets to be traded; and

allocating a set of said plurality of assets in response to said programming for matching bundled trades,

wherein said programming for matching bundled trades further comprises:

selecting a set of numerical values, wherein said set of numerical values has a same number of members as a number of said plurality of entered bundled trades, said set of numerical values forming a set of allocation values; and

multiplying each proportion of asset to be traded by one of each numerical value of said set of numerical values, said step of multiplying being performed for each bundled trade, thereby forming a set of weighted proportions of assets to be traded, said set of weighted proportions having a number of weighted proportions equal to a number of said assets to be traded; and

forming a set of transaction allocations, said programming for forming a set of transaction allocations further comprising:

each bundled trade having a non-zero allocation value, for dividing each bundled size by said non-zero allocation value, thereby forming a set of allocation ratios;

finding a smallest allocation ratio of said set of allocation ratios; and

multiplying each allocation value of said set of allocation values by said smallest allocation ratio, thereby forming a transaction allocation corresponding to each bundled trade of said plurality of bundled trades.

32. The program product embodied in a computer readable medium of claim 31 wherein said instructions for forming a set of allocation values further comprises instructions for multiplying each proportion of said set of proportions of each asset for each bundled trade by a corresponding allocation ratio for each bundled trade, thereby forming a transaction asset allocation for each asset in said each bundled trade, a set of transaction asset allocations being formed for said each bundled trade.

33. The program product embodied in a computer readable medium of claim 32 further comprising instructions for negating each of said weighted proportions thereby forming a set of market surpluses, each of said set of market surpluses being a market surplus corresponding to each of said assets to be traded.

34. The program product embodied in a computer readable medium of claim 33 further comprising instructions for redistributing circuitry for redistributing each market surplus of said set of market surpluses.

35. The program product embodied in a computer readable medium of claim 34 wherein said instructions for redistributing each market surplus of said set of market surpluses further comprise instructions for:

selecting a first set of redistribution values, said first set of redistribution values including a plurality of redistribution values, wherein each value corresponds with an asset to be traded, a number of said values being equal to a number of assets to be traded;

selecting a plurality of second sets of redistribution values, said plurality of second sets having a number of sets equal to a number of entered bundled trades, and wherein each value in each second set corresponds with an asset to be traded, a number of said values being equal to a number of assets to be traded, and wherein a sum of all redistribution values, from said first set and from said plurality of second sets, corresponding with each asset has a value of one;

multiplying each redistribution value in said first set by each market surplus of its corresponding asset, thereby forming a first set of surplus redistribution values;

multiplying each redistribution value in each second set by each market surplus of its corresponding asset, thereby forming a plurality of second sets of surplus redistribution values each said redistribution value corresponding to an asset to be traded, and each set of said plurality of second sets of surplus redistribution values, corresponding with an asset bundled;

multiplying each surplus redistribution value in said first set of surplus redistribution values by said smallest allocation ratio, thereby forming a set of first transaction redistributions, said first transaction redistributions being retained by a market maker;

multiplying each surplus redistribution value in each set of said plurality of second sets of redistribution values by said smallest allocation ratio, thereby forming a plurality of sets of second transaction redistributions, each of said plurality of sets of second transaction redistributions corresponding with an entered bundled trade; and

adding each second surplus redistribution value to its corresponding transaction allocation in its corresponding asset bundled.

36. The program product embodied in a computer readable medium of claim 31 wherein said instructions for matching bundled trades includes instructions for optimizing the bundled trade matching.

37. The program product embodied in a computer readable medium of claim 36 wherein said instructions for optimization further comprises programming for solving a linear programming problem, wherein an objective function,

$$\sum_{i=1}^m c_i \mu_i,$$

is extremized subject to a set of constraints, wherein  $m$  is a number of assets to be traded,  $\mu_i$  is said market surplus, corresponding to asset number "i", said market surplus being

$$-\sum_{j=1}^n z_{ij} x_j \quad \forall i \in \{1, \dots, m\},$$

wherein said  $z_{ij}$  are said set of proportions of each asset to be traded, a number "j" corresponding to a bundled trade number of said plurality of bundled trades, said  $z_{ij}$  corresponding to acquisition offers having a first algebraic sign,  $\sigma_1$ , and disposition offers having a second algebraic sign,  $\sigma_2$ , opposite said first algebraic sign,  $\sigma_2 = -\sigma_1$ , said set of constraints comprising:

$$\text{sgn}(\mu_i) = \sigma_2, \quad \forall i \in \{1, \dots, m\}, \text{ and}$$

$$0 \leq x_j \leq u_j, \quad \forall j \in \{1, \dots, n\}$$

wherein said sgn function extracts an algebraic sign of its argument and returns zero if its argument is zero, and  $n$  is a number of entered bundled trades in a data processing system using said method of asset trading, and wherein said  $x_j$  are given by a solution of said linear programming problem, each said  $x_j$  being an allocation value corresponding to bundled trade number "j", said  $u_j$  being a bundled size corresponding to bundled trade number "j", and wherein said  $c_i$  are preselected constants.

38. The program product embodied in a computer readable medium of claim 36 wherein said instructions for

optimization further comprises programming for solving a linear programming problem, wherein an objective function,

$$\sum_{i=1}^m c_i \mu_i,$$

is extremized subject to a set of constraints, wherein  $m$  is a number of assets to be traded,  $\mu_i$  is said market surplus, corresponding to asset number "i", said market surplus being

$$-\sum_{j=1}^n z_{ij} x_j \quad \forall i \in \{1, \dots, m\},$$

wherein said  $z_{ij}$  are said set of proportions of each asset to be traded, a number "j" corresponding to a bundled trade number of said plurality of bundled trades, said  $z_{ij}$  corresponding to acquisition offers having a first algebraic sign,  $\sigma_1$ , and disposition offers having a second algebraic sign,  $\sigma_2$ , opposite said first algebraic sign,  $\sigma_2 = -\sigma_1$ , said set of constraints comprising:

$$\text{sgn}(\mu_i) \neq \sigma_2, \quad \forall i \in \{1, \dots, m\},$$

$$\sum_{j=1}^n x_j \leq 1, \text{ and}$$

$$x_j \geq 0, \quad \forall j \in \{1, \dots, n\},$$

wherein said sgn function extracts an algebraic sign of its argument and returns zero if its argument is zero, and  $n$  is a number of entered bundled trades in a data processing system using said method of asset trading, and wherein said  $x_j$  are given by a solution of said linear programming problem, each said  $x_j$  being an allocation value corresponding to bundled trade number "j", said  $u_j$  being a bundled size corresponding to bundled trade number "j", and wherein said  $c_i$  are preselected constants.

39. The program product embodied in a computer readable medium of claim 37 wherein said extremization of said objective function is a maximization, and  $\sigma_1$  is positive.

40. The program product embodied in a computer readable medium of claim 37 wherein said extremization of said objective function is minimization, and  $\sigma_1$  is negative.

41. The program product embodied in a computer readable medium of claim 38 wherein said extremization of said objective function is maximization, and  $\sigma_1$  is positive.

42. The program product embodied in a computer readable medium of claim 38 wherein said extremization of said objective function is minimization, and  $\sigma_1$  is negative.

43. The program product embodied in a computer readable medium of claim 37 further comprising instructions for determining an imputed price of each asset in said asset bundle using a corresponding dual value.

44. The program product embodied in a computer readable medium of claim 38 further comprising instructions for determining an imputed price of each asset in said asset bundle using a corresponding dual value.

45. A method of asset trading comprising the steps of: entering a plurality of bundled trades; matching trades among a set of said plurality of bundled trades, wherein each bundled trade includes a set of proportions of each asset of a plurality of assets to be traded; and

allocating a set of assets of said plurality of assets in response to said step of matching trades, wherein said step of matching trades further comprises the steps of:

selecting a set of numerical values, wherein said set of numerical values has a same number of members as a number of said plurality of entered bundled trades, said set of numerical values forming a set of allocation values; and

5 multiplying each proportion of asset to be traded by one of each numerical value of said set of numerical values, said step of multiplying being performed for each bundled trade, thereby forming a set of weighted proportions of assets to be traded, said set of weighted proportions having a number of weighted proportions equal to a number of said assets to be traded, and wherein said step of matching trades further comprises a step of forming a set of transaction allocations, said step of forming a set of transaction allocations further comprising the steps of:

for each bundled trade having a non-zero allocation value, dividing each bundled size by said non-zero allocation value, thereby forming a set of allocation ratios;

finding a smallest allocation ratio of said set of allocation ratios; and

20 multiplying each allocation value of said set of allocation ratios by said smallest allocation ratio, thereby forming a transaction allocation corresponding to each bundled trade of said plurality of bundled trades.

46. The method of claim 45 wherein said step of matching trades further comprises the step of multiplying each proportion of said set of proportions of each asset for each bundled trade by a corresponding allocation ratio for each bundled trade, thereby forming a transaction asset allocation for each asset in said each bundled trade, a set of transaction asset allocations being formed for said each bundled trade.

47. The method of claim 46 further comprising the step of negating each of said weighted proportions of said set of weighted proportions thereby forming a set of market surpluses, each market surplus of said set of market surpluses being a market surplus corresponding to each of said assets to be traded.

48. The method of claim 47 further comprising the step of redistributing each market surplus of said set of market surpluses.

49. The method of claim 48 wherein the step of redistributing each market surplus of said set of market surpluses further comprises the steps of:

selecting a first set of redistribution values, said first set of redistribution values including a plurality of redistribution values, wherein each value corresponds with an asset to be traded, a number of said values being equal to a number of assets to be traded;

selecting a plurality of second sets of redistribution values, said plurality of second sets having a number of sets equal to a number of entered bundled trades, and wherein each value in each second set corresponds with an asset to be traded, a number of said values being equal to a number of assets to be traded, and wherein a sum of all redistribution values, from said first set and from said plurality of second sets, corresponding with each asset has a value of one;

multiplying each redistribution value in said first set by each market surplus of its corresponding asset, thereby forming a first set of surplus redistribution values;

multiplying each redistribution value in each second set by each market surplus of its corresponding asset,

thereby forming a plurality of second sets of surplus redistribution values, each said redistribution value corresponding to an asset to be traded, and each set of said plurality of second sets of surplus redistribution values corresponding with an asset bundle;

5 multiplying each surplus redistribution value in said first set of surplus redistribution values by said smallest allocation ratio, thereby forming a set of first transaction redistributions, said first transaction redistributions being retained by a market maker;

10 multiplying each surplus redistribution value in each set of said plurality of second sets of redistribution values by said smallest allocation ratio, thereby forming a plurality of sets of second transaction redistributions, each of said plurality of sets of second transaction redistributions corresponding with an entered bundled trade; and

adding each second surplus redistribution value to its corresponding transaction allocation in its corresponding asset bundle.

50. The method of claim 49 wherein said step of matching trades includes an optimization step.

51. The method of claim 50 wherein said optimization step further comprises the step of solving a linear programming problem, wherein an objective function,

$$\sum_{i=1}^m c_i \mu_i,$$

is extremized subject to a set of constraints, wherein  $m$  is a number of assets to be traded,  $\mu_i$  is said market surplus, corresponding to asset number "i", said market surplus being

$$-\sum_{j=1}^n z_{ij} x_j \quad \forall i \in \{1, \dots, m\},$$

45 said  $z_{ij}$  corresponding to acquisition offers having a first algebraic sign,  $\sigma_1$ , and disposition offers having a second algebraic sign,  $\sigma_2$ , and wherein said first algebraic sign,  $\sigma_2 = -\sigma_1$ , said set of constraints comprising:

$$\text{sgn}\{\mu_i\} = \sigma_2 \quad \forall i \in \{1, \dots, m\}, \text{ and}$$

$$0 \leq x_j \leq u_j \quad \forall j \in \{1, \dots, n\}$$

55 wherein said  $\text{sgn}$  function extracts an algebraic sign of its argument and returns zero if its argument is zero, and  $n$  is a number of entered bundled trades in a data processing system using said method of asset trading, and wherein said  $x_j$  are given by a solution of said linear programming problem, each said  $x_j$  being an allocation value corresponding to bundle trade number "j", said  $u_j$  being a bundle size corresponding to bundle trade number "j", and wherein said  $x_i$  are given by a solution of said linear programming problem, each said  $x_i$  being an allocation value corresponding to bundle trade number "j", said  $u_j$  being a bundle size corresponding to bundle trade number "j", and wherein said  $c_i$  are preselected constants.



52. The method of claim 50 wherein said optimization step further comprises the step of solving a linear programming problem, wherein an objective function,

$$\sum_{i=1}^m c_i \mu_i,$$

is extremized subject to a set of constraints, wherein  $m$  is a number of assets to be traded,  $\mu_i$  is said market surplus, corresponding to asset number "i", said market surplus being

$$-\sum_{j=1}^n z_{ij} x_j, \forall i \in \{1, \dots, m\},$$

said  $z_{ij}$  corresponding to acquisition offers having a first algebraic sign,  $\sigma_1$ , and disposition offers having a second algebraic sign,  $\sigma_2$ , opposite said first algebraic sign,  $\sigma_2 = -\sigma_1$ , said set of constraints comprising:

$$\text{sgn}(\mu_i) \neq \sigma_2, \forall i \in \{1, \dots, m\},$$

$$\sum_{j=1}^n x_j \leq 1, \text{ and}$$

$$x_j \geq 0, \forall j \in \{1, \dots, n\},$$

wherein said  $\text{sgn}$  function extracts an algebraic sign of its argument and returns zero if its argument is zero, and  $n$  is a number of entered bundled trades in a data processing system using said method of asset trading, and wherein said  $x_j$  are given by a solution of said linear programming problem, each said  $x_j$  being an allocation value corresponding to bundle trade number "j", said  $u_j$  being a bundle size corresponding to bundle trade number "j", each said  $x_j$  being an allocation value corresponding to bundle trade number "j", said  $\mu_j$  being a bundle size corresponding to bundle trade number "j", and wherein said  $c_i$  are preselected constants.

\* \* \* \* \*



US 20020138401A1

A5

(19) **United States**  
 (12) **Patent Application Publication** (10) **Pub. No.: US 2002/0138401 A1**  
 Allen et al. (43) **Pub. Date: Sep. 26, 2002**

(54) **METHOD AND SYSTEM FOR AUTOMATIC EXECUTION OF A SECURITIES TRANSACTION**

**Publication Classification**

(51) **Int. Cl.<sup>7</sup>** ..... **G06F 17/60**  
 (52) **U.S. Cl.** ..... **705/37; 705/36**

(76) **Inventors:** Anne E. Allen, Cranford, NJ (US);  
 Paul N. Desroches, Newburgh, NY (US)

(57) **ABSTRACT**

**Correspondence Address:**  
 MILBANK, TWEED, HADLEY & MCCLOY  
 LLP  
 1 CHASE MANHATTAN PLAZA  
 NEW YORK, NY 10005-1413 (US)

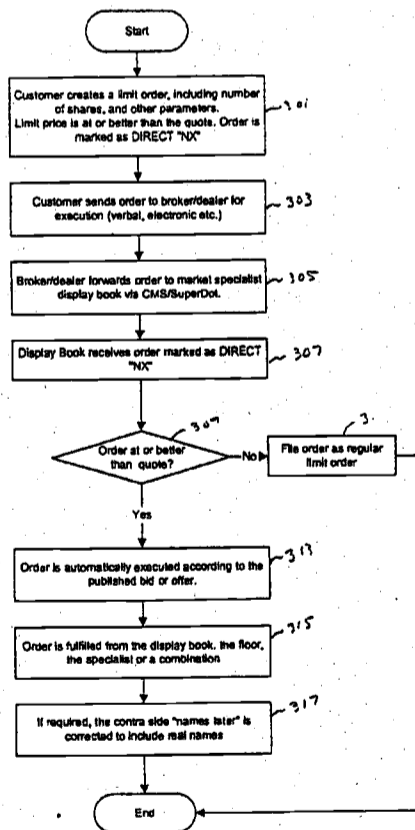
A securities transaction, such as a buy or sell order is transmitted to a securities exchange with an indicator requesting automatic execution. In one embodiment, the securities transaction has a limit price and if the limit price is equal to or better than the current quote for the security on the exchange, the transaction is automatically executed without exposing the transaction to the auction market crowd on the exchange floor for possible price improvement. In another embodiment, the securities transaction is a market order, and if otherwise eligible, the transaction is automatically executed without exposing the transaction to auction market crowd on the exchange floor for possible price improvement.

(21) **Appl. No.:** 09/929,886

(22) **Filed:** Aug. 15, 2001

**Related U.S. Application Data**

(60) **Provisional application No. 60/226,330, filed on Aug. 17, 2000.**



Patent Application Publication Sep. 26, 2002 Sheet 1 of 26 US 2002/0138401 A1

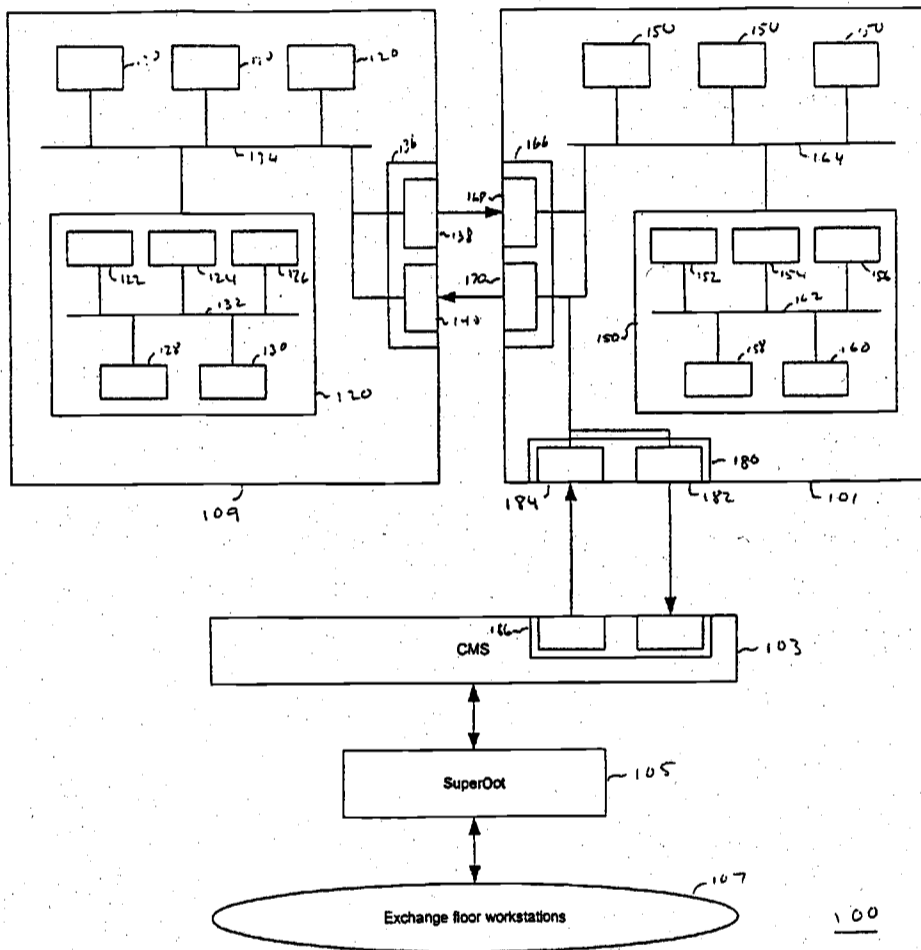


FIG. 1

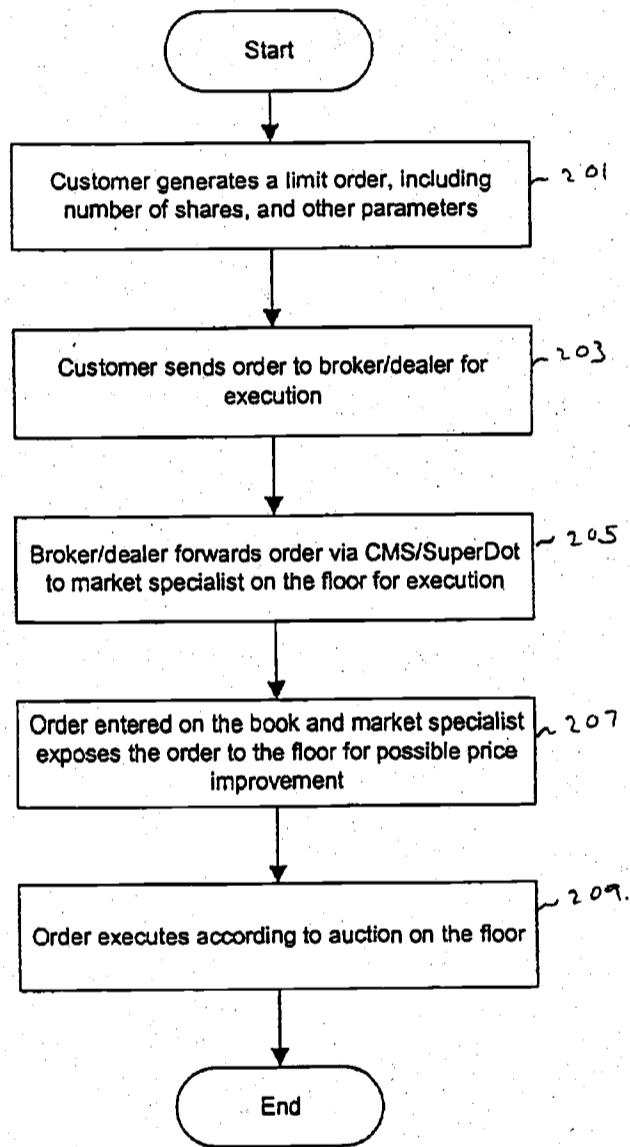


FIG. 2

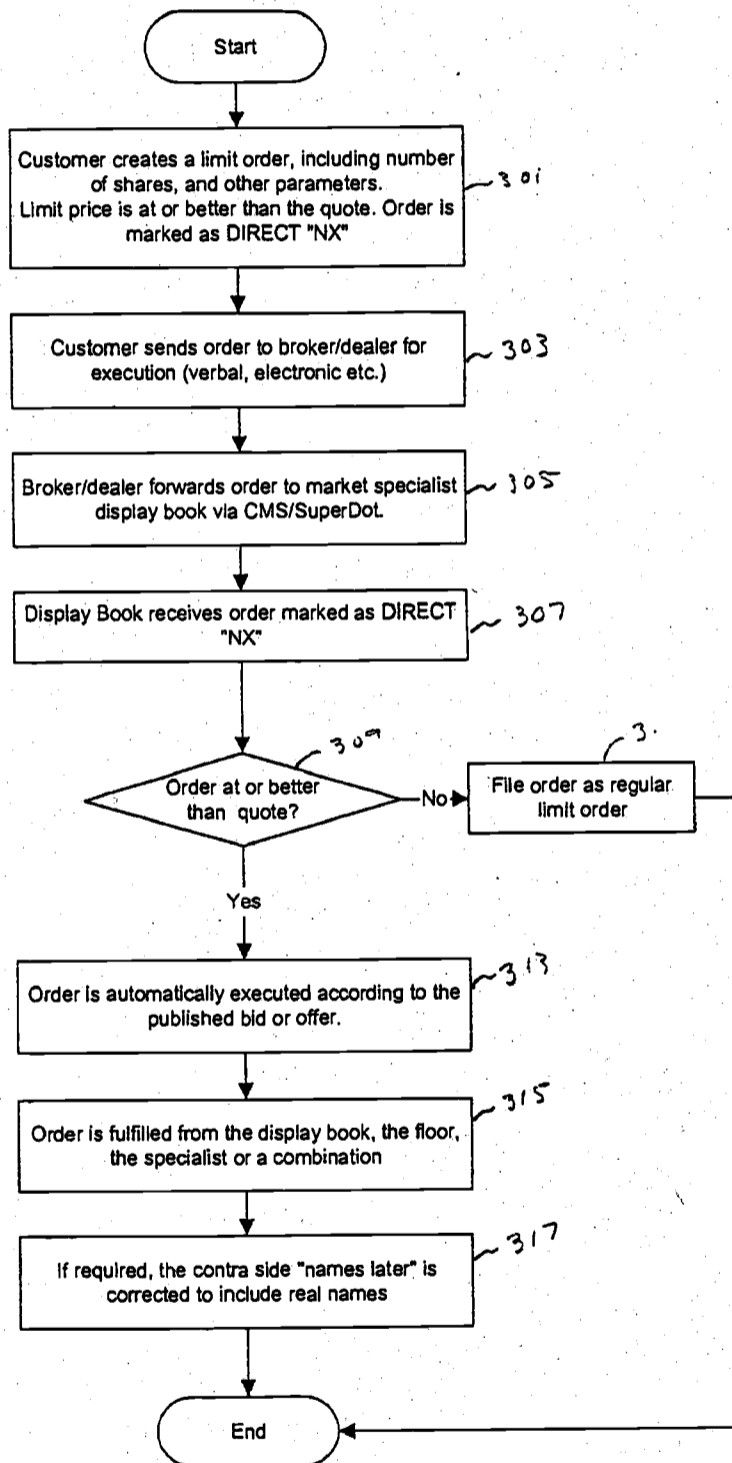


FIG. 3

Patent Application Publication Sep. 26, 2002 Sheet 4 of 26 US 2002/0138401 A1

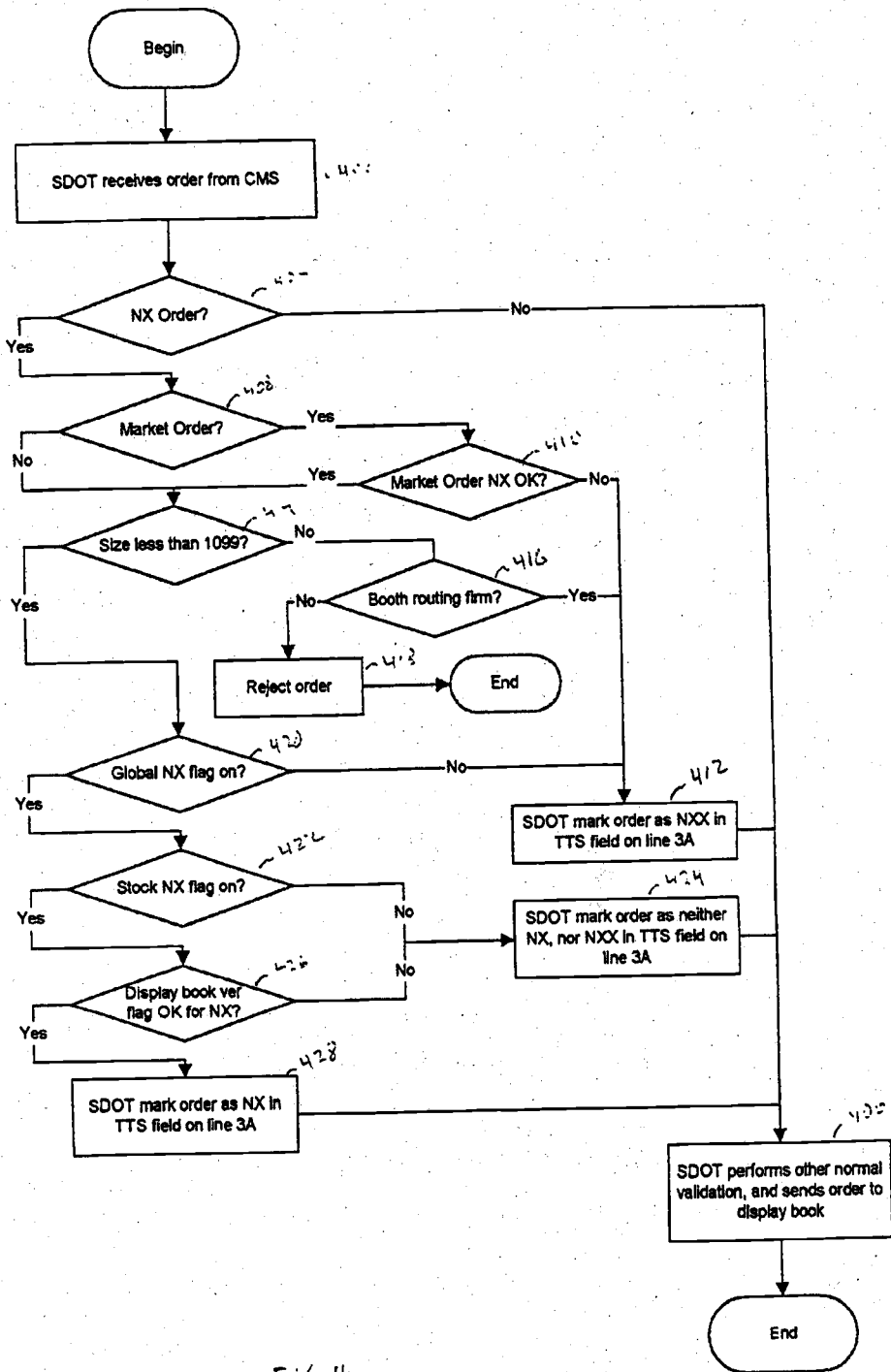


FIG 4

Patent Application Publication Sep. 26, 2002 Sheet 5 of 26 US 2002/0138401 A1

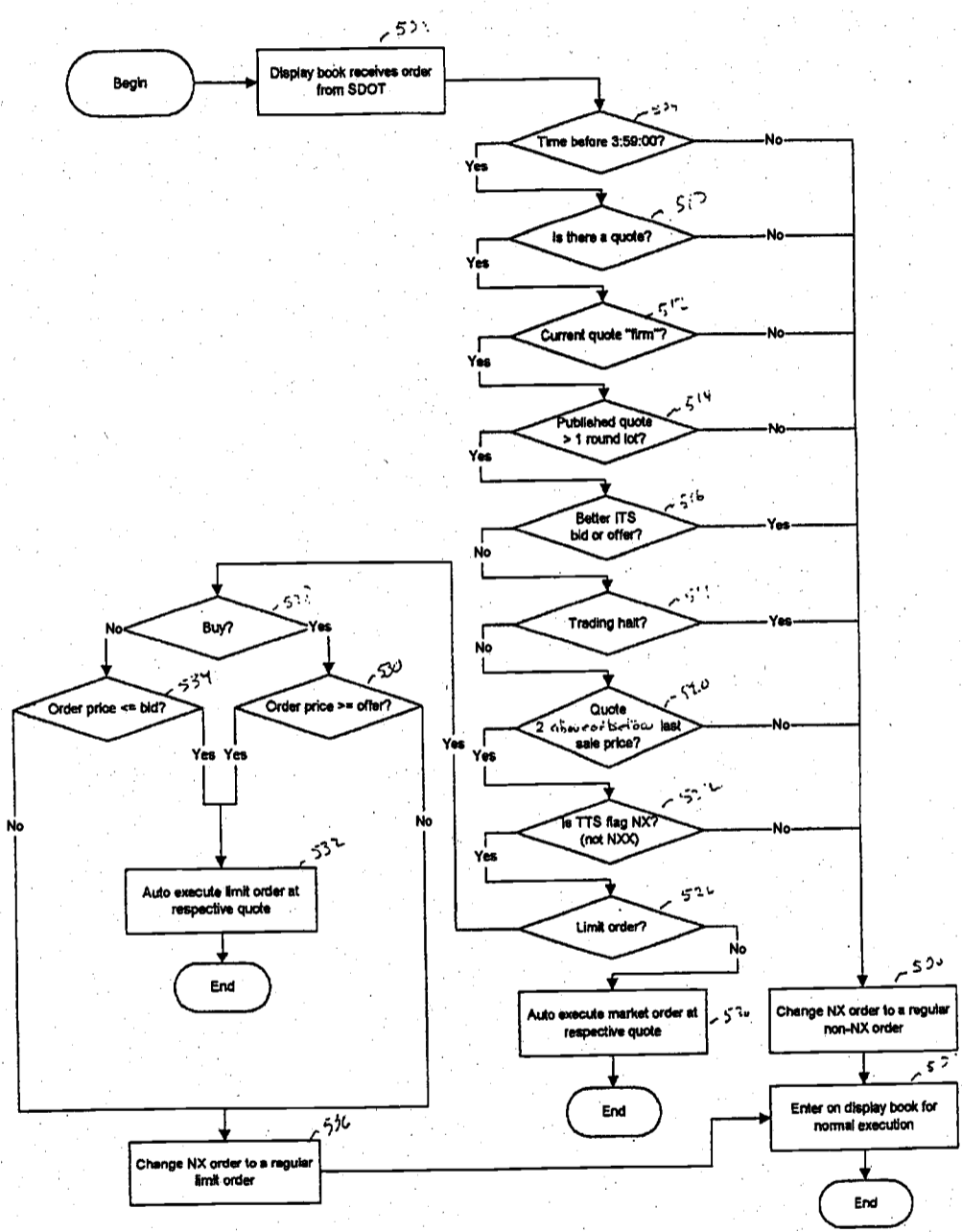


Fig 5

Patent Application Publication Sep. 26, 2002 Sheet 6 of 26 US 2002/0138401 A1

602	BAA	S1	20.00	20.02	BAB				
	+20.02		1	11					
	20.06	4							
	20.04	117							
	36	18.15							
	60	18.14							
606	BAC	S3	+50.00	BAD	S4				
					+60.00				
610	BAC	SS							
	S6	BAC							
604	BAB		39.14	40.02	+40.02				
			75	15					
612	A	X	L	LMT	Price	LMT	L	X	A
614					40.101	5			
					40.08	81			
					40.06	8			
					40.04	2			
					40.02				
	45		39.12						
	35		39.10						
610			MKT						
			Stop						

600

FIG 6



Patent Application Publication Sep. 26, 2002 Sheet 7 of 26 US 2002/0138401 A1

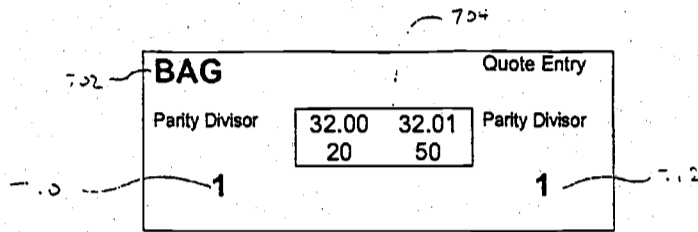


FIG. 7A

<b>BAG</b>	32.00 20	32.01 50	-32.00
	LMT	Price	LMT
		32.05	6
		32.04	5
		32.02	12
		32.01	50
714	20	32.00	
	50	31.14	
	2	31.11	
706	25	31.08	
708	8	MKT	
2, 6		Stop	

FIG. 7B

<b>BAG</b>	32.00 10	32.01 50	-32.00
	LMT	Price	LMT
		32.05	6
		32.04	5
		32.02	12
		32.01	50
716	12	32.00	
	50	31.14	
	2	31.11	
	25	31.08	
6	6	MKT	
		Stop	

FIG. 7C

Patent Application Publication Sep. 26, 2002 Sheet 8 of 26 US 2002/0138401 A1

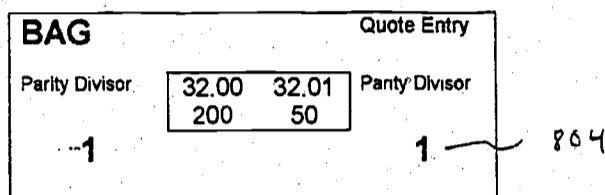


FIG. 8A

<b>BAG</b>	32.00	32.01	-32.00
	200	50	
	LMT	Price	LMT
		32.05	15
		32.04	5
		32.02	12
		32.01	50
	50	31.14	
	2	31.11	
	95	31.09	
	25	31.08	
		MKT	
		Stop	

FIG. 8B

806

<b>BAG</b>	32.00	32.01	-32.00
	190	50	
	LMT	Price	LMT
		32.05	15
		32.04	5
		32.02	12
		32.01	50
	50	31.14	
	2	31.11	
	95	32.09	
	25	31.08	
		MKT	
		Stop	

FIG. 8C

Patent Application Publication Sep. 26, 2002 Sheet 9 of 26 US 2002/0138401 A1

<b>BAG</b>		
NX Sold	10	At 32.00
<b>Buyers</b>		
0	BOOK	
4	M	3212
3	GS	1414
3	ABLE	5643
0	To be assigned	

FIG. 8D

Handwritten annotations: 810 (above 10), 808 (above At 32.00), 812 (left of 0 To be assigned), 814 (below 0 To be assigned), 816 (below 5643).

Patent Application Publication Sep. 26, 2002 Sheet 10 of 26 US 2002/0138401 A1

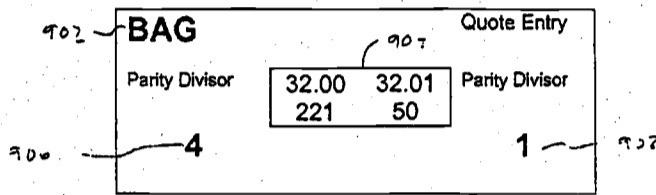


FIG. 9A

<b>BAG</b>	32.00	32.01	-32.00
	221	50	
	LMT	Price	LMT
		32.05	6
		32.04	5
		32.02	12
		32.01	50
40	32.00		
50	31.14		
2	31.11		
95	31.09		
	MKT		
	Stop		

FIG. 9B

<b>BAG</b>	32.00	32.01	-32.00
	213	50	
	LMT	Price	LMT
		32.05	6
		32.04	5
		32.02	12
		32.01	50
910 38	32.00		
50	31.14		
2	31.11		
9	31.09		
	MKT		
	Stop		

FIG. 9C

Patent Application Publication Sep. 26, 2002 Sheet 11 of 26 US 2002/0138401 A1

<b>BAG</b>			
NX Sold	6	At 32.00	
	<b>Buyers</b>		
6	BOOK		
0	To be assigned		

FIG. 9D

<b>BAG</b>			
NX Sold	6	At 32.00	
	<b>Buyers</b>		
2	M	3212	
2	GS	1414	
2	ABLE	5643	
0	To be assigned		

FIG. 9E

Patent Application Publication Sep. 26, 2002 Sheet 12 of 26 US 2002/0138401 A1

<b>BAG</b>		Quote Entry	
Parity Divisor	31.14	32.01	Parity Divisor
	2	50	
<b>1</b>			<b>1</b>

FIG. 10A

1001

<b>BAG</b>	31.14		32.01		-31.14
	2		50		
	LMT	Price	LMT		
		32.05	6		
		32.04	5		
		32.02	12		
		32.01	50		
	2	31.14			
	2	31.11			
	95	32.09			
	12	31.08			
		MKT			
		Stop			

FIG. 10B

1002

<b>BAG</b>	31.14		32.01		-31.14
	1		50		
	LMT	Price	LMT		
		32.04	5		
		32.02	12		
		32.01	50		
		31.14	8 ~ 1004		
	2	31.11			
	95	31.09			
	12	31.08			
	11	31.07			
		MKT			
		Stop			

FIG. 10C

Patent Application Publication Sep. 26, 2002 Sheet 13 of 26 US 2002/0138401 A1

<b>BAG</b>		Quote Entry	
Parity Divisor	31.11 10	31.14 8	Parity Divisor
<b>1</b>			<b>1</b>

FIG. 11A

<b>BAG</b>	31.11 10		31.14 8		-31.11
	LMT	Price	LMT		
		32.04	5		
		32.02	12		
		32.01	50		
		31.14	8		
	2	31.11			
	95	31.09			
	50	31.08			
	25	32.07			
		MKT			
		Stop			

FIG. 11B

<b>BAG</b>	31.11 10		31.14 8		-31.11
	LMT	Price	LMT		
		32.04	5		
		32.02	12		
		32.01	50		
		31.14	8		
1102	5	31.14			
1106	5	31.13			
1104	5	31.12			
1108	2	31.11			
	95	31.09			
		MKT			
		Stop			

FIG. 11C

Patent Application Publication Sep. 26, 2002 Sheet 14 of 26 US 2002/0138401 A1

110 BAG		31.11	31.14	-31.11
		1	8	
	LMT	Price	LMT	
		32.04	5	
		32.02	12	
		32.01	50	
1102	—	31.14	8	
1104	—	31.13		
1104	—	31.12		
	95	31.09		
	50	31.08		
		MKT		
		Stop		

FIG. 11D



Patent Application Publication Sep. 26, 2002 Sheet 15 of 26 US 2002/0138401 A1

BAG	31.00 4		31.03 50		-31.02
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50 # ~ 1202		
	4	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			50 #
		Stop			

FIG. 12A

BAG	31.00 1		31.03 50		-31.00
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.01	50 # ~ 1202		
		31.00	1 ~ 1206		
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			50 #
		Stop			

FIG. 12B

Patent Application Publication Sep. 26, 2002 Sheet 16 of 26 US 2002/0138401 A1

BAG	31.00 25		31.03 50		-31.02
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50 # ~1312		
	25	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
	2: 100	Stop	1: 50		50 #

FIG. 13A

BAG	31.00 15		31.03 50	S: 10 B: 20	-31.00
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.01	50 # ~1312		
	15	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
	2: 100	Stop	1: 50		50 #

FIG. 13B

Patent Application Publication Sep. 26, 2002 Sheet 17 of 26 US 2002/0138401 A1

BAG	31.00		31.03		-31.02
	25		50		
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50 #		
	25	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
	2: 100	Stop	1: 50		50 #

FIG. 14A

BAG	31.00		31.03	S: 10	-31.00
	15		50	B: 20	
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50 # ~ 1403		
	25	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
	2: 100	Stop	1: 50		50 #

FIG. 14B

BAG	31.00		31.03	S: 10	-31.00
	15		50	B: 20	
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.01	50 # ~ 1408		
	25	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
	2: 100	Stop	1: 50		50 #

FIG. 14C



Patent Application Publication Sep. 26, 2002 Sheet 19 of 26 US 2002/0138401 A1

BAG	31.00		31.03		-31.02
	25		50		
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50 #		
	25	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
		Stop			30 #

FIG. 15A

1502

BAG	31.00		31.03		-31.00
	15		50		
	LMT	Price	LMT		
		31.08	70		
		31.05	10		
		31.03	20		
		31.01	30 # ~ .510		
	15	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
		Stop			30 #

FIG. 15B

Patent Application Publication Sep. 26, 2002 Sheet 20 of 26 US 2002/0138401 A1

BAG	31.00		31.03	+31.03
	15		40	
	LMT	Price	LMT	
		31.10	90	
		31.08	70	
		31.05	10	
		31.03	50 # ~1510	
	15	31.00		
	90	30.14		
	50	30.12		
	25	30.11		
		MKT		
		Stop		25 #

FIG. 15C

BAG	31.00		31.03	+31.03
	15		40	
	LMT	Price	LMT	
		31.10	90	
		31.08	70	
		31.05	10	
		31.03	40 #	
	15	31.00		
	90	30.14		
	50	30.12		
	25	30.11		
		MKT		
		Stop		25 #

FIG. 15D

Patent Application Publication Sep. 26, 2002 Sheet 21 of 26 US 2002/0138401 A1

<b>BAG</b>	31.00 25		31.03 50	- 31.02
	LMT	Price	LMT	
		31.10	90	
		31.08	70	
		31.05	10	
		31.03	50	
	25	31.00		20 ~ 16021
	90	30.14		
	50	30.12		
	25	30.11		
		MKT		
		Stop		

FIG. 16A

<b>BAG</b>	31.00 15		31.03 50	-31.00
	LMT	Price	LMT	
		31.10	90	
		31.08	70	
		31.05	10	
		31.03	50	
	25	31.00		20
	90	30.14		
	50	30.12		
	25	30.11		
		MKT		
		Stop		

FIG. 16B

<b>BAG</b>			
NX Sold	10	At 31.00	
	<b>Buyers</b>		
	10 BOOK		
	0 To be assigned		

FIG. 16C

Patent Application Publication Sep. 26, 2002 Sheet 22 of 26 US 2002/0138401 A1

BAG	31.00		31.03		-31.00
	15		50		
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50		
	15	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT	30	20x, 3, 7	
		Stop			

FIG. 16D

1604



Patent Application Publication Sep. 26, 2002 Sheet 23 of 26 US 2002/0138401 A1

BAG	31.00		31.03		-31.02
	5		50		
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50		
	5	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
		Stop			

FIG. 17A

BAG	31.00		31.03		-31.00
	1		50		
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50		
	1702 ~ 5	31.00			
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
		Stop			

FIG. 17B

BAG	30.14		31.00		-31.00
	90		14		
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50		
		31.00	14		
	90	30.14			
	50	30.12			
	25	30.11			
		MKT			
		Stop			

FIG. 17C

Patent Application Publication Sep. 26, 2002 Sheet 24 of 26 US 2002/0138401 A1

BAG	21.00		21.03		-31.02
	5		50		
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50		
	5	31.00			
	90	30.14			
	50	30.12		100	
	25	30.11			
		MKT			
		Stop			

FIG. 18A

BAG	21.00		21.03		-31.02
	5		50		
	LMT	Price	LMT		
		31.10	90		
		31.08	70		
		31.05	10		
		31.03	50		
	5	30.14			
	90	30.12		100	
	50	30.11			
		MKT			
		Stop			

FIG. 18B

Patent Application Publication Sep. 26, 2002 Sheet 25 of 26 US 2002/0138401 A1

<b>BAG</b>	31.00		31.03		-31.02
	10		50		
	<b>LMT</b>	<b>Price</b>	<b>LMT</b>		
		31.10	90		
		31.08	70		
		31.05	10		
20		31.03	50 #		
	5	31.00		10	
	90	30.14			
	50	30.12			
	25	30.11			
		<b>MKT</b>			
		<b>Stop</b>		30 #	

FIG. 19A

<b>BAG</b>	31.00		31.03		-31.00
	1		50		
	<b>LMT</b>	<b>Price</b>	<b>LMT</b>		
X		31.10	90		
		31.08	70		
		31.05	10		
20		31.03	20		
		31.01	30#	~1902	
	90	30.14			
	50	30.12			
	25	30.11			
		<b>MKT</b>	10X		
		<b>Stop</b>		30 #	

FIG. 19B

<b>BAG</b>				
NX Sold	5	At 31.00		
<b>Buyers</b>				
0	BOOK			
5	M	1234		
0	To be assigned			

FIG. 19C

Patent Application Publication Sep. 26, 2002 Sheet 26 of 26 US 2002/0138401 A1

BAG	31.00 1		31.03 40	+31.03
	LMT	Price	LMT	
		31.10	90	
		31.08	70	
		31.05	10	
		31.03	50#	
	90	30.14		
	50	30.12		
	25	30.11		
	10	31.10		
20x, 5, 8	33	MKT	10X	
		Stop		30 #

1904 1906 1908

FIG. 19D

BAG		NX Bot	10	At 31.03
		<b>Sellers</b>		
		10 BOOK		
				0 To be assigned

FIG. 19E

BAG	30.14 90		31.03 40	-31.03
	LMT	Price	LMT	
		31.10	90	
		31.08	70	
		31.05	10	
		31.03	40#	
	90	30.14		
	50	30.12		
	20	30.11		
	10	31.10		
20x, 5, 8	33	MKT	10X	
		Stop		30 #

FIG. 19F

US 2002/0138401 A1

Sep. 26, 2002

1

### METHOD AND SYSTEM FOR AUTOMATIC EXECUTION OF A SECURITIES TRANSACTION

[0001] This application claims the benefit of U.S. Provisional Patent Application Serial No. 60/226,330, filed Aug. 18, 2000, entitled New York Stock Exchange Direct Plus, the disclosure of which is incorporated herein by reference.

#### BACKGROUND

[0002] 1. Field of the Invention

[0003] The invention relates to the field of financial transactions and more particularly to the field of automated securities transactions on a securities exchange with a display book and an auction market crowd.

[0004] 2. Description of the Related Art

[0005] In auction exchanges for securities transactions, such as provided by the New York Stock Exchange, Inc. (NYSE), a round lot securities transaction (e.g., a limit or market order) is exposed to the auction market on the floor, where members of the crowd have an opportunity to compete for the transaction. This competition in the crowd for the transaction may improve the eventual execution price for the transaction. On the New York Stock Exchange, this exposure of the round lot transaction to the crowd occurs even when the order is received electronically on the specialist display book and there is an opportunity to execute the order against other electronic orders on the specialist display book. For some investors and institutions, there is interest in having a transaction execute at a known price, foregoing the opportunity for possible price improvement on the auction floor, and if the transaction will execute in a more timely fashion than is available with the traditional auction transaction, that is also desirable.

[0006] What is needed are methods and systems to automatically execute securities transactions against a quote, without the added time required for a floor auction, with the understanding that the transaction will not experience possible price improvement as it could from the auction market crowd.

[0007] The preceding description is not to be construed as an admission that any of the description is prior art relative to the present invention.

#### SUMMARY OF THE INVENTION

[0008] In one aspect, the instant invention provides a method and system for submitting a securities order to a securities exchange for automatic execution. A quote for a security is determined and a securities order is priced equal to or better than the quote. The order is identified for automatic execution, and transmitted to the securities exchange.

[0009] In one aspect, the instant invention provides a method and system for automatically processing a securities order on a securities exchange. A securities order is automatically received, with an indicator requesting automatic execution. At least a portion of the order is automatically executed against a quote price, without exposing the order for possible price improvement.

[0010] In one aspect, the instant invention provides a method and system for automatic execution of a securities

order on a securities exchange. A current bid or offer price for the security is determined and at least a portion of the order is automatically executed at the bid or offer price, without exposing the order for possible price improvement.

[0011] In one aspect, the instant invention provides a method and system for processing a securities order on a securities exchange. A securities order with an indicator requesting automatic execution and a price of the order is received and compared to a quote. If the price of the order is not equal to or better than the quote, the status of the order is changed from automatic execution to regular execution.

[0012] In one aspect, the instant invention provides a method and system for processing a securities order on a securities exchange. A securities order with an indicator requesting automatic execution and a size of the order is received, and is compared to a respective interest in the security. If the size of the order is greater than the interest, the status of at least a portion of the order is changed from automatic execution to regular execution.

[0013] In one aspect, the instant invention provides a method and system for automatic execution of a securities order on a securities exchange with an auction market crowd. A securities order with an indicator requesting automatic execution and a price of the order is received, and compared to a quote. If the price is equal to or better than the quote, at least a portion of the order is automatically executed without exposing the order to the auction market crowd for possible price improvement.

[0014] In one aspect, the instant invention provides a method and system for submitting a securities order for automatic execution on a securities exchange with an auction market crowd. A securities order is identified for automatic execution, and transmitted to the securities exchange for at least partial automatic execution at a quote price. Automatic execution provides for execution without exposure to the auction market crowd for possible price improvement.

[0015] In one aspect, the instant invention provides a method and system for execution of a securities transaction on a securities exchange with an auction market crowd. A parity divisor is determined and the securities transaction is executed, with a contra side for the transaction selected according to the parity divisor.

[0016] In one aspect, the instant invention provides a method and system for automatic execution of a securities transaction on a securities exchange with an auction market crowd. A quote is automatically updated according to the automatic execution.

[0017] In the above aspects of the instant invention, a securities order is automatically executed against a quote, providing shorter order execution times, and execution at a known price. These aspects are balanced against longer order execution times and possible price improvement when the order is exposed to the floor of the securities exchange without automatic execution.

[0018] The foregoing specific aspects and advantages of the invention are illustrative of those which can be achieved by the present invention and are not intended to be exhaustive or limiting of the possible advantages that can be realized. Thus, the aspects and advantages of this invention

US 2002/0138401 A1

Sep. 26, 2002

2

will be apparent from the description herein or can be learned from practicing the invention, both as embodied herein or as modified in view of any variations which may be apparent to those skilled in the art. Accordingly the present invention resides in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The foregoing features and other aspects of the invention are explained in the following description taken in conjunction with the accompanying figures wherein:

[0020] FIG. 1 illustrates an embodiment of a system according to the instant invention;

[0021] FIG. 2 illustrates a method without the instant invention;

[0022] FIG. 3 illustrates an embodiment of a method according to the instant invention;

[0023] FIG. 4 illustrates an embodiment of a method according to the instant invention;

[0024] FIG. 5 illustrates an embodiment of a method according to the instant invention;

[0025] FIG. 6 illustrates an embodiment of a display book according to the instant invention; and

[0026] FIGS. 7-19 illustrate example transactions using various embodiments according to the instant invention.

[0027] It is understood that the drawings are for illustration only and are not limiting.

#### DETAILED DESCRIPTION OF THE DRAWINGS

[0028] The system and method of the invention are appropriate for use in a Securities Exchange setting, and particularly an exchange with a floor auction market, such as the New York Stock Exchange (NYSE); the American Stock Exchange (AMEX); or the Philadelphia Stock Exchange (PHLX).

[0029] In the description that follows, in the interest of clarity, price information will primarily use decimals rather than fractions. Fractions have been the historic measure of securities price information. However, in the near future, it is believed that most or all securities exchanges will transition to decimal pricing and therefore, use of decimals in this description is believed appropriate.

[0030] Before describing the instant invention in detail, it is helpful to understand a typical securities transaction, as it might be handled by an exchange. The example below will describe a transaction on the New York Stock Exchange, Inc. (NYSE). For a more detailed understanding of all of the rules and procedures of the NYSE, a person or ordinary skill would know to refer to *New York Stock Exchange GUIDE*, Commerce Clearing House (1984 with updates), the disclosure of which is incorporated herein by reference. First, an investor places an order with a NYSE Member Broker Firm to buy or sell shares in an NYSE listed company. The NYSE Member Brokerage Firm checks the customer's account, provides any requested bid or offer pricing information (i.e., the quote) to the investor, and enters order details. The member brokerage firm stores the order in its order match

system, and then transmits the order to the NYSE trading floor, either computer to computer or in some cases by telephone.

[0031] At the NYSE, the Common Message Switch/SuperDot (CMS/SuperDot) safely stores the order and then, based upon the order details and programmed parameters, either routes the order to a broker's booth or directly to the trading post specialist for the stock.

[0032] If the order is routed to the broker's booth, then at the broker's booth on the Exchange floor, the brokerage firm's clerk receives the order electronically (on a display screen) or by telephone (and then enters it onto the screen). The firm's clerk contacts the firm's floor broker by paging, or by wireless telephone, to alert him/her that new orders have arrived. The order may be wired, phoned or physically picked up. The brokerage firm's floor broker then physically takes the order to the specialist trading post where the stock is traded, and competes with other brokers in the auction market crowd for the best price for the customer and makes the trade.

[0033] Alternatively, if the member brokerage firm routes the order to the trading post specialist for the stock, then at the trading post on the Exchange floor, the order appears on the specialist's display book screen, which is an order management system. Although there may be other orders on the display book that could be matched with the new order (if the new order is a limit order), the specialist exposes all orders received on the display book that are at, better or within the current quote to the auction market crowd and makes the trade, seeking price improvement for the customer whenever possible.

[0034] Regardless of how the order is delivered to the floor, after the trade, a transaction report is sent to the originating brokerage firm (buying and selling). On the NYSE, this type of order and report through SuperDot to the specialist takes an average 22 seconds to complete.

[0035] Once the trade is complete, reports are also sent to Consolidated Tape Displays world-wide, and to the clearing operations.

[0036] Also after the trade is complete, post trade processing matches buyers and sellers. This comparison process takes place almost immediately, and is followed by a 3-day clearance and settlement cycle at which time transfer of ownership (shares for dollars or vice versa) is completed via electronic record keeping in the depository.

[0037] At the member brokerage firm, after the trade is completed, the transaction is processed electronically, crediting or debiting the customer's account for the number of shares bought or sold.

[0038] Finally, shortly after the trade is complete, the investor receives a trade confirmation from his/her member brokerage firm. If shares were purchased, the investor submits payment. If shares were sold, the investor's account is credited with the proceeds. As illustrated in this example, there are a number of steps that occur between the time an investor submits an order and the time the investor receives a trade confirmation. The instant invention provides an opportunity to reduce that time by moving some of the steps out of the order execution cycle, or entirely eliminating certain steps, thereby reducing the time between order

US 2002/0138401 A1

Sep. 26, 2002

3

submission and trade confirmation. These aspects of the invention are provided in greater detail below.

[0039] In one embodiment, the instant invention is an automatic order execution system and method that allows order entry for immediate execution against the published quote. A member firm, or individual investor seeking speed of execution for their order designates the order with a suitable instruction, such as "NX". The order size may be limited, for example to 1,099 shares or less for securities traded in 100 share round lots, and 109 shares or less for securities trading in 10 share round lots. The system and method accommodate limit and market orders, and the order size limits can be changed.

[0040] In one embodiment, an "NX" order is entered into CMS by a member firm for normal order validation before routing the order to SuperDot, which determines whether the order is eligible for automatic execution (e.g., size, type and terms). If the order is eligible for automatic execution, it is routed by SuperDot to the specialist display book, for additional checks and immediate execution if eligible. If the order is not eligible for automatic execution, it is generally changed to a regular order and is treated as any other order on the display book, if it meets book eligibility requirements. If the order does not meet eligibility requirements, it is printed at the specialist post.

[0041] In one embodiment, the instant invention runs from the first quote of the day until one minute before the exchange closes. Automatic execution is suspended for a number of reasons, including when there is: 1) no quote; 2) a trading halt; 3) better away market; 4) quote is non-firm; 5) wide spread between bid and offer; 6) one minute before closing; and 7) the bid and/or offer is for 1 round lot (the automatic execution is suspended on the side of the 1 round lot bid and/or offer).

[0042] In one embodiment, when system 100 receives an eligible order, and automatic execution is not suspended, the order price is compared to the published bid or offer. If the order is a limit order and the limit price is equal to or better than the corresponding bid or offer (e.g., bid is \$10.00, and NX sell order is \$9.95), then the entire order is automatically executed against the published bid or offer if the order size is less than the size of the respective bid or offer on the display book. Any unexecuted order quantity is placed on the display book as a regular limit order.

[0043] The entering firm immediately receives an execution confirmation which will have the system contra of LOC.

[0044] In one embodiment, selection of the comparison contra side to the automatic execution depends on a number of conditions. For example, parity divisors set in the display book allow specialist 107 to predetermine the allocation of an NX order. While NX orders can be immediately reported against orders in the book at the bid or offer, specialist 107 must still enter real names after the NX order executes when: 1) crowd participation is indicated by the parity divisor; 2) there is no stock on the book and the parity divisor calls for book participation; or 3) the book is not available due to a frozen condition. In each of these circumstances, specialist 107 must enter real names, such as crowd or system names. Specialist 107 may be forced to take the other side of an automatic execution whenever the crowd/book interest is not available.

[0045] In one embodiment, system 100 reports NX order executions to SuperDot, for delivery to the entering firm by CMS.

[0046] In one embodiment, an NX execution automatically generates a new quote. This results in automatic decrementing of the bid or offer quantity by the size of the execution. Also, to reduce specialist 107 exposure to stale quotes, the quote is automatically updated when book orders that are part of the quote are canceled, deleted or dropped. System 100 sends these quotes for publication on the consolidated tape. NX orders executed according to the invention are automatically reported to the consolidated tape with a sale condition "E", which notes that the transaction was an automatic execution.

[0047] In one embodiment, if the display book is frozen, an NX order will still execute against the published quote. However, such an execution ignores the parity divisor and assumes the trade requires real names to be entered later.

[0048] In one embodiment, an NX execution automatically generates a new quote size and reports the trade to the tape, with a notation that the execution was automatic.

[0049] These various embodiments are explained in greater detail below.

[0050] A System of the Invention

[0051] There are many different possible embodiments for systems of the present invention, and description of all the different possible embodiments would be difficult. Accordingly, an example embodiment, comprising various elements, is described with the understanding that there are numerous equivalent elements and systems. FIG. 1 illustrates an embodiment of a system of the present invention. In system 100, buy and sell orders or securities transactions from customers, individual investors or non-member institutions 109 are sent through members of the exchange 101 and are transmitted through the Common Message Switch (CMS) 103 to the Designated Order Turnaround System (DOT) 105, which is known on the NYSE as SuperDot, and are thereby routed to the proper trading floor specialist workstations 107. In system 100, a customer, individual investor or non-member institution 109 who wishes to send a buy or sell order or securities transaction to the trading floor of the exchange 107 for execution must first send their order to an exchange member 101, who in turn submits the order to the floor of the exchange 107 using Common Message Switch 103 and SuperDot 105. Though not illustrated in FIG. 1, the exchange and members of the exchange have developed a number of procedures with supporting systems to enhance security, rapid processing of orders, audit trails and accountability.

[0052] To accomplish the above-described securities transaction, an operator at a terminal 120 of a customer, individual investor or non-member institution 109 enters details of the desired transaction. These details include the particular security, whether the transaction is a sell or buy order or transaction, and any limits on the order or transaction. The operator or terminal 120 attaches the identity of customer, individual investor or non-member institution 109, so that exchange member 101 will know the origin of the order or transaction. Once the order or transaction is complete, the operator forwards the order or transaction to exchange member 101, where the order or transaction is

US 2002/0138401 A1

Sep. 26, 2002

4

processed, stored, and forwarded to Common Message Switch 103 for handling by one of the traders or specialists 107 on the floor of the exchange.

[0053] Using the information connections illustrated in FIG. 1, or other information sources, an individual or non-member institution 109 is also able to track the current quote, including the published best bid and offer prices of securities and interest or size at the respective bid or offer prices. The quote is the best bid and offer for the security, and is published on the consolidated tape. As an example, if specialist 107 has buy orders for 1,500 shares of a particular security on the display book at \$120.00, with other buy orders at prices less than \$120.00, the best bid is \$120.00. If the specialist also has sell orders for 2,000 shares of the same security on the display book at \$120.15, with other sell orders at prices greater than \$120.15, the best offer is \$120.15. Together, the buy orders at \$120.00 and sell orders at \$120.15 constitute the quote, which is displayed as:

120.00	120.15
15	20

[0054] Here, the bid is in the upper left, the offer is in the upper right and the respective interest or size, expressed in hundreds of shares, is below each.

[0055] If there are no other orders, none of the buy and sell orders on the specialist display book will execute because there is no price overlap.

[0056] The steps for automated execution or handing of an order or transaction when it is received by specialist 107 is one aspect of the instant invention, and will be explained in greater detail elsewhere.

[0057] After the order or transaction is executed, the order confirmation information is forwarded from the floor 107 to the exchange member 101 via SuperDot 105 and Common Message Switch 103. Exchange member 101 records the order confirmation information and matches the order with the proper customer, individual investor or non-member institution 109 and then forwards the order confirmation to the customer, individual investor or non-member institution 109.

[0058] In one embodiment, terminals 120, which run computer software code, are traditional computer workstations, which include a central processor unit (CPU) 122, memory 124 (RAM, ROM or both), data storage 126, removable data storage media 128 and input/output ports 130. These components are interconnected in terminal 120 by a system/data bus 132. Terminals 120 are interconnected at non-member institution by a local area network (LAN), wide area network (WAN), or other equivalent network 134. The various terminals 120 of non-member institution 109 are electronically linked to member(s) of the exchange 101 by appropriate data transmission and reception equipment 136. In the illustrated embodiment, this includes a transmitter 138 and a receiver 140, which are configured to exchange data or information between the non-member institution 109 and the member of the exchange 101.

[0059] Exchange member 101, also has terminals 150, which run computer software code and which are similar to

terminals 120 at the non-member institution. Terminals 150 are used by operators at exchange member 101 in processing orders or securities transactions from customer, individual investor or non-member institution 109. Terminals 150 include a central processor unit (CPU) 152, memory 154 (RAM, ROM or both), data storage 156, removable data storage media 158 and input/output ports 160. These components are interconnected in terminal 150 by a system/data bus 162. Terminals 150 are interconnected at exchange member by a local area network (LAN), wide area network (WAN) or other equivalent network 164.

[0060] The various terminals 150 of exchange member 101 are electronically linked to customer, individual investor or non-member institution 109 by appropriate data transmission and reception equipment 166. In the illustrated embodiment, this includes a transmitter 170 and a receiver 168, which are configured to exchange data or information between the exchange member 101 and the non-member institution 109.

[0061] Exchange member 101 also includes electronic links to the Common Message Switch 103 of the exchange by appropriate data transmission and reception equipment 180. This includes a transmitter 182 and a receiver 184, which are configured to exchange data or information between exchange member 101 and similar data transmission and reception equipment 186 of Common Message Switch 103. In one exchange, the data transmission and reception equipment 186 are termed a Common Access Point (CAP), providing a standardized set of access protocols for the electronic connection of different entities to the exchange.

[0062] In FIG. 1, transmitters 138, 170, 182 and receivers 140, 168, 184 are illustrated as separate pieces of equipment. However, the state of data transmission equipment is such that a single piece of equipment may typically perform both transmission and reception functions using a common media, such as coaxial cable, fiber optic cable or twisted pair wiring. In this configuration, it may be difficult to separate a transmitter from a receiver. The equipment or device may be a single piece of equipment performing both functions. However, depending on the data exchange format and media it is also possible that there are separate transmitters and receivers, such as for satellite, microwave or infrared.

[0063] In FIG. 1, it is also understood that there are non-illustrated elements of exchange member 101, customer, individual investor or non-member institution 109, Common Message Switch 103, SuperDot 105 and floor workstation 107. It is further understood that multiple customers, individual investors or non-member institutions may be connected to a single exchange member, and the multiple exchange members are connected to Common Message Switch 103. It is also possible a customer, individual investor or non-member institution has connections to more than one exchange member. It is also possible that an exchange member has connections to more than one exchange. It is further possible that different exchanges have connections with each other.

[0064] As indicated above, Common Access Point 186 is a state of the art communications infrastructure that serves as a universal bridge between the NYSE's business services and the networks of NYSE members, sponsored non-members (e.g., institutions, brokers/dealers, and individual inves-



US 2002/0138401 A1

Sep. 26, 2002

5

tors), and vendors. Common Access Point is designed to simplify member firm access to a variety of NYSE systems and services using industry-standard protocols and structured data formats. Also, the design of Common Access Point enables member firms to access NYSE business services while maintaining the security and operational integrity of NYSE systems and networks. Common Access Point supports (a) multiple types of connections through multiple providers, (b) multiple types of sessions, and (c) multiple messaging standards over a common Transmission Control Protocol/Internet Protocol (TCP/IP) network.

[0065] Order information flowing to and from the NYSE is supported in the Floor Communication Standard (FCS) message format traditionally used by the NYSE or in the industry-standard Financial Information eXchange (FIX) message format. Other formats are supported as they become widely accepted and utilized in the securities industry.

[0066] Common Access Point authenticates incoming connections from hosts, secure sessions and individual users. It also provides appropriate data confidentiality, and ensures the integrity of NYSE systems against external threats.

[0067] Member firms can choose to connect to Common Access Point either directly, through a financial service bureau, through a public extranet provider, or through an Internet service provider (ISP), depending upon their needs. Depending on the access method, a variety of physical connection types are supported, ranging from dial-up (via third parties) to 155 Mbps circuits. When the member firm's business requirements warrant it, a member firm can run multiple NYSE business services over a single physical connection. Common Access Point is reachable at two sites, and redundant paths from multiple member firm lines or sites are available in order to maintain the high standards of availability member firms have come to expect from the NYSE.

[0068] The information carried in a messaging format such as FIX is conveyed to the NYSE via a "session-layer" protocol that then uses TCP and IP to deliver the data. Common Access Point supports a number of session protocols to meet a range of potential needs. These session protocols are used to provide security services and a measure of standardization between the network and the application.

[0069] The role of the Common Message Switch (CMS) 103 is to receive, validate and pass orders and administrative messages received from member firms to other NYSE systems. In addition, CMS sends Execution Reports, responses to administrative messages, and Status messages back to the member firms.

[0070] The Common Message Switch (CMS) connects to each member firm via Common Access Point (CAP) and lines that handle all of the traffic to and from the NYSE. This ensures that the traffic to and from the member firms is kept private and isolated from any interference. The line can be defined for use by a single mnemonic, or for additional mnemonics where order flow needs to be segregated.

[0071] Without the instant invention, for all round lot trades on a securities exchange with both auction market crowd and electronic order handling (e.g., the NYSE, the

AMEX or the PHLX), even if the trade is received electronically on the specialist display book, the transaction or trade is always completed after exposing the transaction to the auction crowd on the trading floor, where the trade may experience price improvement. This applies to limit buy and sell orders, as well as market buy and sell orders.

[0072] One difference between market and limit orders without the instant invention is that with a limit order exposed to the auction crowd on the trading floor, the transaction will not execute at a price that is "worse" than the limit price, but with price improvement, it can execute at a "better" price than the limit price. For a market order, the order executes at the market price, which is established by the floor auction.

[0073] To assist traders in the floor auction, a market specialist keeps track of and publishes a current best bid and offer (the quote) for the security. The bid reflects the best price that a party will pay to purchase the security, while the offer reflects the best price that a party will accept in a sale of the security. The difference between the bid and offer is called the spread, and under this arrangement, the offer is always greater than the bid. The specialist, in her role as market maker, keeps the spread small by supplying interest (both price and size) on the opposite side of the quote where there is not sufficient interest. This helps to maintain the market. As the bid and offer change, the specialist constantly updates the quote and publishes the update on the consolidated tape, so that a current quote is available to investors during the time that the market is open.

[0074] Associated with the best bid and offer is a respective interest in the security or size. Although the interest may exist in incremental units of stock (i.e., odd lots or mixed lots), the interest is typically expressed in round lots of 100 shares, or blocks of 10,000 shares. In the same way that the specialist updates the bid and offer, she also constantly updates and publishes the respective interest on the consolidated tape.

[0075] FIG. 2 illustrates an embodiment of a method for executing securities transactions without the instant invention. At step 201, customer, individual investor, or non-member institution 109, selects the security for the transaction and generates a limit order for the securities transaction. The limit order includes information such as the particular security, the number of shares, the limit price, whether the transaction is a buy or sell order and any time limits for the order.

[0076] At step 203, customer, individual investor or non-member institution 109 sends the limit order to their broker/dealer for execution. The broker/dealer, who is a member of the securities exchange and therefore has exchange privileges, receives the order and ensures that it is satisfactory. This check includes verification that the customer has an account, that any credit requirements are satisfied and that the security is actually trading.

[0077] At step 205, broker/dealer 101 forwards the limit order to market specialist 107 on the exchange floor, via CMS/SuperDot.

[0078] At step 207, the limit order is automatically entered on the specialist display book. If the limit price of the buy order for that particular security is priced equal to or greater than the offer, or the transaction is a sell order, which is

US 2002/0138401 A1

Sep. 26, 2002

priced equal to or less than the bid, the market specialist exposes the order to the floor for possible price improvement. Otherwise, if the limit price is outside the quote for that particular security, the order remains on the book until it is at or better than the quote, or otherwise expires.

[0079] At step 209, once the order is exposed to the auction market for price improvement, it will execute according to the floor auction. As a result, if price improvement is available, the limit order will execute at a price that is "better" than the limit price. Otherwise, if price improvement is not available and assuming that the limit price is still available on the floor or in the book, the transaction will execute at the limit price.

[0080] Though not illustrated in FIG. 2, there are additional steps involved in reconciling the securities transaction, such as identifying the contra side for the transaction, and reporting the order execution price and contra side of the transaction. It should be noted, that for every order or securities transaction that is executed on the floor, there is a corresponding contra side.

[0081] It should be noted, that for some odd lot trades, there is an aspect of automatic execution on the NYSE. For these trades, market orders are executed off the National Best Bid or Offer (NBBO), while limit orders are executed off the NYSE last sale. However, for odd lot trades, the opposite side is the specialist.

[0082] A Method of the Invention

[0083] FIG. 3 illustrates an embodiment of the method of the invention. In this embodiment, at step 301, customer, individual investor or non-member institution 109 creates a limit order. This limit order is similar to the limit order described with reference to step 201 of FIG. 2, but in addition, the customer also reviews the current quote (the bid and the offer) for that particular security and uses that quote information to set the limit price of the transaction. For example, if the best bid is \$120.00 for 1,500 shares, and the best offer is 2,000 shares at \$120.15. The quote is:

120.00	120.15
15	20

[0084] If the customer wants to sell the particular security, they must set the limit price for their sell order at or better than the bid, which is therefore \$120.00 or less. In this way, the customer's sell order can take advantage of a trade at the current quote, assuming that the customer is willing to forego the opportunity for price improvement. Likewise, if the customer wants to buy the particular security, they must set the limit price for their buy order at or better than the current offer, which is therefore \$120.15 or more. Also different from step 201 of FIG. 2, the customer indicates their desire for automatic execution (without the opportunity for price improvement) by designating the transaction "NX", for automatic execution. This signals to the broker/dealer and the exchange that the customer wants the order automatically executed without exposure to the auction market for possible price improvement.

[0085] In many embodiments, the customer or broker/dealer will have a real-time quote stream and will use that

quote stream in setting the limit price for the transaction at step 301 at or better than the quote for the particular security. However, it is also possible that the customer will set the limit price without knowledge of or access to a real-time quote stream. In this situation, if the limit price for the transaction is at or better than the quote, the transaction can automatically execute at the quote, and if not, it will not automatically execute, as discussed in greater detail below.

[0086] Once customer, individual investor or non-member institution 109 has created the limit order and designated the order as NX, for automatic execute, then at step 303, the limit order is forwarded to the broker/dealer 101. The method used to forward the order may include electronic, voice or in person.

[0087] At step 305, broker/dealer 101 reviews the limit order, checking for errors and verifying any customer credit requirements. The broker/dealer also notes that the limit order is marked NX and may therefore handle it in a more expeditious manner to enhance the timeliness of the transaction. Once any required checks are completed, the broker/dealer forwards the transaction to the market specialist 107 via CMS/SuperDot, with the destination being the market specialist display book.

[0088] Although FIG. 3 illustrates customer 109 designating the order as NX at step 301, it is also possible that broker/dealer 101 designates the order as NX at step 305. This may be to expedite the order, or because it is easier for broker/dealer 101 to make the designation than customer 109.

[0089] At step 307, system 100 of the invention receives the transaction and the indication for automatic execution (NX) is noted.

[0090] At step 309, system 100 of the invention performs a number of checks to see if automatic execution is available. These checks are discussed elsewhere with reference to FIGS. 4 and 5. System 100 also checks to ensure that the limit price of the transaction is at or better than the quote for that particular security to ensure that the order can be automatically executed. For example, as discussed above, if the transaction is a limit sell order with a price of \$119.95, and the current bid is \$120.00, system 100 can automatically process the transaction at the bid of \$120.00. However, it is possible that the quote has changed in the time interval between the customer creating the limit order and receipt of the limit order on the display book. So, if the bid is no longer \$120.00, because there are no longer any buy orders on the book at prices of \$120.00 or less, and the best bid is now \$119.80, system 100 is unable to automatically execute the customer's limit sell order against the quote (\$119.80) at the price of \$119.95. In this case, at step 311, system 100 changes the limit order from automatic execute to a regular limit order and the order is handled as it would be handled without the instant invention.

[0091] If, however, the price of the order is at or better than the quote, then at step 313, system 100 automatically executes the order against the current quote. The automatic execution, and price of execution, is reported to customer, individual investor or non-member institution 109, via SuperDot/CMS 105, 103 and broker/dealer 101. In this way, the customer knows very quickly that the transaction was executed and the execution price of the transaction.

US 2002/0138401 A1

Sep. 26, 2002

7

[0092] Because the transaction is executed against the quote, and not against a particular contra side, a particular contra side is not necessarily identified at step 313 when the transaction is automatically executed. Therefore, system 100 may still need to perform this step. Thus, at step 315, system 100 completes the steps required to fill the order and identify the contra side.

[0093] In one embodiment, the steps for identifying the contra side include use of a parity divisor.

[0094] The parity divisor is used by system 100 to determine how to allocate an NX order when it is automatically executed in accordance with NYSE Rule 72, which governs priority, parity and precedence within a trade crowd. The divisor is a numeric code that a display book user, typically specialist 107, enters for both the bid and offer side. The divisor indicates how system 100 will assign contra sides to an automatically executed NX order. Each stock in a display book has its own parity divisor settings.

[0095] In one embodiment, there are six options for the parity divisor, ranging from zero (0) to five (5). They are: 0) crowd only, no display book; 1) display book is allocated 100%; 2) display book is allocated 50%, the balance requires real names; 3) display book is allocated 33%, the balance requires real names; 4) display book is allocated 25%, the balance requires real names; and 5) display book is allocated 20%, the balance requires real names.

[0096] For each automatic execution, the quantity allocated to the display book is determined by the following formula, as long as the divisor is greater than zero.

$$\text{AllocatedBOOK} = \text{Roundup} \left( \frac{\text{ExecutionQuantityInRoundLots}}{\text{ParityDivisor}} \right)$$

[0097] where, Roundup is taking any number with a fractional portion and rounding up to the next whole number, that is round lot. For example, 2.000000001 is rounded up to 3.

[0098] Of course, when the parity divisor is zero (0), the amount allocated to display book is zero.

[0099] At the beginning of the day, the parity divisors on both the bid and offer side default to one (1). This includes any time a stock is down-line loaded, such as during a recovery or a stock move.

[0100] When the display book is frozen (either explicitly via the freeze key, or implicitly by displaying a template that freezes the book), the parity divisors for both the bid and offer side are implicitly set to zero for the duration of the freeze. However, this does not change the actual status of the parity divisor as set by the specialist. When the freeze is removed, the parity divisors set by the specialist are used for subsequent transactions.

[0101] If, as a result of an NX execution, tick-sensitive orders are filed at a price that is better than the quote, the parity divisor is set to zero temporarily. This state is removed by a specialist execution, refiling or quote. In this state, if there is another execution at the published (old) quote, the display book will refile tick-sensitive orders as of the previous filing date and time.

[0102] In one embodiment, the contra side is selected entirely from the orders that are in the specialists display book, which corresponds to a parity divisor of one (1). This contra side selection is automatic using software that supports the specialist book. The execution report is always immediately sent back to the entering firm. The trade comparison information will be delayed if the contra is NX (real names required).

[0103] In another embodiment the contra side is selected entirely from the floor or by the specialist, filling the order in their role as a market maker, with the order filled according to the quote and the existing interest from the floor. In this manner, traders on the floor also have an opportunity to fill the order at the execution price. This corresponds to a parity divisor of zero (0). For an NX order, this is done without price improvement.

[0104] In another embodiment, the contra side is selected from a combination of the display book, floor or specialist. This corresponds to parity divisors of 2, 3, 4, or 5. This may involve dividing the order into multiple groups with some groups filled from The book, some groups filled from the floor and some groups filled by the specialist. Of course there are multiple other variations available. The variation used to satisfy the contra side may be according to the auction market principles of priority and parity, as codified in NYSE Rule 72, the disclosure of which is incorporated herein by reference.

[0105] Once the contra side or sides are identified, then at step 317, system 100 updates the "names later" for any required securities transaction to include the actual real name information on the contra side or sides. In this way, system 100 is able to finish the transaction by having an identity of a particular contra side for the transaction, to complete the order and transaction reconciliation that is required at the end of the trading day.

[0106] Not illustrated in FIG. 3 are the steps for transaction or order confirmation, audit and order reconciliation. In the order or transaction confirmation process the executed transaction information is sent from the exchange floor 107 to customer, individual investor or non-member institution 109. The confirmation steps are somewhat a reverse of the order steps and involve sending the confirmation from the exchange floor 107 through SuperDot 105 and CMS 103 to the exchange member 101, where the order is forwarded to customer, individual investor or non-member institution 109.

[0107] Also not illustrated in FIG. 3 are steps whereby the automatic execution is not available, such as lack of a firm published price or quote for the security, an automatic execution order received before a published price or quote is available, a gap in the published quotation because of an influx of orders on one side of the market, the published price or quote is 100 share size, a trading halt for the security, the order size is outside 100 to 1,099 shares, or the order is received after an end of trading day cut-off (e.g., after 3:59:00 p.m.). According to NYSE rules, automatic execution may not be available if the individual submitting the transaction has too many orders within a certain time (e.g., two orders for the same security received from the same party within a 30 second interval). It is also possible that part of the order can be executed according to the automatic execution described above and that part can not be executed according to the automatic execution.

US 2002/0138401 A1

Sep. 26, 2002

8

[0108] In one embodiment, the size of an order identified for automatic execution must be 1,099 shares or less.

[0109] In one embodiment, the size (or interest) of the quote, either bid or offer, must be greater than 100 shares (one round lot).

[0110] In other embodiments, automatic execution is not available if: 1) the published quotation is a non-firm quotation (e.g., the NYSE published quotation is a non-firm quotation); 2) the published quotation has been gapped for a brief period because of an influx of orders on one side of the market, and the size of the published quotation is 100 shares at the bid and/or offer; 3) a better price exists in another participating market center for a single-sided order identified for automatic execution; 4) the published bid or offer is 100 shares; 5) a transaction outside the published quotation is being completed; or 6) trading in the security has been halted.

[0111] Some of these other aspects and embodiments of the instant invention are illustrated with reference to FIG. 4. At step 402, SuperDot 105 receives an order from CMS 103.

[0112] At step 404, system 100 determines whether the order is designated as an NX order, thereby requesting automatic execution against the quote. If the order is not designated as an NX order, at step 406, system 100 performs other normal validation procedures on the order, and the order is passed to the display book.

[0113] If the order is designated NX, then at step 408, system 100 determines whether the order is a market order. If the order is a market order, then at step 410, system 100 determines whether NX market orders are being accepted. This is because in one embodiment, system 100 accepts limit NX orders, but does not accept market NX orders. In another embodiment, system 100 accepts both limit NX orders and market NX orders. If system 100 is not accepting market NX orders, then at step 412, system 100 marks the order as NXX in the Try To Stop (TTS) field on line 3A, and then at step 406, system 100 performs other normal validation steps and passes the order to the display book.

[0114] If the order is a market NX order and system 100 is accepting market NX orders, then at step 414, system 100 determines whether the order size is greater than 1,099 shares. If the order size is greater than 1,099, then at step 416, system 100 determines whether the order originated at a booth routing firm. If the order originated at a booth routing firm, then at step 412, system 100 marks the order as NXX in the TTS field on line 3A, and then at step 406, system 100 performs other normal validation steps and passes the order to the display book.

[0115] If the order did not originate at a booth routing firm, then at step 418, the order is rejected outright. This is one of the few circumstances under the instant invention where an order is rejected, and not handled in some other manner.

[0116] If the order size is 1,099 shares or less, then at step 420, system 100 determines whether the global NX flag is on. If the global flag is not on, then at step 412, system 100 marks the order as NXX in the TTS field on line 3A, and then at step 406, system 100 performs other normal validation steps and passes the order to the display book.

[0117] If the global NX flag is on, then at step 422, system 100 determines whether the NX flag for the particular stock

is on. If the stock NX flag is not on, then at step 424, system 100 marks the order in the TTS field on line 3A as NXX, and then at step 406, system 100 performs other normal validation steps and passes the order to the display book.

[0118] SuperDot checks if it is a market order with the market order flag set to On. If no, system 100 appends NXX, if yes, system 100 appends NX.

[0119] If the NX flag for the particular stock is on, then at step 426, system 100 determines whether the display book version flag is ok for NX orders. If the display book version flag is not ok, then at step 424, system 100 marks the order in the TTS field on line 3A as NXX, and then at step 406, system 100 performs other normal validation steps and passes the order to the display book.

[0120] In one embodiment, the test steps described with reference to FIG. 4, are performed by SuperDot. Once SuperDot has completed those tests, the order is passed to the display book, where additional test steps are performed before the order is automatically executed.

[0121] Referring to FIG. 5, the test steps performed by the display book in one embodiment are illustrated. At step 502, the display book of system 100 receives the order from SuperDot.

[0122] At step 504, system 100 determines whether the market is open and the time is before 3:59:00 p.m. If the market is not open, or the time is after 3:59:00 p.m., then at step 506, system 100 changes the order to a non-NX order, and at step 508 enters the order on the display book for normal execution.

[0123] If the market is open and the time is before 3:59:00, then at step 510, system 100 determines whether there is a quote for the security. If there is no quote, then at step 506, system 100 changes the order to a non-NX order, and at step 508 enters the order on the display book for normal execution.

[0124] If there is a quote, then at step 512, system 100 determines whether the current quote is a "firm" quote. A firm quote is a quote by the securities exchange where the order is being presented for execution. This avoids auto execution against a quote from another exchange. If the current quote is not "firm", then at step 506, system 100 enters the order on the display book for normal execution.

[0125] If the quote is "firm", then at step 514, system 100 determines whether the published quote is for more than one round lot. If the quote is not for more than one round lot, then at step 506, system 100 enters the order on the display book for normal execution.

[0126] If the quote is for more than one round lot, then at step 516, system 100 determines whether there is a better Intermarket Trading System (ITS) bid or offer. If there is a better ITS bid or offer, then at step 506, system 100 enters the order on the display book for normal execution.

[0127] If there is no better ITS bid or offer, then at step 518, system 100 determines whether there is a trading halt for the security. If there is a trading halt, then at step 506, system 100 enters the order on the display book for normal execution.

[0128] If there is no trading halt, then at step 520 system 100 determines whether the quote is more than \$2.00 above

US 2002/0138401 A1

Sep. 26, 2002

9

or below the display book last sale for non-high-priced stocks, or more than \$10.00 above or below the display book last sale for high-priced stocks. If there is a quote that is more than \$2.00 above or below the display book last sale for non-high-priced stocks, or more than \$10.00 above or below the display book last sale for high-priced stocks, then at step 506, system 100 enters the order on the display book for normal execution.

[0129] If the quote is less than \$2.00 above or below the display book last sale for non-high-priced stocks, or less than \$10.00 above or below the display book last sale for high-priced stocks, then at step 522, system 100 determines whether the TTS field on line 3A is marked NX, (not NXX). If the TTS field on line 3A is not NX, then at step 506, system 100 enters the order on the display book for normal execution.

[0130] If the TTS field on line 3A is NX, then at step 528, system 100 determines whether the order is a buy order. If it is a buy order, then at step 530, system 100 determines whether the order price is equal to or better than the offer. If the order price is equal to or better than the offer, then at step 532, system 100 automatically executes the order at the respective quote.

[0131] If the order is a sell order, then at step 534, system 100 determines whether the order price is equal to or better than the bid. If the order is equal to or better than the bid, then at step 532, system 100 automatically executes the order at the respective quote.

[0132] If system 100 determines at steps 530 or 534 that the order is not equal to or better than either the offer or bid, then at step 536, system 100 changes the NX order to a regular limit order, and at step 508 enters the order on the display book for normal execution.

[0133] The steps illustrated in FIG. 4 and most of FIG. 5 up to automatic execution are performed for each NX order before the order is considered qualified and eligible for automatic execution.

[0134] It is helpful to understand what the display book looks like to the specialist. Accordingly, FIG. 6 provides an example of a display book screen 600. The specialist handles a number of different securities on the same display book screen. In FIG. 6, these different securities are represented by the symbols BAA (602), BAB (604), BAC (606), BAD (608) & BAE (610). As illustrated, the specialist may configure the display with different size windows for individual securities. In the illustration, the security BAB (604) is illustrated in a larger active window, which helps to illustrate some of the different aspects of the invention. For example, the identity of the security is provided, in addition to the current quote (612). The quote is 39.14 bid for 7,500 shares (here the display book is using fractions rather than decimals), and 1,500 shares offered at 40.02.

[0135] Below the security identity and quote, the current orders on the book are displayed in a sorted order (614) from highest price at the top to lowest price. In the illustration, the bid for 7,500 shares at 39.14 is all from limit order(s) (LMT), and the offer of 1,500 shares at 40.02 is also from limit order(s) (LMT) of 1,400 shares at 40.02 and 100 shares from crowd interest or possibly the specialist at 40.02. If there were any market orders, they would appear at (616).

[0136] To help illustrate how different circumstances are handled by the instant invention, the following examples are provided. All of the examples use the security BAG, and although aspects of the instant invention are described with decimal pricing in other sections, the examples below use fractional pricing.

#### I. EXAMPLE 1

[0137] Referring to FIG. 7, a normal execution against the display book is illustrated. In this example, the stock is BAG (702), and the published quote is the same as the display book quote (704) (no crowd). As illustrated in FIG. 7A, the quoted market is 32.00 bid for 2,000 shares and 5,000 shares offered at 32.01, which is displayed as:

32.00	32.01
20	50

[0138] As illustrated in FIG. 7A, the parity divisors on the bid (710) and offer (712) side are both 1 (meaning all book), and the book is not frozen.

[0139] In FIG. 7B, the display book consists of the following orders, in effective sequence (and expressed in round lots):

[0140] 2 DOT (for Designated Order Turnaround, representing an electronically submitted market order)

[0141] 8 LMT (at 32.00) (representing an electronically submitted regular limit order)

[0142] 6 DOT

[0143] 12 LMT (at 32.00)

[0144] On the display book, the two market orders (2 DOT and 6 DOT) are identified at 706 & 708, while the 8 LMT and 12 LMT at 32.00 are identified at 714.

[0145] With the display book and market in the condition illustrated in FIG. 7B, an investor submits an NX limit order to sell 1,000 shares at 32.00. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). Before the NX order arrives at the display book it is processed according to FIG. 4, and after it arrives at the display book it is processed according to FIG. 5.

[0146] Because the order is at or better than the quote, and the bid quote size is sufficient to cover the NX sell order of 1,000 shares, for NX execution report processing, system 100 reports 1,000 shares of NX order sold to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 2 DOT, 8 LMT.

[0147] The contra side allocation proceeds according to their priority in time and price, so the first allocation is to the 2 DOT (200 shares at the market), and the balance (800 shares) of the 1,000 share order is to the 8 LMT (800 shares). Since the NX limit order was for 1,000 shares, that is all that needs to be allocated. Thus, for contra execution report processing, system 100 reports 200 shares of DOT and 800 shares of LMT bought to SuperDot for delivery to the entering firm via CMS. The give up is 2 DOT and 8 LMT.

US 2002/0138401 A1

10

Sep. 26, 2002

[0148] For Market Data System (MDS) trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 32.00).

[0149] For MDS quote reporting, the quote is automatically updated and published (market 32.00 bid for 1,000 shares and 5,000 shares offered at 32.01) with NX autoquote indicator for surveillance use only, which is displayed as:

32.00	32.01
10	50

[0150] The display book window is updated as illustrated in FIG. 7C, with the limit side 716 of the book reduced by 800 shares from 2,000 shares to 1,200 shares. The last sale and tick are updated, and the bid quote size is reduced by 1,000 shares to 1,000 by autoquote. Because the order was all against the book there is no requirement to provide real names. The specialist must manually update the quote to reflect book interest.

II. EXAMPLE 2

[0151] Referring to FIG. 8, an NX execution against the crowd, with no orders on the display book is illustrated. In this example, there are no eligible bid orders at 32.00 on the book, and the published bid is all crowd. The market is 32.00 bid for 20,000 shares and 5,000 shares offered at 32.01, which is displayed as:

32.00	32.01
200	50

[0152] The parity divisors on the bid (802) and offer (804) sides are both 1 (meaning all book), and the book is not frozen.

[0153] With the display book and market in the condition illustrated in FIG. 8B, the investor submits an NX limit sell order for 1,000 shares at 32.00. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0154] Because the order is at or better than the quote, and the bid quote size is sufficient to cover the NX sell order of 1,000 shares, for NX execution report processing, system 100 reports 1,000 shares of NX order sold to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 10 NX.

[0155] There is no contra execution report processing because the trade is against NX.

[0156] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 32.00).

[0157] For MDS quote reporting, the quote is automatically updated and published (market 32.00 bid for 19,000 shares and 5,000 shares offered at 32.01) with NX autoquote indicator for surveillance use only, which is displayed as:

32.00	32.01
190	50

[0158] The display hook window is updated as illustrated in FIG. 8C. Because the order was not against the book, the limit side of the book is unchanged. The last sale and tick are updated, and the bid quote size (806) is reduced by 1,000 shares by autoquote. Because the order was all against the crowd and the give up was NX, specialist 107 must provide real names.

[0159] Referring to FIG. 8D, the left side of the real names template shows NX Sold, the right side is blank, and the price (808) defaults to 32.00, with NX defaults to 1,000 shares (810). Specialist 107 enters contra side quantities (812), names (814), and (optional) badge numbers (816). When all 1,000 shares are allocated, the template shows 0 shares (818) remaining to be assigned and specialist 107 presses either the smart report key, or done key.

[0160] The display hook sends a real names administrative message to SuperDot, modifying the original trade with the needed names.

III. EXAMPLE 3

[0161] Referring to FIG. 9, an NX execution with distribution between the hook and crowd is illustrated. In this example, the stock is BAG (902), the published quote (904) is both book and crowd on the bid side. The market is 32.00 bid for 221,000 shares and 5,000 shares offered at 32.01, which is displayed as:

32.00	32.01
221	50

[0162] The parity divisor on the bid side (906) is 4 (meaning 25% to the book and 75% to the crowd), and on the offer side (908) is 1 (meaning all hook). The book is not frozen.

[0163] With the display book and market in the condition illustrated in FIG. 9B, the investor submits an NX limit sell order for 800 shares at 32.00. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0164] Because the order is at or better than the quote, and the bid quote size is sufficient to cover the NX sell order of 800 shares, for NX execution report processing, system 100 reports 800 shares of NX order sold to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 2 LMT, 6 NX (25% of 800 shares 200 shares to the book, 75% of 800 shares=600 shares to the crowd).

[0165] For contra execution report processing, system 100 reports 200 shares bought to SuperDot via CMS, with the give up 2 LMT.

[0166] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (800 traded at 32.00).

US 2002/0138401 A1

Sep. 26, 2002

11

[0167] For MDS quote reporting, the quote is automatically updated and published (market 32.00 bid for 21,300 shares and 5,000 shares offered at 32.01) with NX autoquote indicator for surveillance use only, which is displayed as:

```
32.00|32.01
213|50
```

[0168] The display book window is updated as illustrated in FIG. 9C. The limit side of the book (910) is reduced by 200 shares (from 4,000 to 3,800). The last sale and tick are updated, and the bid quote size is reduced by 800 shares by autoquote. Because a portion of the order was against the crowd, specialist 107 must provide real names.

[0169] Referring to FIG. 9D, the real names template shows NX Sold, the right side is blank, and the price defaults to 32.00 (912), with NX defaults to 600 shares (914). Specialist 107 must enter contra side quantities, names, and (optional) badge numbers. Although 600 shares to book are initially displayed, as illustrated in FIG. 9E, when all 600 shares are allocated to real names, the 600 shares book goes gray and the template shows 0 remaining to be assigned. Specialist 107 presses either the smart report key, or done key.

[0170] The display book sends a real names administrative message to SuperDot, modifying the trade with the needed names.

IV. EXAMPLE 4

[0171] Referring to FIG. 10, a partial NX execution, with remainder placed on the book and quote reduction is illustrated. The published quote is all book, there is no crowd interest. The market is 31.14 bid for 200 shares and 5,000 shares offered at 32.01, which is displayed as:

```
31.14      32.01
  2         50
```

[0172] The parity divisors on the bid and offer sides are both 1 (meaning all book), and the book is not frozen.

[0173] With the display book and market in the condition illustrated in FIG. 10B, the investor submits an NX limit sell order for 1,000 shares at 31.14. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0174] Although the order is at or better than the quote, the bid quote size is only 200 shares. Therefore, the remaining 800 shares of the 1,000 share order are placed as regular limit orders to sell at 31.14. For NX execution report processing, system 100 reports 200 shares of NX order sold to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 2 LMT.

[0175] For contra execution report processing, system 100 reports 200 shares bought to SuperDot for delivery to the entering firm via CMS, with the give up 2 LMT.

[0176] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (200 traded at 31.14).

[0177] For MDS quote reporting, the quote is automatically updated and published (market 31.14 bid for 100 shares and 5,000 shares offered at 32.01) with NX autoquote indicator for surveillance use only, which is displayed as:

```
31.14      32.01
  1         50
```

[0178] The display book window is updated as illustrated in FIG. 10C. The book at 31.14 shows the limit side of the book (1002) is reduced by 200 shares to zero (0) and the other 800 shares of the sell order added to the offer side (1004) at 31.14. The last sale and tick are updated, and the bid quote size is reduced to the minimum size of 100 shares by autoquote. This has the effect of freezing the display book on the bid side. The specialist must requote the stock.

V. EXAMPLE 5

[0179] Referring to FIG. 11, an NX execution under effective sequencing rules is illustrated. The published quote on the bid side is both book and crowd. The market is 31.11 bid for 1,000 shares and 800 shares offered at 31.14, which is displayed as:

```
31.11      31.14
  10         8
```

[0180] The parity divisors on the bid and offer sides are both 1 (meaning all book), and the book is not frozen.

[0181] With the display book in the condition illustrated in FIG. 11B, the following limit orders are received in the time sequence shown:

[0182] (at 10:04:38) 500 shares to buy at 31.14 (1102), the quote assist begins, with a message window saying "book paired, no quote";

[0183] (at 10:04:39) 500 shares to buy at 31.12 (1104); and

[0184] (at 10:04:40) 500 shares to buy at 31.13 (1106).

[0185] The display book is updated to the condition illustrated in FIG. 11 C, and an investor submits an NX limit sell order for 1,000 shares at 31.08. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0186] Because the NX order is equal to or better than the published quote, and the bid quote size is sufficient to cover the NX sell order for 1,000 shares, for NX execution report processing, system 100 reports 1,000 shares of NX order sold at 31.11 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 10 LMT.

US 2002/0138401 A1

Sep. 26, 2002

12

[0187] For contra execution report processing, system 100 makes the following reports:

[0188] 200 shares (from those on the book at 31.11 (1108)) bought at 31.11 to SuperDot via CMS, with the give up 2 LMT.

[0189] 500 shares (from those on the book at 31.14 (1102)) bought at 31.11 to SuperDot via CMS, with the give up 5 LMT.

[0190] 300 shares (from those on the book at 31.12 (1104)) bought at 31.11 to SuperDot via CMS, with the give up 3 LMT.

[0191] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 31.11).

[0192] For MDS quote reporting, the quote is automatically updated and published (market 31.11 bid for 100 shares and 800 shares offered at 31.14) with NX autoquote indicator for surveillance use only, which is displayed as:

31.11	311.4
1	8

[0193] The display book window is updated as illustrated in FIG. 1 ID. The bid entry at 31.11 shows the limit side of the book is reduced by 200 shares to zero and the entire line is removed. The bid side entry at 31.14 (1102) shows the limit side of the book reduced by 500 shares and the bid side entry is eliminated, leaving the other side. The bid side entry at 31.12 (1104) is reduced by 300 shares from 500 shares to 200 shares. The bid entry at 31.13 (1106) is unchanged.

[0194] The last sale and tick are updated, and the bid quote size (1110) is reduced to the minimum size of 100 shares by autoquote, suspending NX executions on the bid side.

[0195] The specialist will need to manually requote the stock, as the quote does not correctly reflect the best bid at 31.13.

#### VI. EXAMPLE 6

[0196] Referring to FIG. 12, an NX execution with automatic re-filing of tick sensitive orders with a partial execution is illustrated. The published quote on the bid side is all book. The market is 31.00 bid for 400 shares and 5,000 shares offered at 31.03, which is displayed as:

31.00	31.03
4	50

[0197] The parity divisors on the bid and offer sides are both 1 (meaning all book), and the book is not frozen.

[0198] All 5,000 shares offered at 31.03 (1202) are tick sensitive with quantity shown in the tick order field (1204). (The following orders are considered tick sensitive orders: short orders, buy minus orders and sell plus orders.)

[0199] With the display book and market in the condition illustrated in FIG. 12A, the investor submits an NX limit sell

order for 500 shares at 31.00. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0200] The order price is at or better than the quote. However, because the bid size is only 400 shares, it is not sufficient to cover the entire 500 share NX order. Therefore, system 100 sells 400 shares against the book at 31.00 (the entire interest on the book at 31.00), and the remaining 100 shares (1206) of the NX order are placed on the book as a regular limit order to sell at 31.00.

[0201] For NX execution report processing, system 100 reports 400 shares of NX order sold at 31.00 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 4 LMT.

[0202] For contra execution report processing, system 100 makes the following report, 400 shares bought at 31.00 to SuperDot via CMS, with the give up 4 LMT.

[0203] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (400 shares traded at 31.00).

[0204] For MDS quote reporting, the bid quote is automatically updated and published (market 31.00 bid for 100 shares and 5,000 shares offered at 31.03) with NX autoquote indicator for surveillance use only, which is displayed as:

31.00	30.03
1	50

[0205] The display book window is updated as illustrated in FIG. 12B.

[0206] The limit portion of the book shows bids at 31.00 reduced by 400 shares, leaving the bid field blank at 31.00. 100 shares are placed on the sell side (1206) at 31.00.

[0207] The last sale and tick (1208) are updated to -31.00, and the bid quote size (1210) is reduced to the minimum size of 100 shares by autoquote, suspending NX orders on the bid side of the market.

[0208] The eligible tick sensitive sell orders (1202) are automatically re-filed at 31.01 (the lowest plus tick).

[0209] The specialist will need to manually requote the stock, as the quote does not correctly reflect the best book bid at 30.14 and the best book offer at 31.00.

#### VII. EXAMPLE 7

[0210] Referring to FIG. 13, an NX execution with election of CAP orders (flash window update) is illustrated. The published quote on the bid side is all book. The market is 31.00 bid for 2,500 shares and 5,000 shares offered at 31.03, which is displayed as:

31.00	31.03
25	50



US 2002/0138401 A1

Sep. 26, 2002

13

[0211] The parity divisors on the bid and offer sides are both 1 (meaning all book), and the book is not frozen.

[0212] The last sale is at -31.02, and all 5,000 shares offered at 31.03 are tick sensitive with quantity shows in the tick order field (1301).

[0213] There are also 10,000 shares desired to buy across 2 CAP orders (1302); 5,000 shares available to sell across 1 CAP order (1304).

[0214] With the display book and market in the condition illustrated in FIG. 13A, the investor submits an NX limit sell order for 1,000 shares at 31.00. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0215] Because the order is at or better than the quote, and the bid quote size is sufficient to cover the NX sell order of 1,000 shares, System 100 sells all 1,000 shares against the book at 31.00. For NX execution report processing, system 100 reports 1,000 shares of NX order sold at 31.00 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 10 LMT.

[0216] For contra execution report processing, system 100 makes the following report, 1,000 shares bought at 31.00 to SuperDot via CMS, with the give up 10 LMT.

[0217] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 31.00).

[0218] For MDS quote reporting, the bid quote is automatically updated and published (market 31.00 bid for 1,500 shares and 5,000 shares offered at 31.03) with NX autoquote indicator for surveillance use only, which is displayed as:

31.00	31.03
15	50

[0219] The display book window is updated as illustrated in FIG. 13B.

[0220] The limit portion of the book shows bids at 31.00 (1308) reduced by 1,000 shares, leaving 1,500 shares at 31.00.

[0221] The last sale and tick (1310) are updated to -31.00, and the bid quote size is reduced by 1,500 shares by autoquote.

[0222] Tick sensitive sell orders (1312) are automatically re-filed at 31.01 (the lowest plus tick).

[0223] The specialist will need to manually requote the stock, as the quote does not correctly reflect the best offer at 31.01.

[0224] The flash window (1306) is updated as follows: 1,000 shares for each of the buyers; 1,000 shares for the seller.

VIII. EXAMPLE 8

[0225] Referring to FIG. 14, an NX execution with election of CAP orders (flash window update), implicit freeze

(report template) and real names template is illustrated. The published quote on the bid side is all book. The market is 31.00 bid for 2,500 shares and 5,000 shares offered at 31.03, which is displayed as:

31.00	31.03
25	50

[0226] The last sale is at -31.02, and all 5,000 shares offered at 31.03 are tick sensitive with quantity showing in the tick order field (1401).

[0227] There are also 10,000 shares desired to buy across 2 CAP orders (1402); 5,000 shares available to sell across 1 CAP order (1404).

[0228] The parity divisors on the bid and offer sides are both 1 (meaning all book), and a smart report template is open, causing an implicit freeze of the book.

[0229] With the display book and market in the condition illustrated in FIG. 14A, the investor submits an NX limit sell order for 1,000 shares at 31.00. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0230] Because the order is at or better than the quote, and the bid quote size is sufficient to cover the NX sell order of 1,000 shares, system 100 sells 1,000 shares against the book at 31.00. For NX execution report processing, system 100 reports 1,000 shares of NX order sold at 31.00 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 10 NX. (Although the order was filled by LMT, in this example, the give up is NX, and not LMT because the display book is frozen.)

[0231] There is no contra execution report processing, as the trade is against NX.

[0232] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 31.00).

[0233] For MDS quote reporting, the bid quote is automatically updated and published (market 31.00 for 1,500 and 5,000 at 31.03) with NX autoquote indicator for surveillance use only, which is displayed as:

31.00	30.03
15	50

[0234] The book is frozen by the smart report template, so the limit portion is unchanged. This is illustrated in FIG. 14B, where the flash portion (1406) is updated as follows: 1,000 shares for each of the buyers, with 1,000 shares for the seller.

[0235] As soon as specialist 107 hits the clear key, clearing the smart report template, the book becomes unfrozen, and the tick sensitive orders (1408) are automatically re-filed at 31.01 (lowest plus tick). This is illustrated in FIG. 14C.

US 2002/0138401 A1

Sep. 26, 2002

14

[0236] When specialist 107 hits the smart report key, the real names template appears, as illustrated in FIG. 14D. The left side of the template shows NX Sold, and the price defaults to 31.00, with 1,000 shares of book shown.

[0237] Specialist 107 initiates report processing by pressing one of the following: smart report key or done key. The limit portion of the book is reduced by 1,000 shares at 31.00, leaving 1,500 shares at 31.00. The display book sends out a real names administrative message to SuperDot, modifying the original trade with needed names.

[0238] For contra execution reporting, system 100 reports 1,000 shares bought at 31.00 to SuperDot for delivery to the entering firm via CMS, with a give up of 10 LMT.

IX. EXAMPLE 9

[0239] Referring to FIG. 15, an NX execution with automatic re-filing of tick sensitive orders, and NX order executed at offer price before quote change is illustrated. The published quote on the bid side is all book. The market is 31.00 bid for 2,500 shares and 5,000 shares offered at 31.03, which is displayed as:

31.00	31.03
25	50

[0240] The last sale is at -31.02, and 3,000 of the 5,000 shares offered at 31.03 are tick sensitive with quantity shown in the tick order field (1502).

[0241] The limit sell orders at 31.03 arrived in the following sequence:

- [0242] (1) 500 short, market, @10:01:02;
- [0243] (2) 1,000 limit, GTC, @10:01:06;
- [0244] (3) 1,500 short, market, @10:01:11;
- [0245] (4) 1,000 short, market, @10:01:22; and
- [0246] (5) 1,000 limit, DAY, 10:01:34.

[0247] The parity divisors on the bid and offer sides are both 1 (meaning all book), and the book is not frozen.

[0248] With the display book and market in the condition illustrated in FIG. 15A, the first investor submits an NX limit sell order for 1,000 shares at 31.00. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0249] Because the order is at or better than the quote, and the bid quote size is sufficient to cover the NX sell order of 1,000 shares, system 100 sells 1,000 shares against the book at 31.00.

[0250] For NX execution report processing, system 100 reports 1,000 shares of NX order sold at 31.00 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 10 LMT.

[0251] For contra execution report processing, system 100 reports 1,000 shares bought at 31.00 to SuperDot for delivery to the entering firms via CMS. The give up is 10 LMT.

[0252] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 31.00).

[0253] For MDS quote reporting, the bid quote is automatically updated and published (31.00 bid for 1,500 shares and 5,000 shares offered at 31.03) with NX autoquote indicator for surveillance use only, which is displayed as:

31.00	31.03
15	50

[0254] The display book is updated, as illustrated in FIG. 15B. The last sale and tick (1504) are updated to -31.00.

[0255] The bid quote size (1506) is reduced to 1,500 shares from 2,500 shares by autoquote.

[0256] The limit portion of the bid side of the book (1508) is reduced by 1,000 shares at 31.00, leaving 1,500 shares at 31.00.

[0257] The 3,000 shares of tick sensitive orders (1510) are automatically re-filed at 31.01 (lowest plus tick) (short orders (1), (3) and (4) originally filed at 31.03 are now at 31.01, while limit orders (2) and (5) are still at 31.03).

[0258] The parity divisor on the offer side is temporarily zero because short orders are filed at a better price than the quote offer.

[0259] There is no real names indicator for this trade.

[0260] With the book in the condition illustrated in FIG. 15B, (with the parity divisor on the offer side temporarily zero), a second investor submits an NX limit buy order for 1,000 shares at 31.03. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0261] Because the order is at or better than the quote, and the offer quote size is sufficient to cover the NX buy order of 1,000 shares, system 100 buys 1,000 shares against the book at 31.03. For NX execution report processing, system 100 reports 1,000 shares of NX order bought at 31.03 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 10 NX. (In this example, the give up is NX, not LMT because the parity divisor on the offer side is temporarily zero.)

[0262] There is no contra execution report, as the trade is against NX.

[0263] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 31.03).

[0264] For MDS quote reporting, the quote is automatically updated and published (market 31.00 bid for 1,500 shares and 4,000 shares offered at 31.03) with NX autoquote indicator for surveillance use only, which is displayed as:

US 2002/0138401 A1

Sep. 26, 2002

15

31.00	31.03
15	40

[0265] The display book is updated, as illustrated in FIG. 15C. The last sale and tick (1512) are updated to +31.03.

[0266] The 3,000 shares of tick sensitive orders (1510) are automatically re-filed at 31.03, as of the previous filed date and time, and the quote assist timer stops because the ticks were unfilled at 31.01.

[0267] The offer quote size is reduced to 4,000 from 5,000 by autoquote.

[0268] The quote assist timer starts for the filed tick orders at 31.03.

[0269] The real names template is completed, giving 1,000 shares to the book. The display book sends out a real names administrative message to SuperDot, modifying the original trade with needed names.

[0270] A contra execution report is processed.

[0271] Since execution of the NX buy order (trade number 2) was in time sequence against sell order 500 shares of tick sensitive order (1), and 500 shares of sell order (2), the limit portion of the book is updated at 31.03 to show re-filing of the 2,500 remaining tick sensitive orders (3) (1,500 shares of tick sensitive orders) and (4) (1,000 shares of tick sensitive orders).

X. EXAMPLE 10

[0272] Referring to FIG. 16, an NX execution with election of stops with real names template is illustrated. The published quote is all book. The last sale is at -31.02 and there are 2,000 sell stop orders (1602) at 31.00. The market is 31.00 bid for 2,500 shares and 5,000 shares offered at 31.03, which is displayed as:

31.00	31.03
25	50

[0273] The parity divisors on the bid and offer sides are both 1. There is a smart report template open, implicitly freezing the book.

[0274] There are three trades in this example. The first trade is an NX limit order to sell 1,000 shares, the second trade is a DOT market order to sell 300 shares, and the third trade is a DOT market order to sell 700 shares.

[0275] With the display book and market in the condition illustrated in FIG. 16A, the investor submits an NX limit sell order for 1,000 shares at 31.00 (this is trade number 1). This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0276] Because the order is at or better than the quote, and the bid quote size is sufficient to cover the NX sell order of 1,000 shares, for NX execution report processing, system

100 reports 1,000 shares of NX order sold at 31.00 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 10 NX.

[0277] There is no contra execution report processing, as the trade is against NX.

[0278] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 31.00).

[0279] For MDS quote reporting, the quote is automatically updated and published (market 31.00 bid for 1,500 shares and 5,000 shares offered at 31.03) with NX autoquote indicator for surveillance use only, which is displayed as:

31.00	31.03
15	50

[0280] The display book window is updated as illustrated in FIG. 16B.

[0281] As illustrated in FIG. 16C, since the last sale is at 31.00, that is noted as the NX reference price in the real names template.

[0282] Before the real names template is completed, SuperDot sends a DOT order to the display book (which is frozen) to sell 300 shares (this is trade number 2), and then SuperDot sends a DOT order to the display book (which is still frozen) to sell 700 shares (this is trade number 3).

[0283] These DOT orders are received by the display book and held in queue. However, the limit portion of the book is unchanged, as illustrated in FIG. 16B.

[0284] When specialist 107 presses the clear key, as illustrated in FIG. 16D, the 2,000 sell stop orders are elected on the election reference price and appear in the thermometer (1604). The DOT order to sell 300 (trade number 2) appears in the thermometer, and the DOT order to sell 700 (trade number 3) appears in the thermometer.

[0285] As illustrated in FIG. 16C, the real names template is completed, giving 1,000 shares to the book. Then, system 100 sends out real names administrative message to SuperDot modifying the original trade with needed names.

[0286] The display book is updated as illustrated in FIG. 16D, and a contra report is processed.

XI. EXAMPLE 11

[0287] Referring to FIG. 17, a partial NX execution under explicit freeze with other DOT orders is illustrated. The published quote is all book. The market is 31.00 bid for 500 shares and 5,000 shares offered at 31.03, which is displayed as:

31.00	31.03
5	50

[0288] The parity divisors on the bid and offer sides are both 1 (meaning last sale is -31.02 all book), and the freeze key is depressed, explicitly freezing the display book.

US 2002/0138401 A1

Sep. 26, 2002

16

[0289] With the book in the condition illustrated in FIG. 17A, an investor submits a regular limit sell order for 300 shares at 31.00. Since an explicit freeze is in place on the display book, this order is placed in queue.

[0290] Next, another investor submits an NX limit order to sell 1,000 shares at 31.00. This second order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0291] Because the order is at or better than the quote, and the bid quote size is sufficient to cover the NX sell order of 1,000 shares, and although the display book is frozen, for NX order processing, system 100 processes 500 shares of the NX order, which is the size of the bid at 31.00, with the other 500 shares from the NX order changed to a regular limit order and remaining in queue.

[0292] Next, an investor submits a regular limit order to sell 600 shares at 31.00. Since an explicit freeze is in place on the display book, this order is placed in queue.

[0293] For NX order execution reporting, system 100 reports 500 shares (of the original 1,000 NX order) sold at 31.00 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 5 NX.

[0294] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (500 traded at 31.00).

[0295] Because all of the 500 shares were from the book, there is no more size on the bid side of the book at 31.00, and real names are required. For MDS quote reporting, the quote is automatically updated and published (market 31.00 bid for 100 shares and 5,000 shares offered at 31.03) with NX autoquote indicator for surveillance use only, which is displayed as:

31.00	31.03
1	50

[0296] The display book window is updated as illustrated in FIG. 17B, although the sell limit side (1702) is unchanged, because the book is frozen.

[0297] The last sale and tick are updated to -31.00, with the bid quote size reduced to the minimum size of 100 shares by autoquote, which continues the freeze of the book.

[0298] When the specialist presses the freeze key (toggles freeze off), the new limit orders appear in correct time sequence, which is 300 shares to sell at 31.00; 500 shares to sell at 31.00 (from the NX order); and 600 shares to sell at 31.00.

[0299] The real names template (not illustrated) is completed (e.g., report 500 shares at 31.00, give up is 5 LMT), and the display book sends out real names to SuperDot modifying the original trade with needed names.

[0300] A contra execution report is processed, and the book appears as illustrated in FIG. 17C.

XII. EXAMPLE 12

[0301] Referring to FIG. 18, an erroneous quote input by the clerk is illustrated. The best bid on the book is 31.00 for

500 shares and 5,000 shares offered at 31.03. However, the clerk has mistakenly set the quote at 21.00 bid for 500 shares and 5,000 shares offered at 21.03, which is displayed as:

21.00	21.03
5	50

[0302] The parity divisors on the bid and offer sides are both 1 (meaning all book), and the book is not frozen.

[0303] With the display book and market in the condition illustrated in FIG. 18A, an investor submits an NX sell order for 500 shares at 21.00. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0304] Since this order is more than 2 points from the last sale, NX processing is suspended for this stock, and the order is placed on the book.

[0305] As illustrated in FIG. 18D, a normal highlighting scheme occurs, with the book showing cyan from the book bid at 31.00 to the new offer at 21.00.

XIII. EXAMPLE 13

[0306] Referring to FIG. 19, an NX execution on two sides is illustrated. The published quote on the bid side is book and crowd. The market is 31.00 bid for 1,000 shares and 5,000 shares offered at 31.03, which is displayed as:

31.00	31.03
10	50

[0307] The parity divisors on the bid and offer sides are both 1 (meaning all book), and the book is not frozen. The last sale is at -31.02.

[0308] With the display book and market in the condition illustrated in FIG. 19A, two NX trades are received.

[0309] The first investor submits an NX limit order to sell 1,000 shares at 31.00. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0310] Because the order is at or better than the quote, and the bid quote size is sufficient to cover the NX sell order of 1,000 shares, system 100 sells 1,000 shares against the book at 31.00. For NX execution report processing, system 100 reports 1,000 shares of NX order sold at 31.00 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 5 LMT, 5 NX (names pending). Whenever there is insufficient stock on the book, the remaining balance is real names, even though the parity divisor is one.

[0311] For contra execution report processing, system 100 reports 500 shares bought at 31.00 to SuperDot for delivery to the entering firm via CMS, with the give up 5 LMT.

US 2002/0138401 A1

Sep. 26, 2002

17

[0312] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 31.00).

[0313] For MDS quote reporting, the quote is automatically updated and published (market 31.00 bid for 100 shares and 5,000 shares offered at 31.03) with NX autoquote indicator for surveillance use only, which is displayed as:

31.00	31.03
1	50

[0314] The display book window is updated as illustrated in FIG. 19B.

[0315] The last sale and tick are updated to -31.00, and the bid quote size is automatically reduced to the minimum size of 100 shares by autoquote, and therefore NX is suspended on the bid side of the market.

[0316] 1,000 stop orders are elected into market orders and are received in the thermometer (1903). Short sales of 3,000 shares at 31.03 are re-filed at 31.01 (1902) (lowest plus tick above last sale) and get a yellow highlight. The limit portion of the book removes the line at 31.00, however the re-filed ticks at 31.01 are not reflected in the published quote as illustrated.

[0317] As illustrated in FIG. 19C, the real names template is brought up, and the book is implicitly frozen.

[0318] For trade 2, an investor submits an NX limit buy order for 1,000 shares at 31.03. This order is submitted through CMS and SuperDot with an indicator requesting automatic execution (NX). The NX order is processed as described above with reference to FIGS. 4 and 5.

[0319] Although NX processing is suspended on the bid side because the bid size is 100 shares and the book is frozen, because the NX order is at or better than the quote, and the offer quote size is sufficient to cover the NX buy order for 1,000 shares, 1,000 shares are bought against the book at 31.03. For NX execution report processing, system 100 reports 1,000 shares of NX order bought at 31.03 to SuperDot for delivery to the entering firm via CMS. NX is appended to the execution report, and the give up is 10 NX.

[0320] There is no contra execution report, as the trade is against NX.

[0321] For MDS trade reporting, system 100 reports the trade with "E" indicator appended, and the report is sent to MDS (1,000 traded at 31.03).

[0322] The offer side of the quote is automatically updated to 4,000 shares, which is illustrated as:

31.00	31.03
1	40

[0323] As illustrated in FIG. 19D, the last sale and tick is updated to +31.03. The offer quote size is automatically reduced to 4,000 (at 31.03) by autoquote. 2,000 buy stop orders (1904) are elected into market orders, and are placed

in queue. By chance, a DOT market order to buy 500 shares (1906) is received and placed in queue.

[0324] Another DOT market order to buy 800 shares (1908) is received and placed in queue.

[0325] The real names template for the first trade (see FIG. 19C) is now completed (500 shares Merrill, badge 1234.), and the freeze on the book is lifted. However, real names are still required for trade number 2 (NX limit buy order for 1,000 shares at 31.03).

[0326] 3,000 shares in short sales are re-filed at 31.03 as of previous filed date and time.

[0327] The 2,000 elected buy stop orders, the 500 DOT market order and the 800 DOT market order all enter the thermometer.

[0328] As illustrated in FIG. 19E, the real names template comes up for trade 2, and the book is implicitly frozen. The template is completed with 1,000 shares to Book.

[0329] A contra execution report is processed for trade 2, and the display book sends a real names administrative message to SuperDot modifying the original trade with needed names.

[0330] The specialist 107 manually updates to quote the book, as illustrated in FIG. 19F.

[0331] Although illustrative embodiments have been described herein in detail, it should be noted and will be appreciated by those skilled in the art that numerous variations may be made within the scope of this invention without departing from the principle of this invention and without sacrificing its chief advantages.

[0332] In one such embodiment, the order or securities transaction is submitted directly by member firm 101 trading on their own account.

[0333] Unless otherwise specifically stated, the terms and expressions have been used herein as terms of description and not terms of limitation. There is no intention to use the terms or expressions to exclude any equivalents of features shown and described or portions thereof and this invention should be defined in accordance with the claims that follow.

We claim:

1. A method for submitting a securities order to a securities exchange for automatic execution, the method comprising:

determining a quote for a security;

pricing a securities order equal to or better than the quote for the security;

identifying the order for automatic execution; and

transmitting the securities order to the securities exchange.

2. A method according to claim 1, further comprising receiving an indication that the order was executed.

3. A method according to claim 1, further comprising receiving an indication that the order was executed at a current respective bid or offer.

4. A method according to claim 1, further comprising receiving an indication that the order was executed, before a particular contra side is identified for the order.

US 2002/0138401 A1

Sep. 26, 2002

18

5. A method according to claim 1, wherein the quote includes a bid price for the security and the securities order is a sell order for the security, with the price of the order equal to or less than the bid price.

6. A method according to claim 1, wherein the quote includes an offer price for the security and the securities order is a buy order for the security, with the price of the order equal to or greater than the offer price.

7. A method according to claim 1, wherein the order is a limit order.

8. Computer executable software code transmitted as an information signal, the code for submitting a securities order to a securities exchange for automatic execution, the code comprising:

- code to determine a quote for a security;
- code to price a securities order equal to or better than the quote for the security;
- code to identify the order for automatic execution; and
- code to transmit the securities order to the securities exchange.

9. A computer-readable medium having computer executable software code stored thereon, the code for submitting a securities order to a securities exchange for automatic execution, the code comprising:

- code to determine a quote for a security;
- code to price a securities order equal to or better than the quote for the security;
- code to identify the order for automatic execution; and
- code to transmit the securities order to the securities exchange.

10. A programmed computer for submitting a securities order to a securities exchange for automatic execution, comprising:

- a memory having at least one region for storing computer executable program code; and
- a processor for executing the program code stored in the memory; wherein the program code comprises:
  - code to determine a quote for a security;
  - code to price a securities order equal to or better than the quote for the security;
  - code to identify the order for automatic execution; and
  - code to transmit the securities order to the securities exchange.

11. A method for execution of a buy or sell order on a securities exchange, the method comprising:

- determining a best bid or a best offer for a security;
- generating a limit order for the security with an associated price, the price of the order for the security selected to be equal to or better than the respective best bid or the best offer for the security;

assigning an indicator to the order of the security requesting automatic execution of the order;

transmitting the order to the securities exchange; and

receiving an execution report, wherein the order is automatically executed by the securities exchange in a time

that is shorter than a time required for a similar order that does not include the indicator requesting automatic execution.

12. A method for automatically processing a securities order on a securities exchange, the method comprising:

automatically receiving a securities order, the securities order including an indicator requesting automatic execution; and

automatically executing at least a portion of the order at a quote price, without exposing the order for possible price improvement.

13. A method according to claim 12, wherein the securities order is a limit order.

14. A method according to claim 12, wherein the securities order is a market order.

15. A method according to claim 12, further comprising sending an order execution report.

16. A method according to claim 12, further comprising identifying at least one particular contra side for the order after automatically executing the order.

17. A method according to claim 12, wherein automatically executing further comprises at least partially fulfilling the order from a display book order.

18. A method according to claim 12, further comprising at least partially fulfilling the order from an auction market crowd order after automatically executing the order.

19. A method according to claim 12, further comprising at least partially fulfilling the order from a display book order after automatically executing the order.

20. Computer executable software code transmitted as an information signal, the code for automatically processing a securities order on a securities exchange, the code comprising:

code to automatically receive a securities order, the securities order including an indicator requesting automatic execution; and

code to automatically execute at least a portion of the order at a quote price, without exposing the order for possible price improvement.

21. A computer-readable medium having computer executable software code stored thereon, the code for automatically processing a securities order on a securities exchange, the code comprising:

code to automatically receive a securities order, the securities order including an indicator requesting automatic execution; and

code to automatically execute at least a portion of the order at a quote price, without exposing the order for possible price improvement.

22. A programmed computer for automatically processing a securities order on a securities exchange, comprising:

a memory having at least one region for storing computer executable program code; and

a processor for executing the program code stored in the memory; wherein the program code comprising:

code to automatically receive a securities order, the securities order including an indicator requesting automatic execution; and

US 2002/0138401 A1

Sep. 26, 2002

19

code to automatically execute at least a portion of the order at a quote price, without exposing the order for possible price improvement.

23. A method for automatically processing a limit buy or sell order for a security on a securities exchange with an auction market crowd, the method comprising:

automatically receiving the limit order for the security;  
 automatically determining that the limit order includes an indicator requesting automatic execution;  
 automatically determining that the limit order qualifies for automatic execution; and

automatically executing at least a portion of the limit order against a respective offer or bid for the security, without exposing the limit order to the auction market crowd for possible price improvement.

24. A method for automatically processing a market buy or sell order for a security on a securities exchange with an auction market crowd, the method comprising:

automatically receiving the market order for the security;  
 automatically determining that the market order includes an indicator requesting automatic execution;  
 automatically determining that the market order qualifies for automatic execution; and

automatically executing at least a portion of the market order against a respective offer or bid for the security, without exposing the market order to the auction market crowd for possible price improvement.

25. A method for automatic execution of a securities order on a securities exchange, the method comprising:

automatically determining a current bid or offer price for a security; and

automatically executing at least a portion of the securities order at the bid or offer price without exposing the order for possible price improvement.

26. A method according to claim 25, wherein the securities order is a limit order.

27. A method according to claim 25, wherein the securities order is a market order.

28. A method according to claim 25, wherein the current bid or offer price represents a best bid or offer for the security, and is the current quote for the security.

29. A method according to claim 25, wherein automatically executing does not require human interaction.

30. A method according to claim 25, further comprising determining whether the securities order is eligible for automatic execution before automatically executing.

31. A method according to claim 25, further comprising automatically executing the entire securities order at the bid or offer price.

32. A method according to claim 25, further comprising entering any unexecuted portion of the securities order on a specialists order book as a regular limit order.

33. A method according to claim 25, further comprising collecting bids and offers at varying prices and selecting the best bid and best offer as the current bid or offer.

34. A method according to claim 26, wherein collecting bids and offers further comprises collecting a bid or offer from an auction market crowd of the securities exchange.

35. A method according to claim 26, wherein collecting bids and offers further comprises electronically collecting a bid or offer from a member of the securities exchange.

36. A method according to claim 26, wherein collecting bids and offers further comprises collecting a bid or offer from a specialist in their role as market maker for the security.

37. Computer executable software code transmitted as an information signal, the code for automatic execution of a securities order on a securities exchange, the code comprising:

code to automatically determine a current bid or offer price for a security; and

code to automatically execute at least a portion of the securities order at the bid or offer price without exposing the order for possible price improvement.

38. A computer-readable medium having computer executable software code stored thereon, the code for automatic execution of a securities order on a securities exchange, the code comprising:

code to automatically determine a current bid or offer price for a security; and

code to automatically execute at least a portion of the securities order at the bid or offer price without exposing the order for possible price improvement.

39. A programmed computer for automatic execution of a securities order on a securities exchange, comprising:

a memory having at least one region for storing computer executable program code; and

a processor for executing the program code stored in the memory; wherein the program code comprises:

code to automatically determine a current bid or offer price for a security; and

code to automatically execute at least a portion of the securities order at the bid or offer price without exposing the order for possible price improvement.

40. A method for automatic execution of a limit buy or sell order of a security on a securities exchange with an auction market crowd, the method comprising:

automatically determining a best bid or offer price for a security, the best bid or offer selected from electronic orders, orders from the auction market crowd and orders from a market specialist, which are represented on a market specialist book;

automatically executing at least a portion of the limit order for the security at the best bid or offer price for the security, without exposing the limit order to the auction market crowd for possible price improvement; and

at least partially fulfilling the limit order for the security from the orders which are represented on the market specialist book.

41. A method for automatic execution of a market buy or sell order of a security on a securities exchange with an auction market crowd, the method comprising:

automatically determining a best bid or offer price for a security, the best bid or offer selected from electronic orders, orders from the auction market crowd and

US 2002/0138401 A1

Sep. 26, 2002

20

orders from a market specialist, which are represented on a market specialist book;

automatically executing at least a portion of the market order for the security at the best bid or offer price for the security, without exposing the market order to the auction market crowd for possible price improvement; and

at least partially fulfilling the market order for the security from the orders which are represented on the market specialist book.

42. A method for processing a securities order on a securities exchange, the method comprising:

receiving the securities order, the securities order including an indicator requesting automatic execution and a price of the order;

comparing the price of the order to a quote; and

changing the status of the order from automatic execution to regular execution if the price of the order is not equal to or better than the quote.

43. A method according to claim 42, wherein the securities order further includes a size, the method further comprising:

comparing the size of the order with a respective interest in the security; and

changing the status of at least a portion of the order from automatic execution to regular execution if the size is greater than the interest.

44. A method according to claim 42, further comprising exposing the order to an auction market crowd for possible price improvement.

45. A method according to claim 42, further comprising executing the order on an auction market of the securities exchange.

46. A method according to claim 42, further comprising sending an execution report for the order.

47. A method according to claim 42, further comprising at least partially fulfilling the order with an order on a display book.

48. A method according to claim 42, further comprising at least partially fulfilling the order with an order from an auction market crowd.

49. A method according to claim 42, wherein the quote includes a best bid price for the security, the securities order is a sell order and the price of the order is greater than the best bid price.

50. A method according to claim 42, wherein the quote includes a best offer price for the security, the securities order is a buy order and the price of the order is less than the best offer price.

51. Computer executable software code transmitted as an information signal, the code for processing a securities order on a securities exchange, the code comprising:

code to receive the securities order, the securities order including an indicator requesting automatic execution and a price of the order;

code to compare the price of the order to a quote; and

code to change the status of the order from automatic execution to regular execution if the price of the order is not equal to or better than the quote.

52. A computer-readable medium having computer executable software code stored thereon, the code for processing a securities order on a securities exchange, the code comprising:

code to receive the securities order, the securities order including an indicator requesting automatic execution and a price of the order;

code to compare the price of the order to a quote; and

code to change the status of the order from automatic execution to regular execution if the price of the order is not equal to or better than the quote.

53. A programmed computer for processing a securities order on a securities exchange, comprising:

a memory having at least one region for storing computer executable program code; and

a processor for executing the program code stored in the memory; wherein the program code comprises:

code to receive the securities order, the securities order including an indicator requesting automatic execution and a price of the order;

code to compare the price of the order to a quote; and

code to change the status of the order from automatic execution to regular execution if the price of the order is not equal to or better than the quote.

54. A method for processing a securities order on a securities exchange, the method comprising:

receiving the securities order, the securities order including an indicator requesting automatic execution and a size of the order;

comparing the size of the order to a respective interest in the security; and

changing the status of at least a portion of the order from automatic execution to regular execution if the size of the order is greater than the interest.

55. A method according to claim 54, wherein the securities order further includes a price, the method further comprising:

comparing the price of the order to a quote; and

changing the status of the order from automatic execution to regular execution if the price of the order is not equal to or better than the quote.

56. A method according to claim 54, wherein the securities order is a limit order.

57. A method according to claim 54, wherein the securities order is a market order.

58. A method for automatic execution of a limit order for a security on a securities exchange, the method comprising:

receiving the limit order, the order including an indicator requesting automatic execution and a limit price;

comparing the limit price to a best offer price or a best bid price of the security;

comparing the size of the limit order to interest at the respective offer price or bid price;

changing at least a portion of the limit order from automatic execution to regular execution if either:



US 2002/0138401 A1

21

Sep. 26, 2002

the price of the limit order is not equal to or better than the respective offer price or bid price; or

the size of the limit order is greater than the respective interest; and

automatically executing any unchanged portion of the limit order.

59. A method for automatic execution of a securities order on a securities exchange with an auction market crowd, the method comprising:

receiving the securities order, the securities order including an indicator requesting automatic execution and a price of the order;

comparing the price of the order to a quote; and

automatically executing at least a portion of the order if the price of the order is at least equal to or better than the quote, without exposing the order to the auction market crowd for possible price improvement.

60. A method according to claim 59, further comprising sending an execution report for the order.

61. A method according to claim 59, further comprising identifying at least one particular contra side for the order.

62. A method according to claim 59, further comprising at least partially fulfilling the order with an order from a display book.

63. A method according to claim 59, further comprising at least partially fulfilling the order with an order from the auction market crowd.

64. A method according to claim 59, wherein the securities order is a sell order for the security and the price of the order is equal to or less than the best bid price for the security.

65. A method according to claim 59, wherein the securities order is a buy order for the security and the price of the order is equal to or greater than the best offer price for the security.

66. Computer executable software code transmitted as an information signal, the code for automatic execution of a securities order on a securities exchange with an auction market crowd, the code comprising:

code to receive the securities order, the securities order including an indicator requesting automatic execution and a price of the order;

code to compare the price of the order to a quote; and

code to automatically execute at least a portion of the order if the price of the order is at least equal to or better than the quote, without exposing the order to the auction market crowd for possible price improvement.

67. A computer-readable medium having computer executable software code stored thereon, the code for automatic execution of a securities order on a securities exchange with an auction market crowd, the code comprising:

code to receive the securities order, the securities order including an indicator requesting automatic execution and a price of the order;

code to compare the price of the order to a quote; and

code to automatically execute at least a portion of the order if the price of the order is at least equal to or better

than the quote, without exposing the order to the auction market crowd for possible price improvement.

68. A programmed computer for automatic execution of a securities order on a securities exchange with an auction market crowd, comprising:

a memory having at least one region for storing computer executable program code; and

a processor for executing the program code stored in the memory; wherein the program code comprises:

code to receive the securities order, the securities order including an indicator requesting automatic execution and a price of the order;

code to compare the price of the order to a quote; and

code to automatically execute at least a portion of the order if the price of the order is at least equal to or better than the quote, without exposing the order to the auction market crowd for possible price improvement.

69. A method for automatic execution of a limit buy or sell order on a securities exchange with an auction market crowd, the method comprising:

receiving the limit order, the order including an indicator requesting automatic execution and a price of the limit order;

comparing the price of the limit order to a respective best bid price or a best offer price for the security; and

automatically executing at least a portion of the limit order if the price of the order is equal to or better than the respective best bid or best offer price for the security, without exposing the limit order to the auction market crowd for possible price improvement.

70. A method for submitting a securities order for automatic execution on a securities exchange with an auction market crowd, the method comprising:

identifying the securities order for automatic execution; and

transmitting the order to the securities exchange for at least partial automatic execution at a quote price, wherein automatic execution provides for execution without exposure to the auction market crowd for possible price improvement.

71. A method according to claim 70, wherein the securities order is a limit order.

72. A method according to claim 71, wherein the limit order includes a limit price and the order is available for automatic execution at a current respective quote price if the limit price is equal to or better than the current respective quote price.

73. A method according to claim 70, wherein the securities order is a market order.

74. A method according to claim 73, wherein the market order is available for automatic execution at the current respective quote price.

75. Computer executable software code transmitted as an information signal, the code for submitting a securities order for automatic execution on a securities exchange with an auction market crowd, the code comprising:

code to identify the securities order for automatic execution; and

US 2002/0138401 A1

Sep. 26, 2002

22

code to transmit the order to the securities exchange for at least partial automatic execution at a quote price, wherein automatic execution provides for execution without exposure to the auction market crowd for possible price improvement.

76. A computer-readable medium having computer executable software code stored thereon, the code for submitting a securities order for automatic execution on a securities exchange with an auction market crowd, the code comprising:

code to identify the securities order for automatic execution; and

code to transmit the order to the securities exchange for at least partial automatic execution at a quote price, wherein automatic execution provides for execution without exposure to the auction market crowd for possible price improvement.

77. A programmed computer for submitting a securities order for automatic execution on a securities exchange with an auction market crowd, comprising:

a memory having at least one region for storing computer executable program code; and

a processor for executing the program code stored in the memory; wherein the program code comprises:

code to identify the securities order for automatic execution; and

code to transmit the order to the securities exchange for at least partial automatic execution at a quote price, wherein automatic execution provides for execution without exposure to the auction market crowd for possible price improvement.

78. A method for execution of a securities transaction on a securities exchange with an auction market crowd, the method comprising:

determining a parity divisor; and

executing the securities transaction, wherein a contra side for the transaction is selected according to the parity divisor.

79. A method according to claim 78, wherein the divisor represents selecting all of the contra side from a display book.

80. A method according to claim 78, wherein the divisor represents selecting all of the contra side from the auction market crowd.

81. A method according to claim 78, wherein the divisor represents selecting some of the contra side from a display book and some of the contra side from the auction market crowd.

82. A method according to claim 81, wherein the divisor represents a variable percentage for allocation of the contra side from the display book and the auction market crowd.

83. Computer executable software code transmitted as an information signal, the code for execution of a securities transaction on a securities exchange with an auction market crowd, the code comprising:

code to determine a current parity divisor; and

code to execute the securities transaction, wherein a contra side for the transaction is selected according to the parity divisor.

84. A computer-readable medium having computer executable software code stored thereon, the code for execution of a securities transaction on a securities exchange with an auction market crowd, the code comprising:

code to determine a current parity divisor; and

code to execute the securities transaction, wherein a contra side for the transaction is selected according to the parity divisor.

85. A programmed computer for submitting a securities order for execution of a securities transaction on a securities exchange with an auction market crowd, comprising:

a memory having at least one region for storing computer executable program code; and

a processor for executing the program code stored in the memory; wherein the program code comprises:

code to determine a current parity divisor; and

code to execute the securities transaction, wherein a contra side for the transaction is selected according to the parity divisor.

86. A method for automatic execution of a securities order on a securities exchange with an auction market crowd, the method comprising:

automatically determining a parity divisor, the divisor representing different possible allocations of the order to contra sides listed on a display book and in the auction market crowd; and

automatically executing the securities transaction, wherein a contra side to the order is selected according to the parity divisor.

87. A method for automatically processing a securities order on a securities exchange with an auction market crowd, the method comprising:

receiving a securities order identified for automatic execution;

automatically executing the transaction against a published quote; and

automatically updating the published quote based on the order.

88. A method according to claim 87, wherein a size of the published quote after updating reflects a size of the order.

89. A method according to claim 87, wherein a size of the published quote after updating represents a minimum quote size, but does not necessarily reflect a size of the transaction.

90. Computer executable software code transmitted as an information signal, the code for automatically processing a securities order on a securities exchange with an auction market crowd, the code comprising:

code to receive a securities order identified for automatic execution;

code to automatically execute the transaction against a published quote; and

code to automatically update the published quote based on the order.

91. A computer-readable medium having computer executable software code stored thereon, the code for auto-

US 2002/0138401 A1

23

Sep. 26, 2002

atically processing a securities order on a securities exchange with an auction market crowd, the code comprising:

code to receive a securities order identified for automatic execution;

code to automatically execute the transaction against a published quote; and

code to automatically update the published quote based on the order.

92. A programmed computer for automatically processing a securities order on a securities exchange with an auction market crowd, comprising:

a memory having at least one region for storing computer executable program code; and

a processor for executing the program code stored in the memory; wherein the program code comprises:

code to receive a securities order identified for automatic execution;

code to automatically execute the transaction against a published quote; and

code to automatically update the published quote based on the order.

\* \* \* \* \*

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

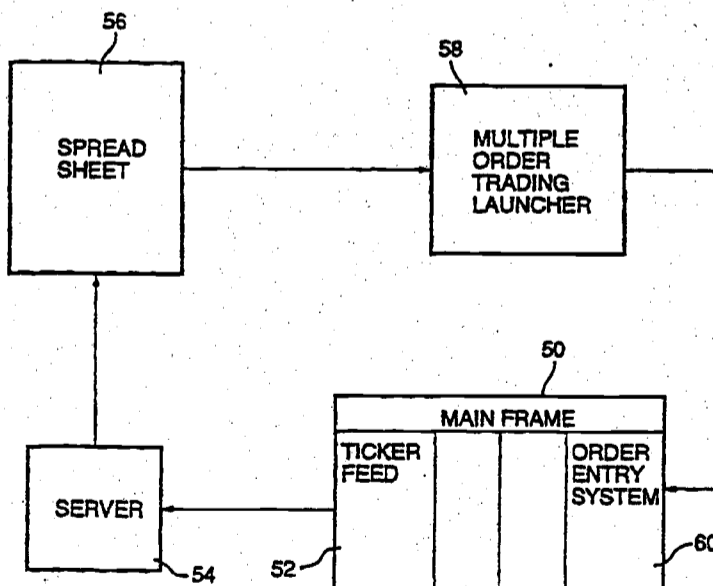


A6

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G06F 17/60</b>	<b>A1</b>	(11) International Publication Number: <b>WO 95/26005</b> (43) International Publication Date: 28 September 1995 (28.09.95)
(21) International Application Number: PCT/CA95/00123 (22) International Filing Date: 3 March 1995 (03.03.95) (30) Priority Data: 2,119,921 23 March 1994 (23.03.94) CA (71)(72) Applicant and Inventor: BELZBERG, Sydney, H. [CA/CA]; Suite 5707, 40 King Street West, Toronto, Ontario M5H 3Y2 (CA). (74) Agent: SHEARN, G., James, M.; Suite 4300, Scotia Plaza, 40 King Street West, Toronto, Ontario M5H 3Y4 (CA).	(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TT, UA, UG, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG).  <b>Published</b> <i>With international search report.  Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	

(54) Title: COMPUTERIZED STOCK EXCHANGE TRADING SYSTEM



(57) Abstract

An improvement in computer automated stock exchange trading whereby a graphic user interface with a mouse and display is used to select parameters such as share symbol, price selection, order size, and transaction type, as well as other indicators to launch a trading order to the order entry system of a stock exchange computer. Further improvements include a programmed interface by which data on a group of shares may be read from a spreadsheet formulated into an order and launched automatically or in response to a signal from an operator so as to trade an index or basket of shares substantially instantaneously.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

COMPUTERIZED STOCK EXCHANGE TRADING SYSTEM

This invention relates to automated means for effecting the purchase and sale of shares traded on a stock exchange. More particularly, it relates to computer software and hardware by which an operator may instantaneously effect the transfer of shares of a large number of corporations.

BACKGROUND:

For many years the trading of shares listed on a stock exchange were effected by the activities of people known as traders on the trading floor of a stock exchange, and were confirmed by some form of notation or writing on paper. Once effected, the trades or transfers of shares were formally reported to brokers for the purchasing and selling customers in a formal way with or without the delivery of the share certificates.

More recently the transactions have become automated so that trades may be done by a trader operating a keyboard to enter the necessary commands into a terminal connected to the mainframe computer of the stock exchange, or a small personal computer with a terminal emulator. With this automated system a trader may enter an order to buy or sell which is transmitted to the central system of the stock exchange where it matched with another trader who is willing to sell or buy the same shares, and the computer then confirms the completion of the transaction to each trader, and the transaction is confirmed and recorded by means of a hard copy generated on a printer.

Although this computerized automated system was much faster than the trading floor, it still required a trader to key in by hand the necessary data and commands for each

**SUBSTITUTE SHEET**

individual stock being traded. From the information available  
at a terminal, the trader/operator would have to input the  
symbol for the company shares, the price, the exchange, the  
size of the order, and the instructions to buy, sell, cross  
5 or short trade the stock.

It has even become possible to effect trades in  
certain stocks automatically when they reach a certain price  
level.

However, modern investment strategies involve  
10 the investment in large groups or "basket" of listed shares  
as part of an entire portfolio which is strategically selected  
to provide a balance of growth potential, income generation,  
and risk avoidance. These portfolios are often held by mutual  
funds, banks, insurance companies, or other institutional  
15 investors, and they are frequently being changed to adjust  
the balance in the factors which effect growth, income and  
risks.



Some institutions invest in an established mixture of stocks which reflect the current economic climate in the country, such as the TSE 35, the TSE 100, the TSE 300, and in the United States the Dow Jones or other representative 5 portfolios. In some cases institutional investors will establish their own collection of shares which it considers to represent their investment strategy and objectives. These may be weighted in favour of industry groups such as mining companies, financial institutions, manufacturing, or others 10 considered preferable by the investment manager.

As a result of this strategy of investing in a mixed "basket" of shares, institutional investors are often increasing or decreasing their investment in the entire range of shares in a basket or index. This therefore requires 15 a large number of trades in order to effect the single

investment move. Hitherto, this has been done by a  
trader/operator keying in the necessary trades in each  
individual stock through a computer terminal. Where the  
portfolio includes a list of 100 stocks, for example, this  
5 is a lengthy process and in fact the problem arises that  
the prices of many shares would change during the time it  
takes to key in the various orders, and the original  
conditions necessary to satisfy the requirements of the  
particular trade may no longer be present.

10 SUMMARY OF THE INVENTION:

It is therefore the purpose of the present  
invention to provide an automated, computerized trading system  
in which multiple share order entries can be executed  
automatically within seconds by the trader/operator in  
15 activating a few entries on a keyboard. This method of

trading is accomplished by means of the present invention  
in which a list of stocks is continually monitored and their  
prices recorded on a "spreadsheet format" on a personal  
computer and displayed on a screen. When the composite price  
5 of the list of stocks conforms to certain predetermined  
parameters, the trader can execute the necessary instructions  
to transform the list into an order on the personal computer  
(which is connected to the computerized order entry system  
of the stock exchange, which may be a mainframe), and the  
10 order will be immediately processed by the computer and sent  
to the exchange's order entry system. Thus, the purchase  
or sale of a basket comprising various numbers (volumes)  
of a variety of shares can be executed in a matter of seconds  
before the price or other conditions have changed.

15

- 6 -

**SUBSTITUTE SHEET**

By means of the system programmed in accordance with the present invention, a conventional terminal or personal computer capable of communication with a stock exchange central computer can be adapted to read, process, and react to information from the stock exchange, and/or commands of the operator and automatically and quickly perform multiple trades in a manner described above.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

The invention may be better understood by a description of one embodiment with reference to the attached drawings in which:

Figure 1 is a schematic illustration of a mainframe stock exchange computer to which a series of terminals or personal computers are connected each comprising a display screen and keyboard;

Figure 2 is a graphic user interface suitable  
for use in executing single stock trans-  
actions;

5 Figure 3 is a graphic user interface used in  
effecting multiple trades in a basket  
comprising various volumes of a list of  
shares;

10 Figure 4 is a schematic block diagram which  
illustrates the sequence and flow of  
data and commands by which the system  
is used.

In the system illustrated in the attached drawings  
15 Figure 1 shows a mainframe computer 2 used to process all  
the data relating to the stocks listed on a stock exchange,  
such as the TSE, the VSE, or the NYSE, as the case may be.

Since the advent of computerized trading, these mainframe  
central computers are connected to a variety of terminals,  
such as 4, in various trading offices of brokerage houses  
through the city and abroad. By means of the individual  
5 terminals, traders may review data on the display screen  
8 and input the necessary information and instructions on  
the keyboard 6 whereby a given volume of a particular stock  
is bought or sold (or crossed or shorted) in a manner which  
is the automated equivalent of an individual transaction  
10 on the trading floor.

Such a network is referred to, in the case of  
the Toronto Stock Exchange, as "CATS" which is an  
abbreviation for "Computer Aided Trading System", and similar  
systems are now commonly used and operated by many stock  
15 exchanges.

Figure 2 illustrates an improvement which comprises a graphic user interface with a network such as CATS which allows a trader/operator to use the trading system more quickly and efficiently.

5           Whereas previously the data necessary for a transaction (stock symbol, volume, price, buy or sell, etc., etc.) had to be entered on the keyboard and showed up in the screen area 10 before the order could be launched to the central processing unit, the present invention allows  
10 the instructions to be put in much more quickly, more easily and with less error.

In the embodiment illustrated in Figure 2, the trader/operator can enter the symbol representing the stock in the area 12 followed by the price at which the transaction  
15 is to be completed in space 14 (which may be a selected price

or the bid offer or last price derived from the CATS data).  
Then the size of the order (or volume of the transaction)  
may be indicated in space 16 by selecting the appropriate  
nominal figures 1,000, 5,000, 10,000, 50,000 or by  
5 inserting the precise volume in the box 18. Many of the  
instruction choices provided by this interface (such as bid,  
offer, last, ID, volume, exchange, transaction) may be entered  
without keying by using a mouse as illustrated at 10 in Figure  
1, which directs a cursor or indicator to the command.

10 In the illustrated embodiment the other information  
may be selected, such as the appropriate exchange in area  
20, the type of transaction in area 22, the buy and sell  
IDs in areas 24 and 26. Other areas 28 provided by the  
interface include features to provide various information  
15 from the data bank as an aid to the operator.



To effect individual transactions an operator may, by mouse or a combination of mouse and keyboard, enter the necessary data and commands and quickly transmit the transaction to a stock exchange.

5 Thus, by means of the interface illustrated in Figure 2, transactions of a single stock through a computer aided trading system may be more quickly and efficiently executed.

10 The second aspect of the present invention is illustrated in Figure 3 which is a reproduction of a display screen which is part of the multiple stock trading system.

By means of the software of this invention, the terminal or personal computer illustrated in Figure 1 can  
15 be used to connect the spreadsheet of the system to the data base of the stock exchange mainframe and display the

information (including symbol, volume of shares, bid, first  
and last price) in the area 30 of the display screen of the  
terminal as shown in Figure 3. For purposes of trading  
an index or custom basket of shares, the display will contain  
5 the information with respect to the shares included in the  
index or basket as illustrated. The system then executes  
a dynamic data link to the spreadsheet which causes the  
spreadsheet to read the list of stocks to the multiple order  
trading system of the present invention. In the next step  
10 the system captures the spreadsheet data and makes each stock  
price and volume a variable that is inserted in a list of  
preprogrammed commands. The list is then sent to the order  
entry system of the stock exchange with a single key stroke.

Thus, each of the stocks and the pertinent data  
15 relating thereto is entered into the multiple order entry

system, and at the appropriate time and with the appropriate command, the entire basket can be dealt with in a single transaction within a matter of seconds before prices or other criterion change.

5           The present system therefore eliminates the need for a trader/operator to enter each individual stock and the transaction criterion, which in the case of 100 stocks or so, would be time-consuming, prone to error, and difficult to coordinate because of the changing prices and their  
10 relationship to the transaction criterion.

Also illustrated in Figure 3 is a box 32 in which the necessary commands may be entered from a keyboard.

Also illustrated, in area 34, is a series of commands which may be quickly entered by means of a mouse  
15 or similar device, including identification of the basket

of shares to be traded 36, the type of transaction (buy,  
sell, cross, or sell short) 38, the appropriate buy ID 40  
or sell ID 42, and the price (bid, offer, or last) 44. When  
the appropriate commands have been entered the transaction  
5 may be executed by pressing the launch button 46 and all  
of the shares of the basket are traded almost instantaneously.

As in all cases a provision is made for the entry  
of a pass word 48 to provide security against unauthorized  
use and other functions which are commonly associated with  
10 graphic user interface are provided.

Therefore, by means of the present system, a  
terminal or personal computer may be used to capture from  
a spreadsheet all the data necessary to trade in a selected  
list or group of shares, and by inserting this data into  
15 the preprogrammed commands of the system, all of the necessary  
commands to execute the trade in all of the shares may be  
sent to the stock exchange order entry system in a single  
set of signals.

It will be appreciated that this system will enable a trader to deal in baskets of shares, whether they are related to a standard index, such as the TSE 35 or the TSE 100, or a customized basket of shares designed for or by each customer and will be able to effect transactions quickly and without the complications that arise from the time delay in entering each stock transaction separately.

Figure 4 is a block diagram and flow chart which illustrates schematically how the present invention facilitates a faster more efficient operation of the automated trading facilities. In the diagram the mainframe or central computer of the stock exchange is shown at 50 and includes a ticker feed system 52 which constantly generates updated data on the prices and volumes of various stocks being traded, and delivers the updated data to a server 54 where the data

is stored and accessible to any terminals which are connected  
to the network. The information in the server is read by  
the spreadsheet 56 of a terminal, such as the one illustrated  
in Figure 1, which is designed to read and display a given  
5 basket of shares with the pertinent data with respect to  
volumes, bid, offer, last, etc. Block 58 represents the  
multiple order trading system of the present invention which  
reads the data from the spreadsheet, including all the data  
on a given basket of shares, organizes the data into the  
10 proper format for automated trading, and issues the multiple  
orders to the order entry system 60 of the central computer  
50 at the stock exchange.

By having the data formatted by the multiple order  
launcher, the transaction of a whole basket of shares can  
15 be effected quickly, easily, with fewer errors and within  
the time frame for which the criterion or instructions for  
the transaction are valid.

By providing a means, such as the multiple order launcher, which is capable of capturing all the data on a spreadsheet, selecting what is required, and organizing it into the form of an order, the present invention creates  
5 a bridge between the spreadsheet, which contains the necessary data on a group of stocks, and the order entry system of the stock exchange which effects a transaction in those stocks.

Furthermore, because it can use and format the  
10 data more quickly and correctly than an operator on a keyboard, it is capable of effecting a transaction within the time and parameters which are rapidly changing, in a manner which an operator could not accomplished. Therefore, instead of merely processing data, it is capable of activating  
15 and controlling stock transactions. In this respect the

system may be adapted to initiate a transaction automatically when certain criterion are met, or may be designed to create a signal when the criterion are met so that a trader/operator may make the final decision or judgment to execute the transaction or not, and may then execute it substantially  
5 instantaneously once the decision has been made.

Once the order entry has been received by the exchange system, the transaction is completed and the appropriate records and confirmation documents are produced  
10 in the usual manner without any further activity by the trader.

It will, of course, be realized that numerous modifications and variations from the illustrated embodiments may be employed without departing from the inventive concept  
15 herein.

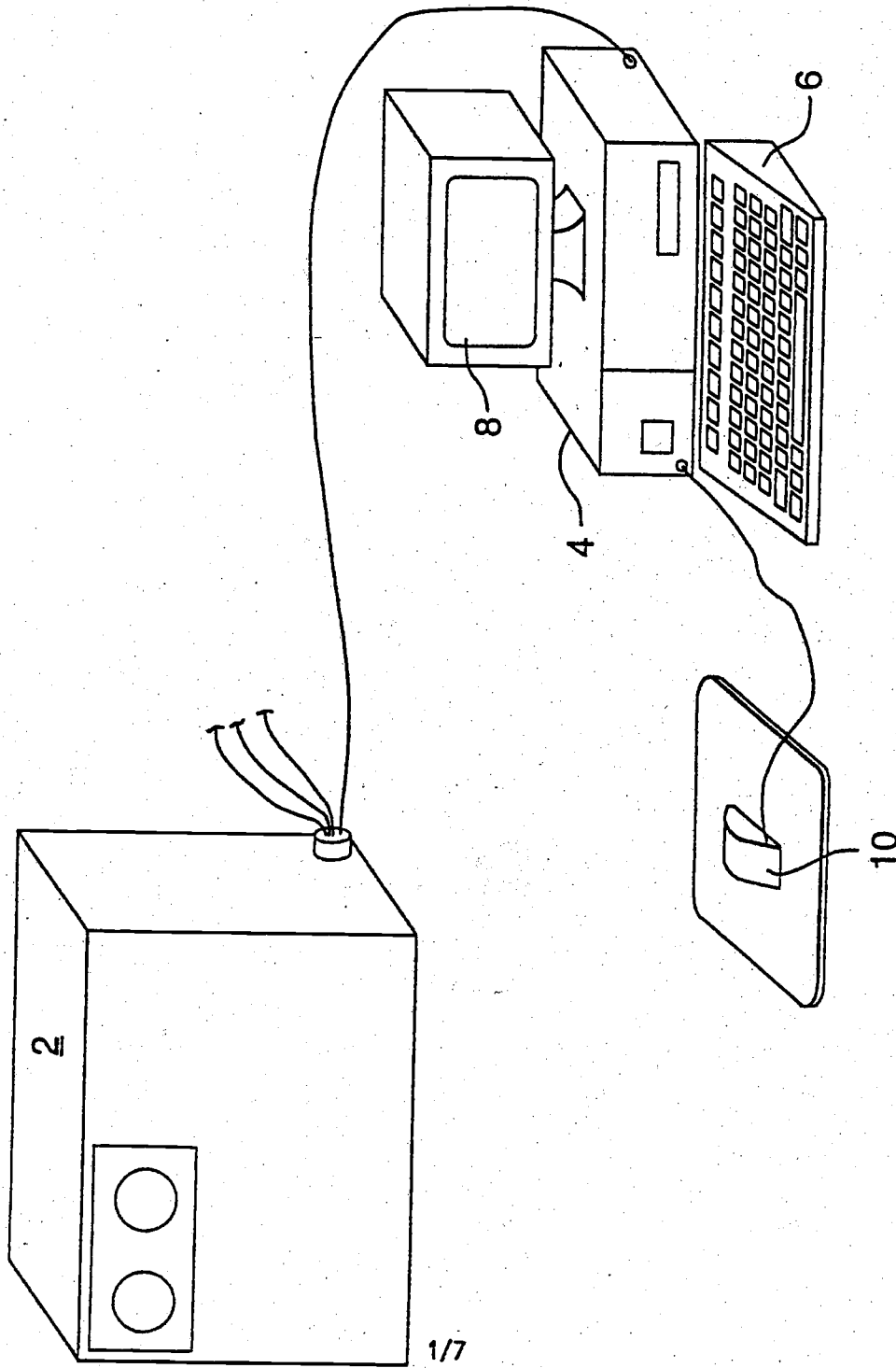


CLAIMS:

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. For use in a computer system having means to receive data from a central computer of a stock exchange on a spreadsheet;
  - display means and means to communicate orders to the order entry system of the stock exchange computer;
  - a control system comprising means to read selected groups of said data from said spreadsheet;
  - means to formulate said data in a manner acceptable to the stock exchange computer or entry system;
  - means to launch said orders to the stock exchange computer order entry system.

2. A control system as claimed in claim 1 wherein said means to launch is responsive to conditions in the data read from said spreadsheet.
3. Apparatus as claimed in claim 2 wherein said means to launch said order is responsive to the commands of an operator.
4. Apparatus as claimed in claims 1, 2 and 3 wherein said means to read, means to formulate, and means to launch are operated by means of a graphic user interface with display means and a mouse adapted to communicate to selected controls on the graphic user interface display.
5. A system as claimed in claim 4 in which said graphic user interface displays commands which include share symbols, price selections, order size, and transaction type.



SUBSTITUTE SHEET

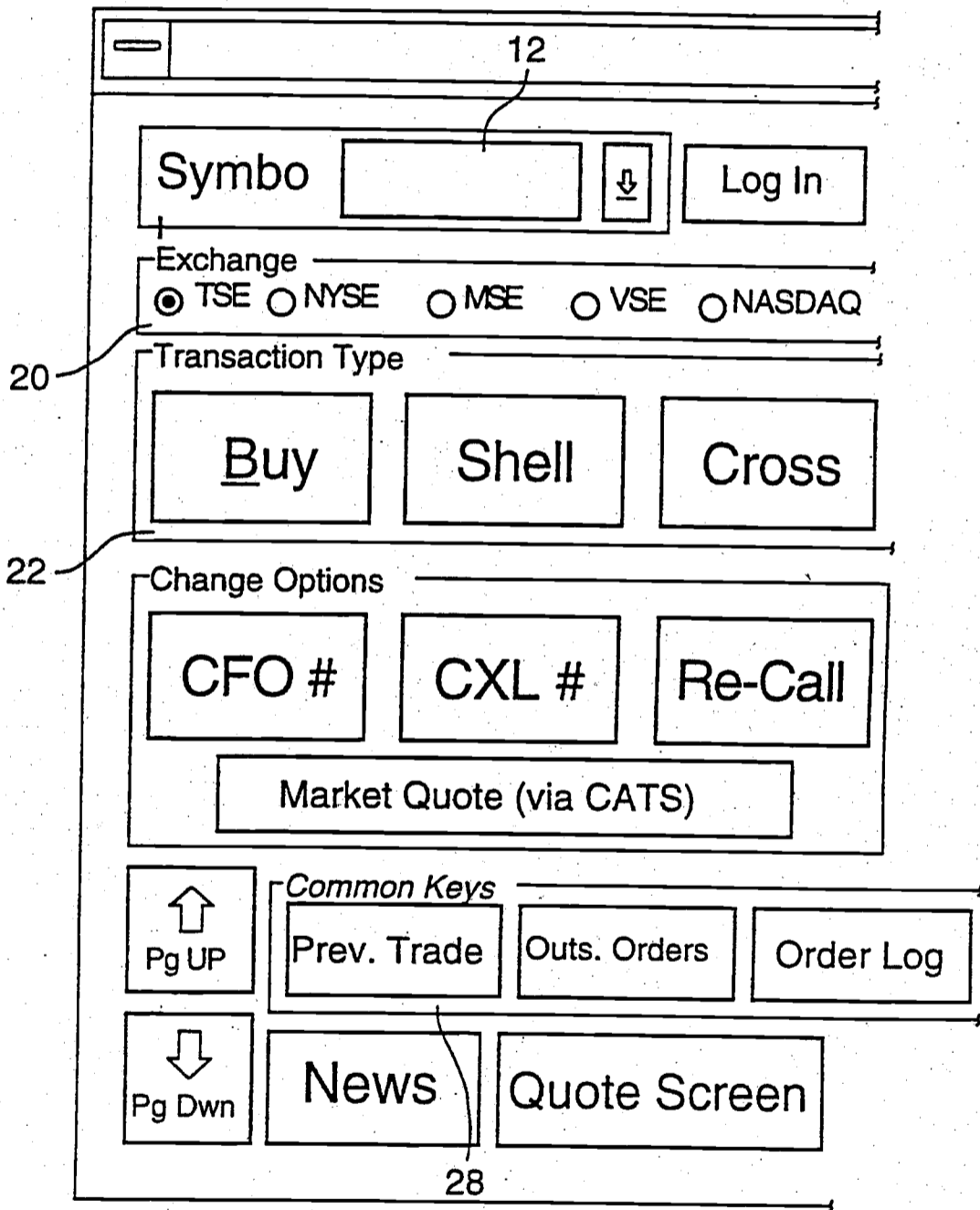


FIG. 2 A.

2/7

SUBSTITUTE SHEET

03/14/94 Belzberg CATS Interface 2:44 PM

Log Out	14 Price <input type="text"/>	<input type="radio"/> Bid <input type="radio"/> Offer <input type="radio"/> Last	Buy ID → <input type="radio"/> OCL 24 <input type="radio"/> ON/CL <input type="radio"/> ON/CL X <input type="radio"/> ON/CL PPTX
<input type="radio"/> AMEX <input type="radio"/> ASE	Order Size 16 <input type="radio"/> 1,000 <input type="radio"/> 5,000 <input type="radio"/> 10,000 <input type="radio"/> 20,000 <input type="radio"/> 50,000		Self ID → <input type="radio"/> OCL 26 <input type="radio"/> ON/CL <input type="radio"/> ON/CL X <input type="radio"/> ON/CL PPTX
Short	Order Size <input type="text" value="18"/>		

Stk Watch	Stk. Ord.	Order Rep.
-----------	-----------	------------

Super Charts	Trading Logs	Basket Trades
--------------	--------------	---------------

FIG.2B.

3/7

SUBSTITUTE SHEET

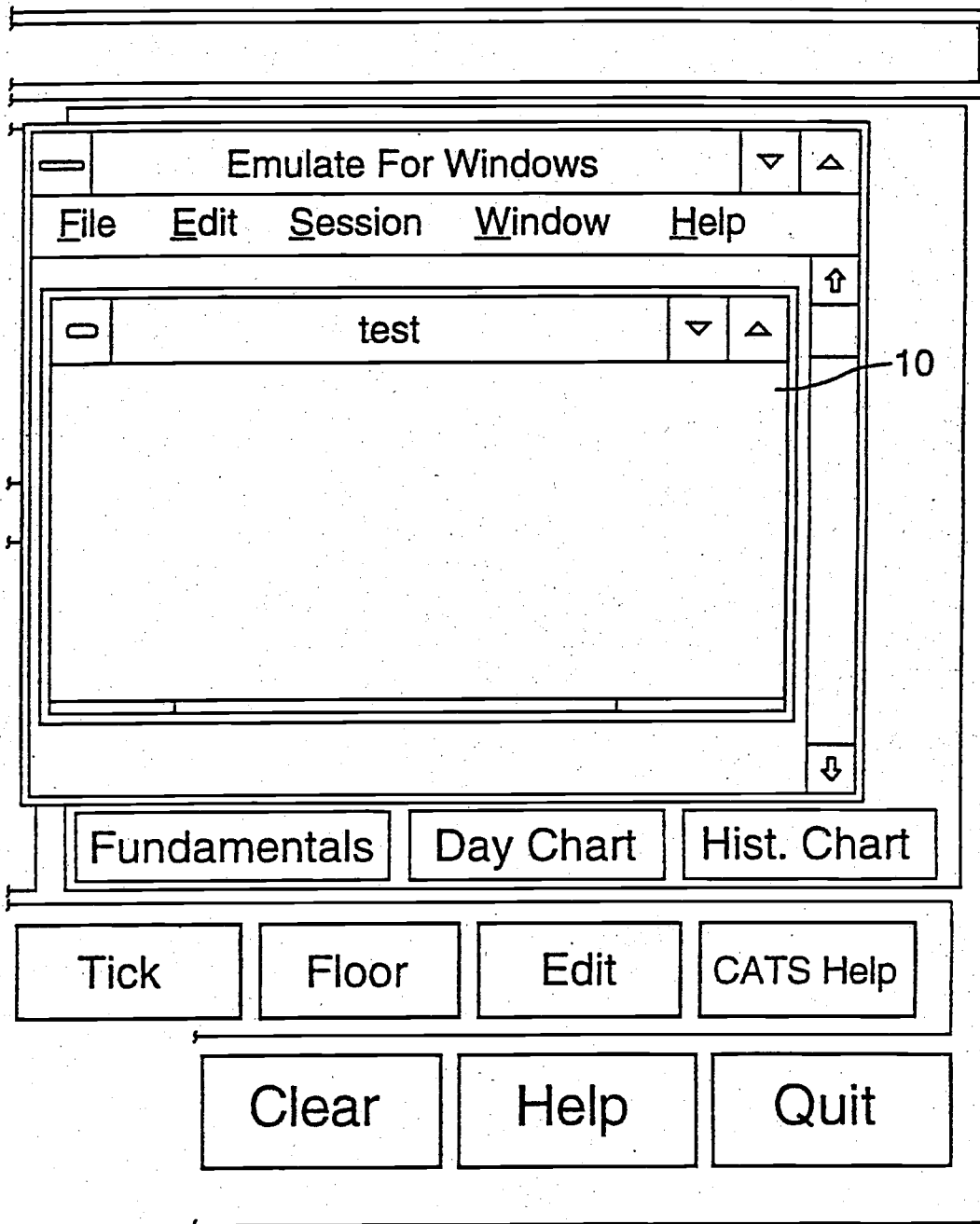


FIG.2C.

4/7

SUBSTITUTE SHEET

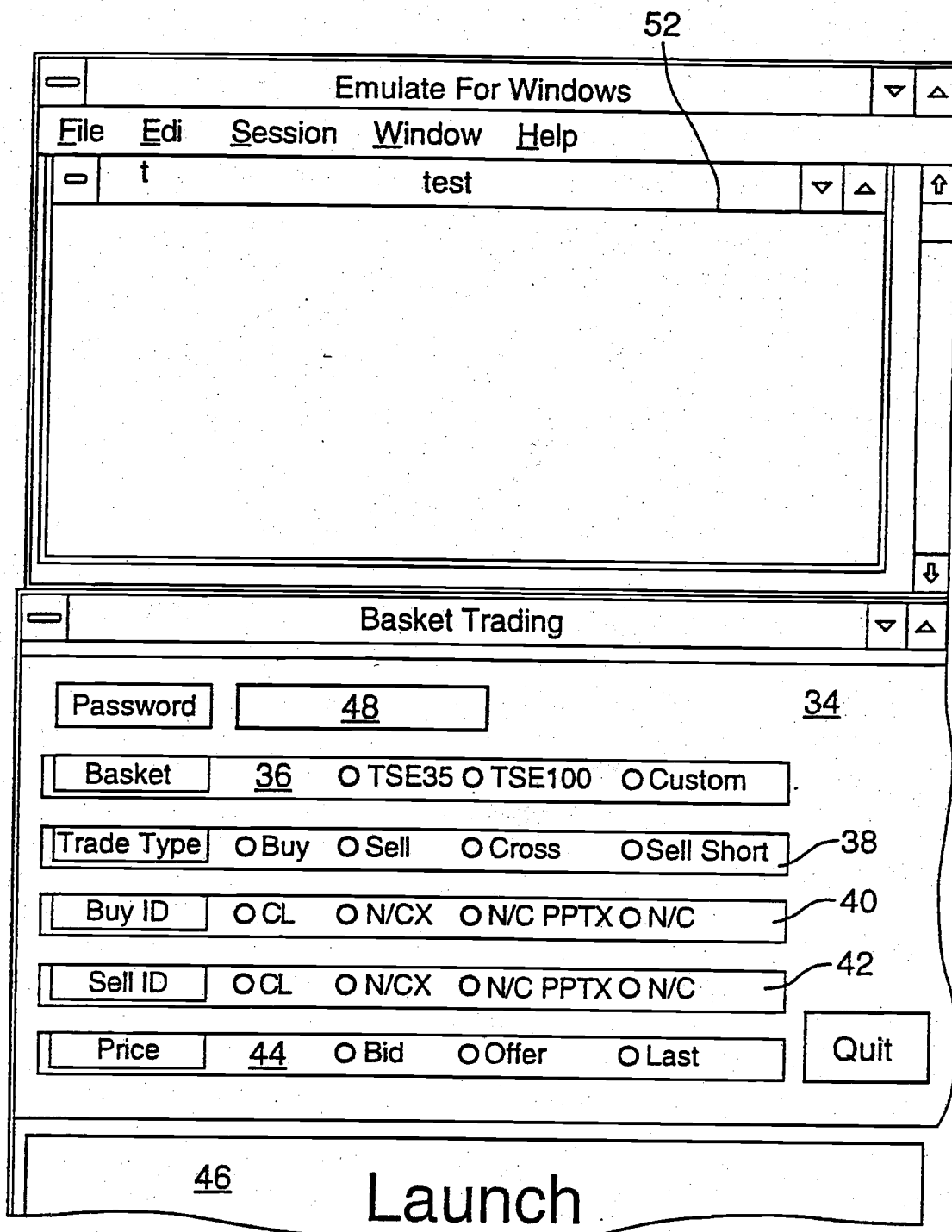


FIG. 3 A.

5/7

SUBSTITUTE SHEET

FIG. 3B.

Microsoft Excel-35EXE.XLS										
File Edit View Insert Format Tools Data Window Help										
MS Sans Serif 10 B I U \$ % 100%										
A	B	C	D	E	F	G	H	I		
		INDEX	Bid	Ask	Ask Size	LAST	Yesterday	DOWN		
14			220.293597	221.643484		221.01182				
15										
16	SYM	SHS		Ask	Ask Size	LAST	Yesterday			
17	AL		115	31.125	151	31.125	32			
18	AGT		393	17.125	475	17.125	17.25			
19	BBDB		128	20.125	198	20.125	20.25			
20	B		300	48.625	646	48.625	48.875			
21	BNS		20	30.875	464	30.75	31.375			
22	BMO		146	29.125	282	29.25	29.5			
23	CM		95	34.375	110	34.375	34.75			
24	CXY		17	27.75	64	27.875	28			
25	CP		41	22.875	174	22.875	23.5			
26	CTRA		44	12.375	171	12.375	12.875			
27	ECO		18	17	115	17	17.375			
28	IMO		17	46.375	93	46.5	47			
29	IMS		71	39.625	46	39.625	40.125			
30	LAC		100	11.375	902	11.375	11.5			
31	LDM.B		888	8.5	5	8.625	8.875			
32	MB		141	23	9	23	23.375			
33	MCL		45	25.625	22	25.625	25.25			
34	MHP		908	16.125	883	16.125	16.25			

30



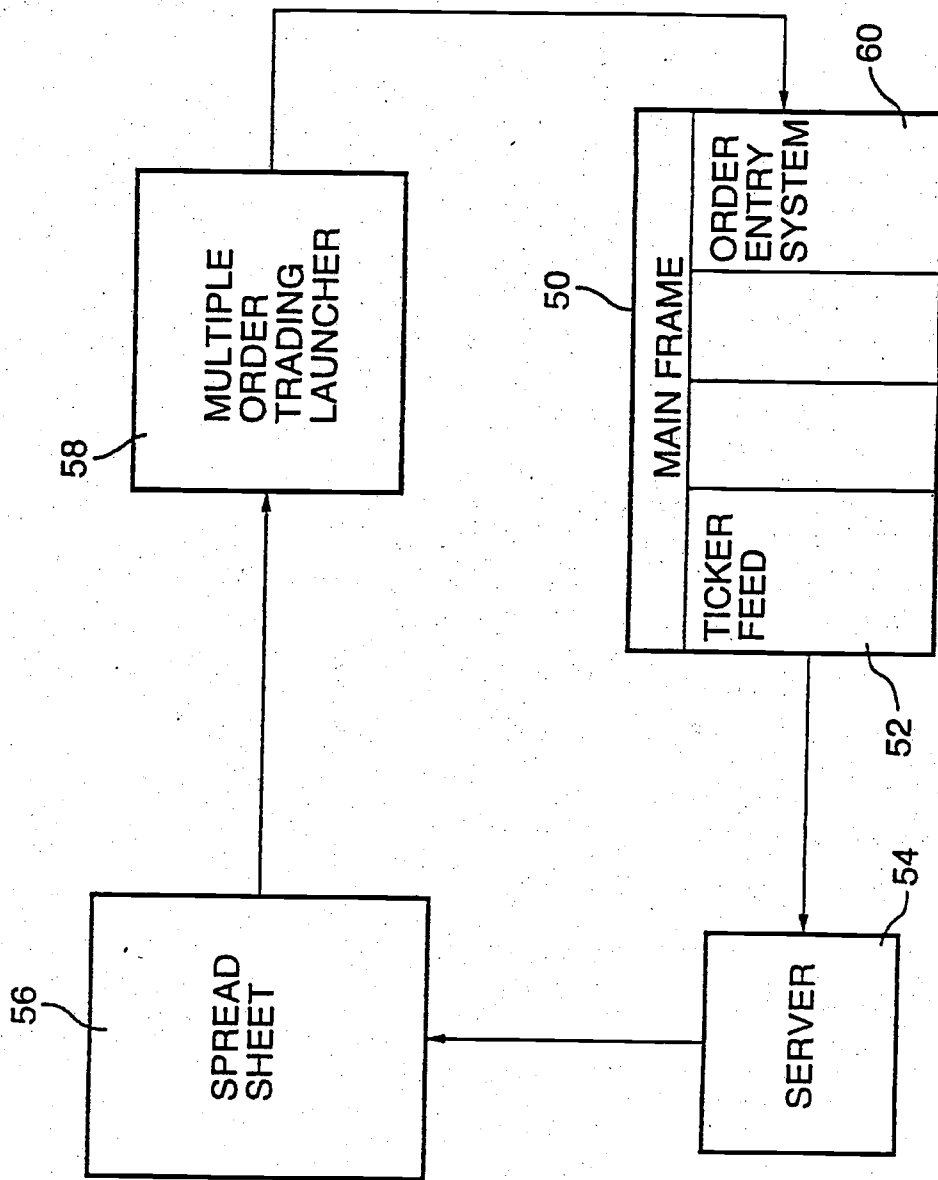


FIG.4.

INTERNATIONAL SEARCH REPORT

International Application No  
PCT/CA 95/00123

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 G06F17/60

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)  
IPC 6 G06F

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 practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP,A,0 401 203 (MJT HOLDINGS INC) 5 December 1990 see the whole document ----	1-5
X	EP,A,0 453 150 (COMMODITY EXCHANGE INC) 23 October 1991 see the whole document ----	1-5
X	WO,A,91 14231 (CHICAGO TRADE BOARD) 19 September 1991 see the whole document -----	1-5

Further documents are listed in the continuation of box C.  Patent family members are listed in 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 but 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.

\*Z\* document member of the same patent family

Date of the actual completion of the international search: 21 July 1995

Date of mailing of the international search report: 04.08.95

Name and mailing address of the ISA: European Patent Office, P.B. 5818 Patentlaan 2, NL - 2280 HV Rijswijk, Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+ 31-70) 340-3016

Authorized officer: Suendermann, R

Form PCT/ISA/210 (second sheet) (July 1992)

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No  
PCT/CA 95/00123

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0401203	05-12-90	US-A- 5101353	31-03-92
		CA-A- 2016715	30-11-90
		JP-A- 3068067	25-03-91
EP-A-0453150	23-10-91	AU-B- 643982	02-12-93
		AU-A- 7358491	24-10-91
		JP-A- 4227566	17-08-92
WO-A-9114231	19-09-91	US-A- 5297031	22-03-94
		AU-B- 653147	22-09-94
		AU-A- 7493291	10-10-91
		EP-A- 0471063	19-02-92
		JP-T- 4507159	10-12-92

*HS*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Gary Alan KEMP II et al.

Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

Appl. No.: 09/894,637

Filing Date: 06/27/2001

Examiner: R. Weisberger

Art Unit: 3624

RECEIVED  
TECHNICAL LIBRARY CENTER 3500  
03 NOV 12 AM 8:31

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 CFR §1.56**

Commissioner for Patents  
PO Box 1450  
Alexandria, Virginia 22313-1450

Sir:

Submitted herewith on Form PTO/SB/08 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56. A copy of each listed document is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(b).

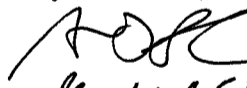
**RELEVANCE OF EACH DOCUMENT**

The listed documents were cited by a patent examiner during the prosecution of a corresponding foreign patent application.

Applicants respectfully request that any listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 CFR §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

By   
Reg No 41514

Date: November 12, 2003

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5485  
Facsimile: (202) 672-5399

William T. Ellis  
Attorney for Applicant  
Registration No. 26,874

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  Date Submitted: November 12, 2003 (use as many sheets as necessary)				<b>Complete if Known</b>	
Application Number		09/894,637			
Filing Date		June 27, 2001			
First Named Inventor		Gary Allan Kemp II			
Group Art Unit		3624			
Examiner Name		Weisberger, R.			
Attorney Docket Number		024051-0155			
Sheet	1	of	1		

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	A1	PCT	WO 98/49639		11/05/1998			
	A2	PCT	WO 99/19821		04/22/1999			
	A3	PCT	WO 99/53424		10/21/1999			

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>

Examiner Signature	Date Considered	1/14
--------------------	-----------------	------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, D.C. 20231.



#15 1/2

Atty. Dkt. No. 024051-0155

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Gary Alan KEMP II et al.  
 Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH  
 Appl. No.: 09/894,637  
 Filing Date: 06/27/2000  
 Examiner: R. Weisberger  
 Art Unit: 3624  
 Confirmation No.: 1527

**RECEIVED**  
 MAR 09 2004  
**GROUP 3600**

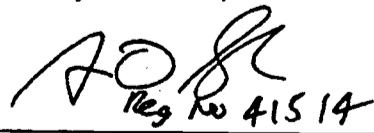
**APPLICANT'S STATEMENT ON SUBSTANCE OF INTERVIEW**

Commissioner for Patents  
 PO Box 1450  
 Alexandria, Virginia 22313-1450

Sir:

Having reviewed the Interview Summary mailed on February 10, 2004 in the above-captioned application file, based on the telephonic Interview conducted on September 1, 2003, Applicant makes the following clarifying remarks. Applicant agrees with the substance of the Interview Summary as described by the Examiner. Applicant further points out for clarification that the product identified by Applicant that was referenced in the petition to make special in 09/590,692 was the "DOME" screen of the J-Trader product.

Respectfully submitted,



Reg No 41514

Date: March 5, 2004

By \_\_\_\_\_

FOLEY & LARDNER  
 Customer Number: 22428  
 Telephone: (202) 672-5485  
 Facsimile: (202) 672-5399

William T. Ellis  
 Attorney for Applicant  
 Registration No. 26,874

Feb 17 2004 8:23

Trading Technologies

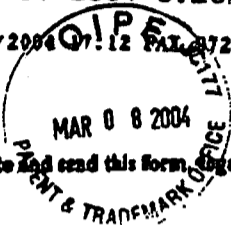
24761188

02/17/2004 07:12 FAX 72742309

JACKSON WALKER LLP

003

P. 3



PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail

Mail Stop ISSUE FEE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
or Fax (703) 746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CLIENT CORRESPONDENCE ADDRESS (Note: Legible and 12 WFO only accepted on this block)

22428

1990

02/18/2004

Robert C. Klingler  
Jackson Walker L.L.P.  
Suite 600 - 500  
2435 North Central Expressway  
Richardson, TX 75080

FOLEY AND LARDNER

3000 K St. NW  
WASHINGTON, DC 20007

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying paper. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmittal.

Certificate of Mailing or Transmittal  
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being accepted for transmittal to the USPTO, on the date indicated below.

Signature lines for (Applicant's name), (Attorney), and (Date)

see change dated 7/3/01

APPLICATION NO.	FILING DATE	REAL NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09894437	04/27/2001	Gary Allen Kemp III	024031-0155	1527

TITLE OF INVENTION: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

APPLX TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO/YES	\$1130	\$700	\$1830	02/10/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
WEISBERGER, RICHARD C	3624	703-037000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.331).  
 Change of correspondence address (ie. Change of Correspondence Address form PTO/SB/122) attached.  
 "Fee Address" indication (or "Fee Address" indication) form PTO/SB/17, Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. FOLEY & LARDNER

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

Trading Technologies International, Inc.

Chicago, IL

Please check the appropriate assignee category or categories (will not be printed on the patent);  Individual  corporation or other private group entity  government

4a. The following fee(s) are enclosed:

- Issue Fee
- Publication Fee
- Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s):

- A check in the amount of the fee(s) is enclosed.
- Payment by credit card. Form FTG-2038 is attached.
- The Director is hereby authorized by check to pay the required fee(s), or credit any overpayment, to Deposit Account Number 19-0741 (enclose as many copies of this form).

Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature)   
4519 (Date) 3/8/04  
William T. Ellis, Reg. #26,874 3/8/04

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant, a registered attorney or agent, or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain a benefit by the public which is to this (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is intended to later 12 maintain in complete, including gathering, processing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22312-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

03/11/2004 MBIZUNE2 00000138 09894637

02 FE:2504

665.00 OP  
388.00 OP

TRANSMIT THIS FORM WITH FEES

PTOL-01 (Rev. 11/83) Approved for use through 04/30/2004.

OMB 965-0033 U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE



PA-IDC #16

QUERY CONTROL FORM		RTIS USE ONLY	
Application No. <u>09/894 637</u>	Prepared by <u>NPB</u>	Tracking Number <u>05909954</u>	
Examiner-GAU <u>Wassberger</u>	Date <u>3/29/04</u>	Week Date <u>2/23/04</u>	
<u>3624</u>	No. of queries <u>3</u>	<u>PUTY</u>	

JACKET			
a. Serial No.	f. Foreign Priority	k. Print Claim(s)	<u>p. PTO-1449</u>
b. Applicant(s)	g. Disclaimer	l. Print Fig.	q. PTOL-85b
<u>c. Continuing Data</u>	h. Microfiche Appendix	m. Searched Column	r. Abstract
d. PCT	i. Title	n. PTO-270/328	s. Sheets/Figs
e. Domestic Priority	j. Claims Allowed	o. PTO-892	t. Other

SPECIFICATION	MESSAGE
a. Page Missing	<p>① PTO-1449 (4 pages): Please either initials or line through citations.</p> <p>② Continuing data is listed on the palm/bib sheet, but not in specification/text.</p> <p>③ Please verify if the Amendment dated 3/2/03 be entered. See yellow tag (not lined-off/not listed in contents panel).</p> <p><i>with amendment</i> please verify.</p> <p><b>RECEIVED</b></p> <p>APR 01 2004 Publishing Division 13</p> <p><i>Shankar</i></p> <p>initials <i>SM</i></p>
b. Text Continuity	
c. Holes through Data	
d. Other Missing Text	
e. Illegible Text	
f. Duplicate Text	
g. Brief Description	
h. Sequence Listing	
i. Appendix	
<u>j. Amendments</u>	
k. Other	
CLAIMS	RESPONSE
a. Claim(s) Missing	<p><i>Corrected</i></p> <p>initials <i>SM</i></p>
b. Improper Dependency	
c. Duplicate Numbers	
d. Incorrect Numbering	
e. Index Disagrees	
f. Punctuation	
g. Amendments	
h. Bracketing	
i. Missing Text	
j. Duplicate Text	
k. Other	

# FOLEY LARDNER

ATTORNEYS AT LAW

WASHINGTON HARBOUR  
3000 K STREET, N.W., SUITE 500  
WASHINGTON, D.C. 20007-5143  
TELEPHONE: 202.672.5300  
FACSIMILE: 202.672.5399  
WWW.FOLEYLARDNER.COM

#17

## FACSIMILE TRANSMISSION

Total # of Pages 17 (including this page)

TO:	PHONE #:	FAX #:
Examiner Weisberger - Art Unit 3624 United States Patent and Trademark Office		703-872-9025

**From :** William T. Ellis/Daniel L. Girdwood  
**Date :** March 21, 2003  
**Client/Matter No :** 024051-0155  
**User ID No :** 0251

**MESSAGE:**

Re: Serial No.: 09/894,637  
 Inventor(s): Gary Alan KEMP II et al.  
 Filing Date: June 27, 2001  
 Title: **CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH**

I hereby certify that the following paper(s) and or fee along with any attachments referred to or identified as being attached or enclosed are being transmitted via facsimile to the U.S. Patent and Trademark Office under on the date as shown below.

**March 21, 2003**

**Ankur D. Shah**

If there are any problems with this transmission or if you have not received all of the pages, please call 202.672.5340.

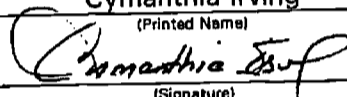
Operator:	Time Sent:	Return Original To: Cymanthia T. Irving
-----------	------------	--

CONFIDENTIALITY NOTICE: THE INFORMATION CONTAINED IN THIS FACSIMILE MESSAGE IS INTENDED ONLY FOR THE PERSONAL AND CONFIDENTIAL USE OF THE DESIGNATED RECIPIENTS NAMED ABOVE. THIS MESSAGE MAY BE AN ATTORNEY-CLIENT COMMUNICATION, AND AS SUCH IS PRIVILEGED AND CONFIDENTIAL. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT OR ANY AGENT RESPONSIBLE FOR DELIVERING IT TO THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT YOU HAVE RECEIVED THIS DOCUMENT IN ERROR, AND THAT ANY REVIEW, DISSEMINATION, DISTRIBUTION OR COPYING OF THIS MESSAGE IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY BY TELEPHONE AND RETURN THE ORIGINAL MESSAGE TO US BY MAIL. THANK YOU.

Atty. Dkt. No. 024051-0155

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Gary Alan KEMP II et al.  
 Title: CLICK BASED TRADING WITH  
 INTUITIVE GRID DISPLAY OF  
 MARKET DEPTH  
 Appl. No.: 09/894,637  
 Filing Date: 06/27/2001  
 Examiner: R. Weisberger  
 Art Unit: 3624

CERTIFICATE OF FACSIMILE TRANSMISSION	
I hereby certify that this paper is being facsimile transmitted to the United States Patent and Trademark Office, Washington, D.C. on the date below.	
Cymanthia Irving	(Printed Name)
	(Signature)
March 21, 2003	(Date of Deposit)

**AMENDMENT TRANSMITTAL**

Commissioner for Patents  
 Washington, D.C. 20231

Sir:

Transmitted herewith is an amendment in the above-identified application.

Small Entity status under 37 C.F.R. § 1.9 and § 1.27 has been established by a Small Entity statement previously submitted.

Small Entity statement is enclosed.

The fee required for additional claims is calculated below:

	Claims as Amended	Previously Paid For	Extra Claims Present	Rate	Additional Claims Fee
Total Claims:	40	28	12	\$18.00	\$216.00
Independents:	2	3	0	\$84.00	\$0.00
First presentation of any Multiple Dependent Claims:				\$280.00	\$0.00
				<b>CLAIMS FEE TOTAL:</b>	<b>\$216.00</b>

Applicant hereby petitions for an extension of time under 37 C.F.R. § 1.136(a) for the total number of months checked below:

Atty. Dkt. No. 024051-0155

<input type="checkbox"/>	Extension for response filed within the first month:	\$110.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the second month:	\$410.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the third month:	\$930.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the fourth month:	\$1,450.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the fifth month:	\$1,970.00	\$0.00
	EXTENSION FEE TOTAL:		\$0.00
	CLAIMS AND EXTENSION FEE TOTAL:		\$218.00
<input checked="" type="checkbox"/>	Small Entity Fees Apply (subtract ½ of above):		\$108.00
	TOTAL FEE:		\$108.00

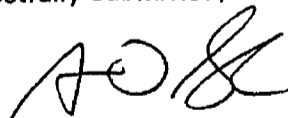
Please charge Deposit Account No. 19-0741 in the amount of \$108.00. A duplicate copy of this transmittal is enclosed.

A check in the amount of \$108.00 is enclosed.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,



Date March 21, 2003

By \_\_\_\_\_

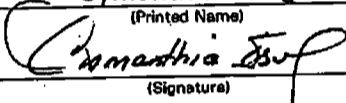
FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

Ankur D. Shah  
Attorney for Applicant  
Registration No. 41,514

Atty. Dkt. No. 024051-0155

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Gary Alan KEMP II et al.  
 Title: CLICK BASED TRADING WITH  
 INTUITIVE GRID DISPLAY OF  
 MARKET DEPTH  
 Appl. No.: 09/894,637  
 Filing Date: 06/27/2001  
 Examiner: R. Weisberger  
 Art Unit: 3624

CERTIFICATE OF FACSIMILE TRANSMISSION	
I hereby certify that this paper is being facsimile transmitted to the United States Patent and Trademark Office, Washington, D.C. on the date below.	
Cymanthia Irving	(Printed Name)
	(Signature)
March 21, 2003	(Date of Deposit)

**AMENDMENT TRANSMITTAL**

Commissioner for Patents  
 Washington, D.C. 20231

Sir:

Transmitted herewith is an amendment in the above-identified application.

- Small Entity status under 37 C.F.R. § 1.9 and § 1.27 has been established by a Small Entity statement previously submitted.
- Small Entity statement is enclosed.
- The fee required for additional claims is calculated below:

	Claims as Amended	Previously Paid For	Extra Claims Present	Rate	Additional Claims Fee
Total Claims:	40	28	12	x \$18.00	= \$216.00
Independents:	2	3	0	x \$84.00	= \$0.00
First presentation of any Multiple Dependent Claims:				+ \$280.00	= \$0.00
CLAIMS FEE TOTAL:					= \$216.00

- Applicant hereby petitions for an extension of time under 37 C.F.R. § 1.136(a) for the total number of months checked below:

05/26/2004 SWILLIAM 00000001 190741 09894637

01 FC:1202 216.00 DA

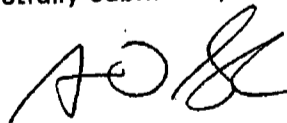
Atty. Dkt. No. 024051-0155

<input type="checkbox"/>	Extension for response filed within the first month:	\$110.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the second month:	\$410.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the third month:	\$930.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the fourth month:	\$1,450.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the fifth month:	\$1,970.00	\$0.00
	EXTENSION FEE TOTAL:		\$0.00
	CLAIMS AND EXTENSION FEE TOTAL:		\$216.00
<input checked="" type="checkbox"/>	Small Entity Fees Apply (subtract 1/2 of above):		\$108.00
	TOTAL FEE:		\$108.00

- Please charge Deposit Account No. 19-0741 in the amount of \$108.00. A duplicate copy of this transmittal is enclosed.
- A check in the amount of \$108.00 is enclosed.
- The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,



Date March 21, 2003

By \_\_\_\_\_

FOLEY & LARDNER  
 Washington Harbour  
 3000 K Street, N.W., Suite 500  
 Washington, D.C. 20007-5143  
 Telephone: (202) 672-5300  
 Facsimile: (202) 672-5399

Ankur D. Shah  
 Attorney for Applicant  
 Registration No. 41,514

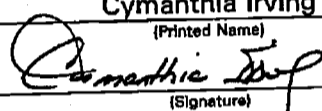


Atty. Dkt. No. 024051-0155

#17/D  
ms  
5/26/03

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Applicant:** Gary Alan KEMP II et al.  
**Title:** CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH  
**Appl. No.:** 09/894,637  
**Filing Date:** 06/27/2001  
**Examiner:** R. Weisberger  
**Art Unit:** 3624

<b>CERTIFICATE OF FACSIMILE TRANSMISSION</b>	
I hereby certify that this paper is being facsimile transmitted to the United States Patent and Trademark Office, Washington, D.C. on the date below.	
Cymantia Irving	(Printed Name)
	(Signature)
March 21, 2003	(Date of Deposit)

**AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please amend the application as follows:

**In the Claims:**

In accordance with 37 CFR § 1.121, please substitute for claims 41-44, 48-50, 52-54, 56, 61, 62, and 68, the following rewritten versions of the same claims, as amended. The changes are shown explicitly in the attached "Marked Up Version Showing Changes Made."

Further, please cancel claim 55 without prejudice or disclaimer, and add new claims 69-81 as set forth below.

41. (Amended) A method for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the method comprising:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a price level along a common static price axis, the first indicator representing quantity associated

D'

D

Atty. Dkt. No. 024051-0155

with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a price level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators moves in the bid or ask display regions relative to the common static price axis;

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

<sup>2</sup>/~~42~~ (Amended) The method of claim ~~41~~<sup>1</sup> wherein the bid and ask display regions and the order entry region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

<sup>3</sup>/~~43~~ (Amended) The method of claim ~~41~~<sup>1</sup> wherein the bid and ask display regions and the order entry region are oriented vertically.

<sup>4</sup>/~~44~~ (Amended) The method of claim ~~41~~<sup>1</sup> wherein the bid and ask display regions and the order entry region are oriented horizontally.

<sup>8</sup>/~~48~~ (Amended) The method of claim ~~47~~<sup>7</sup> wherein the bid display region, the ask display region, the order entry region and the price display region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

D



Atty. Dkt. No. 024051-0155

<sup>9</sup>  
~~48.~~ (Amended) The method of claim ~~47~~<sup>7</sup> wherein the bid display region, the ask display region, the order entry region and the price display region are oriented vertically.

<sup>10</sup>  
~~50.~~ (Amended) The method of claim ~~47~~<sup>7</sup> wherein the bid display region, the ask display region, the order entry region and the price display region are oriented horizontally.

<sup>11</sup>  
~~52.~~ (Amended) The method of claim ~~51~~<sup>11</sup> wherein a location of the plurality of locations of the bid display region comprises a blank region in which there is no first or third indicator displayed.

<sup>12</sup>  
~~53.~~ (Amended) The method of claim ~~41~~<sup>1</sup> wherein a location of the plurality of locations of the ask display region comprises a blank region in which there is no second or fourth indicator displayed.

<sup>13</sup>  
~~54.~~ (Amended) The method of claim ~~41~~<sup>1</sup> wherein the order entry region comprises:

a bid order entry region comprising a plurality of locations for receiving commands to send buy orders, each location corresponding to a price level along the common static price axis; and

an ask order entry region comprising a plurality of locations for receiving commands to send sell orders, each location corresponding to a price level along the common static price axis.

<sup>14</sup>  
~~55.~~ (Canceled)

<sup>15</sup>  
~~56.~~ (Amended) The method of claim ~~54~~<sup>14</sup> wherein the bid order entry region overlaps with the bid display region and the ask order entry region overlaps with the ask display region.

<sup>20</sup>  
~~61.~~ (Amended) The method of claim ~~41~~<sup>1</sup> further comprising the steps of:



Atty. Dkt. No. 024051-0155

D2

displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and  
 displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

21

~~62.~~ (Amended) The method of claim ~~41~~ further comprising the steps of:  
 displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and

D3

displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

27

~~68.~~ (Amended) A computer readable medium having program code recorded thereon for execution on a computer for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the program code causing a machine to perform the following method steps:

D4

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a price level along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a the price level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators moves in the bid or ask display regions relative to the common static price axis;

D

Atty. Dkt. No. 024051-0155

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

24

~~28~~ 69. (New) The method of claim ~~51~~ <sup>11</sup> wherein the first and third indicators are displayed in locations of the bid display region that are arranged along an axis which is parallel to the common static price axis.

~~29~~ 70. (New) The method of claim ~~51~~ <sup>11</sup> wherein the second and fourth indicators are displayed in locations of the ask display region that are arranged along an axis which is parallel to the common static price axis.

25

~~30~~ 71. (New) The method of claim ~~51~~ <sup>11</sup> further comprising the steps of:  
displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and  
displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

~~31~~ 72. (New) The method of claim ~~71~~ <sup>30</sup> wherein the third and fourth indicators remain in the same location in the bid and ask display regions, respectively, before and after the first indicator is displayed at the second location.

~~32~~ 73. (New) The method of claim ~~72~~ <sup>31</sup> wherein each location of the bid display region corresponds to a different price level along the common static price axis and each location of the ask display region corresponds to a different price level along the common static price.

~~33~~ 74. (New) The method of claim ~~51~~ <sup>11</sup> further comprising the steps of:  
displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and

Ⓟ

Atty. Dkt. No. 024051-0155

displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

~~34~~  
~~75.~~ (New) The method of claim ~~74~~ wherein the third and fourth indicators remain in the same location in the bid and ask display regions, respectively, before and after the second indicator is displayed at the second location.

~~35~~  
~~76.~~ (New) The method of claim ~~75~~ wherein each location of the bid display region corresponds to a different price level along the common static price axis and each location of the ask display region corresponds to a different price level along the common static price.

~~34~~  
~~77.~~ (New) The method of claim ~~41~~ wherein the bid and ask display regions are displayed separately.

~~37~~  
~~78.~~ (New) The method of claim ~~41~~ wherein the first and second indicators are based on an exchange order book and wherein the price levels along the common static price axis do not move in response to the addition of a price to the exchange order book, the additional price comprising a price for which there is a corresponding displayed location in at least one of the bid and ask display regions.

~~38~~  
~~79.~~ (New) The method of claim ~~78~~ wherein the price levels along the common static price axis do not move in response to the removal of a price from the exchange order book, the removed price comprising a price for which there is a corresponding displayed location in at least one of the bid and ask display regions.

~~39~~  
~~80.~~ (New) The method of claim ~~41~~ wherein the first and second indicators are based on an exchange order book and the price levels along the common static price axis never move in response to a price change in the exchange order book relating to a price which corresponds to a displayed location in at least one of the bid and ask display regions.

Atty. Dkt. No. 024051-0155

<sup>40</sup>  
~~81.~~ (New) The method of claim ~~41~~ wherein the plurality of parameters  
comprises a price and type of order.

b

11

Atty. Dkt. No. 024051-0155

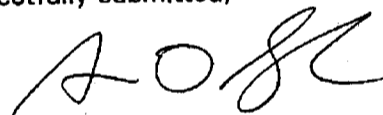
REMARKS

Claims 41-68 were pending in the application. Claims 41-44, 48-50, 52-54, 56, 61, 62, and 68 have been amended. Claim 55 has been canceled without prejudice or disclaimer. Claims 69-81 have been added. No new matter has been introduced. Thus, claims 41-54, and 56-81 are pending for consideration at this time.

Applicants thank the Examiner for the telephone interview of March 21, 2003. The pending claims have been amended as discussed. The discussion resulted in agreement that the claims as amended are allowable and that a Notice of Allowance would be issued promptly.

Applicants note that the amendments are being made without prejudice and solely in order advance prosecution of this application more rapidly to issuance.

Respectfully submitted,



Date March 21, 2003

By \_\_\_\_\_

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

Ankur D. Shah  
Attorney for Applicant  
Registration No. 41,514

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge deposit account No. 19-0741 for any such fees; and applicant hereby petitions for any needed extension of time.



Atty. Dkt. No. 024051-0155

**MARKED UP VERSION SHOWING CHANGES MADE**

41. (Amended) A method for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange [market] having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the method comprising:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a [in association with] price [levels] level along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a [in association with the] price [levels] level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market; [and]

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators [can] move in the bid [and] or ask display regions relative to the common static price axis [when the inside market changes];

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

42. (Amended) The method of claim 41 wherein the bid and ask display regions and the order entry region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

Atty. Dkt. No. 024051-0155

43. (Amended) The method of claim 41 wherein the bid and ask display regions and the order entry region are oriented vertically.
44. (Amended) The method of claim 41 wherein the bid and ask display regions and the order entry region are oriented horizontally.
48. (Amended) The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.
49. (Amended) The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented vertically.
50. (Amended) The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented horizontally.
52. (Amended) The method of claim 51 wherein [one] a location of the plurality of locations of the bid display region comprises a blank region in which there is no first or third indicator displayed.
53. (Amended) The method of claim 41 wherein [one] a location of the plurality of locations of the ask display region comprises a blank region in which there is no second or fourth indicator displayed.
54. (Amended) The method of claim 41 [further comprising the steps of] wherein the order entry region comprises:  
[displaying] a bid order entry region comprising a plurality of locations for receiving commands to send buy orders, each location corresponding to a price level along the common static price axis; and



Atty. Dkt. No. 024051-0155

[displaying] an ask order entry region comprising a plurality of locations for receiving commands to send sell orders, each location corresponding to a price level along the common static price axis.

55. (Canceled)

56. (Amended) The method of claim 54 wherein the bid order entry region [comprises] overlaps with the bid display region and the ask order entry region [comprises] overlaps with the ask display region.

61. (Amended) The method of claim 41 further comprising the steps of: displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and  
[updating the display to] displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

62. (Amended) The method of claim 41 further comprising the steps of: displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and  
[updating the display to] displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

68. (Amended) A computer readable medium having program code recorded thereon for execution on a computer for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange [market] having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the program code causing a machine to perform the following method steps:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a [in association with] price [levels] level along a common static price axis, the first indicator

Atty. Dkt. No. 024051-0155

representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a [in association with] the price [levels] level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators [can] move in the bid [and] or ask display regions relative to the common static price axis [when the inside market changes];

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.





UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,637	06/27/2001	Gary Allan Kemp II	024051-0155	1527

7590 06/17/2004  
FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W.  
Suite 500  
Washington, DC 20007-5143

EXAMINER

WEISBERGER, RICHARD C

ART UNIT	PAPER NUMBER
3624	

DATE MAILED: 06/17/2004

#18

Please find below and/or attached an Office communication concerning this application or proceeding.

*Free copy 000395*



UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND  
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE  
WASHINGTON, DC 20231  
www.uspto.gov

Robert C. Klinger  
Jackson Walker L.L.P.  
Suite 600  
2435 North Central Expressway  
Richardson, TX 75080

Paper No. 18

In re application of : **DECISION ON PETITION**  
Gary Allen Kemp II et al. : **TO MAKE SPECIAL**  
Application No. 09/894,637 : **(INFRINGEMENT)**  
Filed: June 27, 2001  
For: **CLICK BASED TRADING WITH INTUITIVE**  
**GRID DISPLAY OF MARKET DEPTH**

This is a decision on the petition under 37 C.F.R § 1.102(d) filed September 7, 2001 to make the above-identified application special. The delay in treating this petition is sincerely regretted.

The petition requests that the above-identified application be made special under the procedure set forth in M.P.E.P. § 708.02, item II: Infringement.

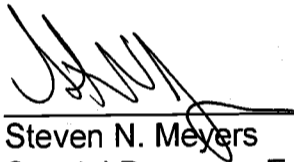
MPEP 708.02 states that a Petition to Make Special based on Infringement must have the following: (1) the appropriate petition fee under 37 CFR 1.17(i); (2) a statement by the assignee, applicant, or attorney alleging: (A) that there is an infringing device or product actually on the market; (B) that a rigid comparison of the alleged infringing device or product with the claims of the application has been made, and that, in his or her opinion, some of the claims are unquestionably infringed; and (C) that he or she has made a careful and thorough search of the prior art, or has good knowledge of the prior art, and has sent a copy of the references deemed most closely related to the subject matter encompassed by the claims.

The petition filed September 7, 2001 includes all of the requirements above and, therefore, the petition is **GRANTED**. The \$130. petition fee has been charged to applicant's deposit account No. 19-0741 as per applicant's authorization to do so in the documents filed September 7, 2001.

The examiner is directed (1) to make an interference search for possible interfering applications; (2) to promptly examine this application out of turn; and (3) if any interfering application is discovered, to examine such application simultaneously and

state in the first official letter of such application that it is being taken out of turn because of a possible interference.

Petitioner is advised that this application will continue to be special, throughout its entire prosecution and pendency, including interference and appeal, if any, only if petitioner makes a prompt *bona fide* effort, in response to each Office action, to place the application in condition for allowance, even if it is necessary to conduct an interview with the examiner to accomplish this purpose.



---

Steven N. Meyers  
Special Programs Examiner  
Technology Center 3600  
(703) 308-3868

snm : 6/14/04

# PALM INTRANET

Day : Friday  
Date: 9/3/2004  
Time: 10:43:44

## Application Number Information

Application Number: **09/894637**      Examiner Number: **68944 / WEISBERGER, RICHARD**  
**Assignments**  
 Filing Date: **06/27/2001**      Group Art Unit: **3624**  
 Effective Date: **06/27/2001**      Class/Subclass: **705/037.000**  
 Application Received: **06/29/2001**      Lost Case: **NO**  
 Pat. Num./Pub. Num: **6766304/20020059129**      Interference Number:  
 Issue Date: **07/20/2004**      Unmatched Petition: **NO**  
 Date of Abandonment: **00/00/0000**      L&R Code: Secrecy Code: **1**  
 Attorney Docket Number: **024051-0155**      Third Level Review: **NO**      Secrecy Order: **NO**  
 Status: **150 /PATENTED CASE**      Status Date: **07/01/2004**  
 Confirmation Number: **1527**      Oral Hearing: **NO**  
 Title of Invention: **CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH**

Bar Code	PALM Location	Location Date	Charge to Loc	Charge to Name	Employee Name	Location
09894637	9210	09/03/2004	9200	No Charge to Name	WYATT,DONNA	

Appln Info    Contents    Patent Info    App/Agent Info    Community Data    Foreign Data    Inv

Search Another: Application#   or Patent#    
 PCT /  /   or PG PUBS #    
 Attorney Docket #    
 Bar Code #

To go back use Back button on your browser toolbar.

Back to [PALM](#) | [ASSIGNMENT](#) | [OASIS](#) | [Home page](#)



Atty. Dkt. No. 024051-0155

*WJC*  
*H. King*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Gary Alan KEMP, II et al.

Title: CLICK BASED TRADING WITH INTUITIVE  
GRID DISPLAY OF MARKET DEPTH

Patent. No.: 6,766,304 *B2*

Issue Date: 07/20/2004

Examiner: R. Weisberger

Art Unit: 3624

Certificate  
OCT 06 2004  
of Correction

**REQUEST FOR CERTIFICATE OF CORRECTION FOR PTO MISTAKE  
PURSUANT TO 37 C.F.R. § 1.322(a)**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Enclosed, in duplicate, is a Certificate of Correction, Form PTO/SB/44, for United States Patent Number 6,766,304 issued July 20, 2004. The following Patent Office printing errors appear in the issued patent:

**ON THE TITLE PAGE**

Item (56) Please add the following in the References Cited:

**U.S. PATENT DOCUMENTS**

4,903,201	A	2/1990	Wagner
5,101,353	A	3/1992	Lupien et al.
5,946,667	A	8/1999	Tull, Jr., et al.
6,035,287	A	3/2000	Stallaert et al.
2002/0138401	A1	9/2002	Allen et al.

**FOREIGN PATENT DOCUMENTS**

WO	WO 95/35005	9/1995
----	-------------	--------

OCT 08 2004

Submitted herewith is a copy of Form PTO/SB/08 dated October 20, 2003, signed and dated by the Examiner, listing the references that were inadvertently omitted from the front of the patent.

**IN THE CLAIMS:**

The errors in the issued patent are listed below and the corrections are supported by the Amendment filed on March 21, 2003. The errors in the patent are shown by column and line number as follows.

**Col. 14, line 64**, the word "Static" should be --static--. (See Amendment filed March 21, 2003, pages 4-5, claim 68 now claim 27.)

**Col. 15, line 26**, after "claim 11" add the word --further--. (See Amendment filed March 21, 2003, page 5, claim 71 now claim 30.)

**Col. 16, line 1**, after "claim 11" add the word --further--. (See Amendment filed March 21, 2003, page 5, claim 74 now claim 33.)

**Col. 16, line 10**, the word "an" should be --and--. (See Amendment filed March 21, 2003, page 5, claim 75 now claim 34.)

**Col. 16, line 40**, after "claim 1" add --wherein--. (See Amendment filed March 21, 2003, page 7, claim 81 now claim 40.)

Attached for your review is a copy of the as-filed Transmittal and Amendment filed March 21, 2003. The instant corrections conform the claims in the patent with the Amendment filed on March 21, 2003.

Applicant submits that the above changes would not constitute new matter, and correction thereof would not require reexamination.

Pursuant to 37 C.F.R. §1.322, Applicant requests that the enclosed Certificate of Correction be approved.

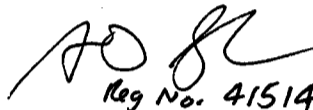


Atty. Dkt. No. 024051-0155

Although Applicant believes that no fee is required for this Request, the Commissioner is hereby authorized to charge any additional fees which may be required for this Request to Deposit Account No. 19-0741.

Respectfully submitted,

Date OCTOBER 4, 2004

By   
Reg No. 41514

FOLEY & LARDNER LLP  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5485  
Facsimile: (202) 672-5399

William T. Ellis  
Attorney for Applicant  
Registration No. 26,874

OCT 04 2004



Atty. Dkt. No. 024051-0155

THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Gary Alan KEMP II et al.

Title: CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH

Appl. No.: 09/894,637

Filing Date: 06/27/2001

Examiner: R. Weisberger

Art Unit: 3624

<b>CERTIFICATE OF FACSIMILE TRANSMISSION</b>	
I hereby certify that this paper is being facsimile transmitted to the United States Patent and Trademark Office, Washington, D.C. on the date below.	
Cymanthia Irving	
(Printed Name)	
(Signature)	
March 21, 2003	
(Date of Deposit)	

AMENDMENT TRANSMITTAL

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Transmitted herewith is an amendment in the above-identified application.

- Small Entity status under 37 C.F.R. § 1.9 and § 1.27 has been established by a Small Entity statement previously submitted.
- Small Entity statement is enclosed.
- The fee required for additional claims is calculated below:

	Claims as Amended	Previously Paid For	Extra Claims Present	Rate	Additional Claims Fee
Total Claims:	40	28	12	\$18.00	\$216.00
Independents:	2	3	0	\$84.00	\$0.00
First presentation of any Multiple Dependent Claims:				\$280.00	\$0.00
CLAIMS FEE TOTAL:					\$216.00

- Applicant hereby petitions for an extension of time under 37 C.F.R. §1.136(a) for the total number of months checked below:

<input type="checkbox"/>	Extension for response filed within the first month:	\$110.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the second month:	\$410.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the third month:	\$930.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the fourth month:	\$1,450.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the fifth month:	\$1,970.00	\$0.00
	EXTENSION FEE TOTAL:		\$0.00
	CLAIMS AND EXTENSION FEE TOTAL:		\$216.00
<input checked="" type="checkbox"/>	Small Entity Fees Apply (subtract 1/2 of above):		\$108.00
	TOTAL FEE:		\$108.00

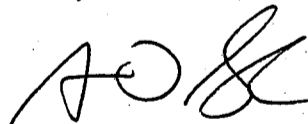
Please charge Deposit Account No. 19-0741 in the amount of \$108.00. A duplicate copy of this transmittal is enclosed.

A check in the amount of \$108.00 is enclosed.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,



Date March 21, 2003

By \_\_\_\_\_

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

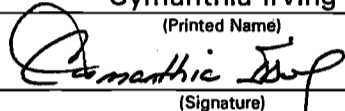
Ankur D. Shah  
Attorney for Applicant  
Registration No. 41,514



Atty. Dkt. No. 024051-0155

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Gary Alan KEMP II et al.  
Title: CLICK BASED TRADING WITH  
INTUITIVE GRID DISPLAY OF  
MARKET DEPTH  
Appl. No.: 09/894,637  
Filing Date: 06/27/2001  
Examiner: R. Weisberger  
Art Unit: 3624

<b>CERTIFICATE OF FACSIMILE TRANSMISSION</b> I hereby certify that this paper is being facsimile transmitted to the United States Patent and Trademark Office, Washington, D.C. on the date below.  Cymanthia Irving (Printed Name)  (Signature)  March 21, 2003 (Date of Deposit)
--

**AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please amend the application as follows:

**In the Claims:**

In accordance with 37 CFR § 1.121, please substitute for claims 41-44, 48-50, 52-54, 56, 61, 62, and 68, the following rewritten versions of the same claims, as amended. The changes are shown explicitly in the attached "Marked Up Version Showing Changes Made."

Further, please cancel claim 55 without prejudice or disclaimer, and add new claims 69-81 as set forth below.

41. (Amended) A method for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the method comprising:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a price level along a common static price axis, the first indicator representing quantity associated

with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a price level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators moves in the bid or ask display regions relative to the common static price axis;

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

42. (Amended) The method of claim 41 wherein the bid and ask display regions and the order entry region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

43. (Amended) The method of claim 41 wherein the bid and ask display regions and the order entry region are oriented vertically.

44. (Amended) The method of claim 41 wherein the bid and ask display regions and the order entry region are oriented horizontally.

48. (Amended) The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

49. (Amended) The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented vertically.

50. (Amended) The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented horizontally.

52. (Amended) The method of claim 51 wherein a location of the plurality of locations of the bid display region comprises a blank region in which there is no first or third indicator displayed.

53. (Amended) The method of claim 41 wherein a location of the plurality of locations of the ask display region comprises a blank region in which there is no second or fourth indicator displayed.

54. (Amended) The method of claim 41 wherein the order entry region comprises:

a bid order entry region comprising a plurality of locations for receiving commands to send buy orders, each location corresponding to a price level along the common static price axis; and

an ask order entry region comprising a plurality of locations for receiving commands to send sell orders, each location corresponding to a price level along the common static price axis.

55. (Canceled)

56. (Amended) The method of claim 54 wherein the bid order entry region overlaps with the bid display region and the ask order entry region overlaps with the ask display region.

61. (Amended) The method of claim 41 further comprising the steps of:

displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and

displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

62. (Amended) The method of claim 41 further comprising the steps of:  
displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and

displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

68. (Amended) A computer readable medium having program code recorded thereon for execution on a computer for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the program code causing a machine to perform the following method steps:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a price level along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a the price level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators moves in the bid or ask display regions relative to the common static price axis;

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

69. (New) The method of claim 51 wherein the first and third indicators are displayed in locations of the bid display region that are arranged along an axis which is parallel to the common static price axis.

70. (New) The method of claim 51 wherein the second and fourth indicators are displayed in locations of the ask display region that are arranged along an axis which is parallel to the common static price axis.

71. (New) The method of claim 51 further comprising the steps of:  
displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and  
displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

72. (New) The method of claim 71 wherein the third and fourth indicators remain in the same location in the bid and ask display regions, respectively, before and after the first indicator is displayed at the second location.

73. (New) The method of claim 72 wherein each location of the bid display region corresponds to a different price level along the common static price axis and each location of the ask display region corresponds to a different price level along the common static price.

74. (New) The method of claim 51 further comprising the steps of:  
displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and



displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

75. (New) The method of claim 74 wherein the third and fourth indicators remain in the same location in the bid and ask display regions, respectively, before and after the second indicator is displayed at the second location.

76. (New) The method of claim 75 wherein each location of the bid display region corresponds to a different price level along the common static price axis and each location of the ask display region corresponds to a different price level along the common static price.

77. (New) The method of claim 41 wherein the bid and ask display regions are displayed separately.

78. (New) The method of claim 41 wherein the first and second indicators are based on an exchange order book and wherein the price levels along the common static price axis do not move in response to the addition of a price to the exchange order book, the additional price comprising a price for which there is a corresponding displayed location in at least one of the bid and ask display regions.

79. (New) The method of claim 78 wherein the price levels along the common static price axis do not move in response to the removal of a price from the exchange order book, the removed price comprising a price for which there is a corresponding displayed location in at least one of the bid and ask display regions.

80. (New) The method of claim 41 wherein the first and second indicators are based on an exchange order book and the price levels along the common static price axis never move in response to a price change in the exchange order book relating to a price which corresponds to a displayed location in at least one of the bid and ask display regions.

Atty. Dkt. No. 024051-0155

81. (New) The method of claim 41 wherein the plurality of parameters comprises a price and type of order.

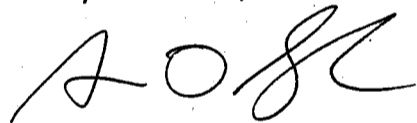
**REMARKS**

Claims 41-68 were pending in the application. Claims 41-44, 48-50, 52-54, 56, 61, 62, and 68 have been amended. Claim 55 has been canceled without prejudice or disclaimer. Claims 69-81 have been added. No new matter has been introduced. Thus, claims 41-54, and 56-81 are pending for consideration at this time.

Applicants thank the Examiner for the telephone interview of March 21, 2003. The pending claims have been amended as discussed. The discussion resulted in agreement that the claims as amended are allowable and that a Notice of Allowance would be issued promptly.

Applicants note that the amendments are being made without prejudice and solely in order advance prosecution of this application more rapidly to issuance.

Respectfully submitted,



Date March 21, 2003

By \_\_\_\_\_

FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143  
Telephone: (202) 672-5300  
Facsimile: (202) 672-5399

Ankur D. Shah  
Attorney for Applicant  
Registration No. 41,514

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge deposit account No. 19-0741 for any such fees; and applicant hereby petitions for any needed extension of time.

**MARKED UP VERSION SHOWING CHANGES MADE**

41. (Amended) A method for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange [market] having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the method comprising:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a [in association with] price [levels] level along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a [in association with the] price [levels] level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market; [and]

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators [can] moves in the bid [and] or ask display regions relative to the common static price axis [when the inside market changes];

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

42. (Amended) The method of claim 41 wherein the bid and ask display regions and the order entry region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

43. (Amended) The method of claim 41 wherein the bid and ask display regions and the order entry region are oriented vertically.

44. (Amended) The method of claim 41 wherein the bid and ask display regions and the order entry region are oriented horizontally.

48. (Amended) The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

49. (Amended) The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented vertically.

50. (Amended) The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented horizontally.

52. (Amended) The method of claim 51 wherein [one] a location of the plurality of locations of the bid display region comprises a blank region in which there is no first or third indicator displayed.

53. (Amended) The method of claim 41 wherein [one] a location of the plurality of locations of the ask display region comprises a blank region in which there is no second or fourth indicator displayed.

54. (Amended) The method of claim 41 [further comprising the steps of] wherein the order entry region comprises:

[displaying] a bid order entry region comprising a plurality of locations for receiving commands to send buy orders, each location corresponding to a price level along the common static price axis; and

[displaying] an ask order entry region comprising a plurality of locations for receiving commands to send sell orders, each location corresponding to a price level along the common static price axis.

55. (Canceled)

56. (Amended) The method of claim 54 wherein the bid order entry region [comprises] overlaps with the bid display region and the ask order entry region [comprises] overlaps with the ask display region.

61. (Amended) The method of claim 41 further comprising the steps of: displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and

[updating the display to] displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

62. (Amended) The method of claim 41 further comprising the steps of: displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and

[updating the display to] displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

68. (Amended) A computer readable medium having program code recorded thereon for execution on a computer for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange [market] having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the program code causing a machine to perform the following method steps:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a [in association with] price [levels] level along a common static price axis, the first indicator

representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a [in association with] the price [levels] level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators [can] moves in the bid [and] or ask display regions relative to the common static price axis [when the inside market changes];

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

Feb 17 2004 6:24P

Trading Technologies

24761189

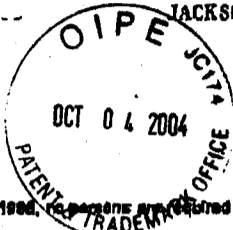
P.9

02/17/2004 17:14 FAX 97274

JACKSON WALKER LLP

0009

10/20/2003 10:30 FAX



0019

Under the Paperwork Reduction Act of 1996, no persons are required to respond to a collection of information unless it carries a valid OMB control number.

Approved for use through 10/31/2002. OMB 0331-0031 U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449B/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> Date Submitted: October 20, 2003 <i>(use as many sheets as necessary)</i>		<b>Complete If Known</b> Application Number: 06/064,657 Filing Date: 09/27/2001 First Named Inventor: Gary Allan Kamp II Group Art Unit: 3524 Examiner Name: R. Welsberger Agency Docket Number: 024061-0188	
Sheet	1	of	1

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code* (if known)			
	A1	4,803,201		WAGNER	02-20-1990	
	A2	5,101,353		(LUPIN et al.)	03-31-1992	
	A3	5,348,687		TULL, JR. et al.	06-31-1995	
	A4	6,088,287		STALLAERT et al.	03-07-2000	
	A5	2002/0138401	A1	ALLEN et al.	09-26-2002	

FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Office	Number	Kind Code* (if known)			
	A6	WO	98/29008	A1	BELZBERG, Sydney H.	09-28-1998	

NON PATENT LITERATURE DOCUMENTS							
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.					T*

EXAMINER Signature		Date Considered	11/17
--------------------	--	-----------------	-------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 802. Draw fee through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.  
 \*Unless citation designation number. \*On attached kind of U.S. Patent Documents. \*Enter Office that issued the document, by the two-letter code (WIPO Standard ST.2). \*For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. \*Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. \*Applicant is to place a check mark here if English language translation is attached.  
 Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, PO Box 1480, Alexandria, Virginia 22312-1480. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, PO Box 1450, Alexandria, Virginia 22312-1450.

Received from <> at 10/20/03 4:27:11 PM [Eastern Daylight Time]



**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

PATENT NO : 6,766,304 *B2*  
 DATED : 07/20/2004  
 INVENTOR(S) : Gary Allan Kemp II; Jens-Uwe Schluetter; Harris Brumfield

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**ON THE TITLE PAGE**

Item (56) References Cited - adding

**U.S. PATENT DOCUMENTS**

4,903,201	A	2/1990	Wagner
5,101,353	A	3/1992	Lupien et al.
5,946,667	A	8/1999	Tull, Jr., et al.
6,035,287	A	03/2000	Stallaert et al.
2002/0138401	A1	9/2002	Allen et al.

**FOREIGN PATENT DOCUMENTS**

WO	WO 95/35005	9/1995
----	-------------	--------

MAILING ADDRESS OF SENDER:

William T. Ellis  
 Foley & Lardner LLP  
 Washington Harbour  
 3000 K Street, N.W., Suite 500  
 Washington, D.C. 20007-5143

PATENT NO. 6,766,304 *B2*

No. of additional copies

⇒ 1

Burden Hour Statement: This form is estimated to take 1.0 hour to complete. Time will vary depending upon the needs of the individual case. Any comment on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORM TO THIS ADDRESS. SEND TO: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

OCT 08 2004

000417

Under the Paperwork Reduction Act of 1995, no persons are required to a collection of information unless it displays a valid OMB control number.  
(Also Form PTO-1050)

**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

PATENT NO : 6,766,304 *B2*  
DATED : 07/20/2004  
INVENTOR(S) : Gary Allan Kemp II; Jens-Uwe Schluetter; Harris Brumfield

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**IN THE CLAIMS:**

Col. 14, line 64, the word "Static" should be --static--.

Col. 15, line 26, after "claim 11" add the word --further--.

Col. 16, line 1, after "claim 11" add the word --further--.

Col. 16, line 10, the word "an" should be --and--.

Col. 16, line 40, after "claim 1" add --wherein--.

MAILING ADDRESS OF SENDER: William T. Ellis  
Foley & Lardner LLP  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143

PATENT NO. 6,766,304 *B2*  
No. of additional copies  
⇒ 1

Burden Hour Statement: This form is estimated to take 1.0 hour to complete. Time will vary depending upon the needs of the individual case. Any comment on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORM TO THIS ADDRESS. SEND TO: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

OCT 08 2004

Under the Paperwork Reduction Act of 1995, no persons are required to a collection of information unless it displays a valid OMB control number.  
(Also Form PTO-1050)

**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

PATENT NO : 6,766,304 *B2*  
 DATED : 07/20/2004  
 INVENTOR(S) : Gary Allan Kemp II; Jens-Uwe Schluetter; Harris Brumfield

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**ON THE TITLE PAGE**

Item (56) References Cited - adding

U.S. PATENT DOCUMENTS

4,903,201	A	2/1990	Wagner
5,101,353	A	3/1992	Lupien et al.
5,946,667	A	8/1999	Tull, Jr., et al.
6,035,287	A	03/2000	Stallaert et al.
2002/0138401	A1	9/2002	Allen et al.

FOREIGN PATENT DOCUMENTS

WO	WO 95/35005	9/1995
----	-------------	--------

MAILING ADDRESS OF SENDER:

William T. Ellis  
 Foley & Lardner LLP  
 Washington Harbour  
 3000 K Street, N.W., Suite 500  
 Washington, D.C. 20007-5143

PATENT NO. 6,766,304 *B2*

No. of additional copies

⇒ 1

Burden Hour Statement: This form is estimated to take 1.0 hour to complete. Time will vary depending upon the needs of the individual case. Any comment on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORM TO THIS ADDRESS. SEND TO: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

OCT 08 2004

000419

Under the Paperwork Reduction Act of 1995, no persons are required to a collection of information unless it displays a valid OMB control number.

(Also Form PTO-1050)

**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

PATENT NO : 6,766,304 *B2*  
DATED : 07/20/2004  
INVENTOR(S) : Gary Allan Kemp II; Jens-Uwe Schluetter; Harris Brumfield

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**IN THE CLAIMS:**

Col. 14, line 64, the word "Static" should be --static--.

Col. 15, line 26, after "claim 11" add the word --further--.

Col. 16, line 1, after "claim 11" add the word --further--.

Col. 16, line 10, the word "an" should be --and--.

Col. 16, line 40, after "claim 1" add --wherein--.

*[Handwritten marks and scribbles]*

MAILING ADDRESS OF SENDER: William T. Ellis  
Foley & Lardner LLP  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5143

PATENT NO. 6,766,304 *B2*  
No. of additional copies  
⇒ 1

Burden Hour Statement: This form is estimated to take 1.0 hour to complete. Time will vary depending upon the needs of the individual case. Any comment on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORM TO THIS ADDRESS. SEND TO: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

OCT 08 2004

Cancel Patent File Order

<http://fos/fosw/WRO1011.ASP?Qcommand=execute&qPatentTrademarkCd=P>



**USPTO Repository**  
**display patent file location**

Tuesday  
11/23/2004  
9:25:36 AM  
WRO1011P

<b>Serial Number</b>	<b>Patent Number</b>	<b>Interference Number</b>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Box Number</b>	<b>Artifact Number</b>	
<input type="text"/>	<input type="text"/>	
<input type="button" value="Submit"/>	<input type="button" value="Reset"/>	<input type="button" value="Clear Log"/>

---

**Results Log**

Serial #: **09/894637**  
Patent #: **6766304**  
Current Location: **9200**  
Location Date: **11/23/2004 9:24:53 AM**  
Delivery Location: **9210**  
Requesting Employee #: **67364**

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 6,766,304 B2  
DATED : July 20, 2004  
INVENTOR(S) : Gary Allan Kemp II, Jens-Uwe Schluetter and Harris Brumfield

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title page.

Item [56], **References Cited**, U.S. PATENT DOCUMENTS, add the following:

-- 4,903,201	A	2/1990	Wagner
5,101,353	A	3/1992	Lupien et al.
5,946,667	A	8/1999	Tull, Jr., et al.
6,035,287	A	3/2000	Stallaert et al.
2002/0138401	A1	9/2002	Allen et al. --

FOREIGN PATENT DOCUMENTS, add the following:

-- WO WO 95/35005 9/1995 --

Column 14.

Line 64, the word "Static" should be -- static --.

Column 15.

Line 26, after "claim 11" add the word -- further --.

Column 16.

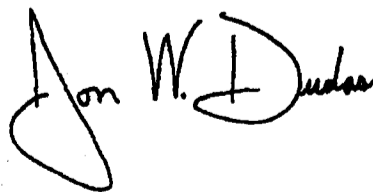
Line 1, after "claim 11" add the word -- further --.

Line 10, the word "an" should be -- and --.

Line 40, after "claim 1" add -- wherein --.

Signed and Sealed this

Sixteenth Day of November, 2004



JON W. DUDAS  
Director of the United States Patent and Trademark Office

## United States District Court, Northern District of Illinois


<b>Name of Assigned Judge or Magistrate Judge</b>	James B. Moran	<b>Sitting Judge If Other than Assigned Judge</b>	
<b>CASE NUMBER</b>	04 C 5312	<b>DATE</b>	9/17/2004
<b>CASE TITLE</b>	TRADING TECHNOLOGIES INTERNATIONAL vs. Espeed, INC.		

[In the following box (a) indicate the party filing the motion, e.g., plaintiff, defendant, 3rd party plaintiff, and (b) state briefly the nature of the motion being presented.]

**MOTION:**

**DOCKET ENTRY:**

(1)	<input type="checkbox"/>	Filed motion of [ use listing in "Motion" box above.]
(2)	<input type="checkbox"/>	Brief in support of motion due _____.
(3)	<input type="checkbox"/>	Answer brief to motion due _____. Reply to answer brief due _____.
(4)	<input type="checkbox"/>	Ruling/Hearing on _____ set for _____ at _____.
(5)	<input type="checkbox"/>	Status hearing[held/continued to] [set for/re-set for] on _____ set for _____ at _____.
(6)	<input type="checkbox"/>	Pretrial conference[held/continued to] [set for/re-set for] on _____ set for _____ at _____.
(7)	<input type="checkbox"/>	Trial[set for/re-set for] on _____ at _____.
(8)	<input type="checkbox"/>	[Bench/Jury trial] [Hearing] held/continued to _____ at _____.
(9)	<input type="checkbox"/>	This case is dismissed [with/without] prejudice and without costs[by/agreement/pursuant to] <input type="checkbox"/> FRCP4(m) <input type="checkbox"/> Local Rule 41.1 <input type="checkbox"/> FRCP41(a)(1) <input type="checkbox"/> FRCP41(a)(2).
(10)	<input checked="" type="checkbox"/>	[Other docket entry]   Enter Preliminary Injunction Discovery Order.
(11)	<input checked="" type="checkbox"/>	[For further detail see order attached to the original minute order.]

<input type="checkbox"/> No notices required, advised in open court. <input type="checkbox"/> No notices required. <input type="checkbox"/> Notices mailed by judge's staff. <input type="checkbox"/> Notified counsel by telephone. <input checked="" type="checkbox"/> Docketing to mail notices. <input type="checkbox"/> Mail AO 450 form. <input type="checkbox"/> Copy to judge/magistrate judge.	U.S. DISTRICT COURT CLERK 2004 SEP 17 PM 4:17 Date/time received in central Clerk's Office	number of notices <div style="border: 1px solid black; padding: 2px; text-align: center; font-weight: bold;">SEP 20 2004</div> <small>date docketed</small> <div style="text-align: center; margin-top: 5px;">   <small>docketing deputy initials</small> </div> date mailed notice mailing deputy initials	<div style="border: 1px solid black; padding: 5px;"> <b>Document Number</b>  <span style="font-size: 2em; font-family: cursive;">19</span> </div>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">LG</div> courtroom deputy's initials			

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION**

Trading Technologies International, Inc., )  
 )  
 Plaintiff, )  
 )  
 v. )  
 )  
 eSpeed, Inc. )  
 )  
 Defendant. )

Civil Action No. 04 C 5312

Judge: James B. Moran

Magistrate: Sidney I. Schenkier

**DOCKETED**  
**SEP 20 2004**

**PRELIMINARY INJUNCTION DISCOVERY ORDER**

In view of Trading Technologies International, Inc.'s pending motion for a preliminary injunction, this Court hereby enters the following preliminary injunction discovery schedule and guidelines:

- 1) Both parties are permitted to begin taking written and oral discovery immediately.
  
- 2) All responses to written discovery requests are due within ten days of service of the discovery requests. In addition, Saturdays, Sundays and legal holidays count when computing this ten day period, contrary to the portion of Fed. R. Civ. Pro. 6(a) that states that "[w]hen the period of time prescribed or allowed is less than 11 days, intermediate Saturdays, Sundays, and legal holidays shall be excluded in the computation." However, the other provisions of Fed. R. Civ. Pro. 6(a) shall apply, including that when a due date falls on a Saturday, Sunday or legal holiday, the filing or service is due the next business day: "The last day of the period so computed shall be included, unless it is a Saturday, a Sunday, or a legal



holiday, or, when the act to be done is the filing of a paper in court, a day on which weather or other conditions have made the office of the clerk of the district court inaccessible, in which event the period runs until the end of the next day which is not one of the aforementioned days."

All discovery requests and responses to discovery requests shall be served by both facsimile and overnight or hand delivery, and they shall be considered served upon the successful transmission of the facsimile copy. The Additional Time After Service provisions of Fed. R. Civ. Pro 6(e) shall not apply when service is by facsimile.

3) All document requests and interrogatories shall be tailored to request only documents and ask only interrogatories relevant to the issues regarding the pending motion for preliminary injunction.

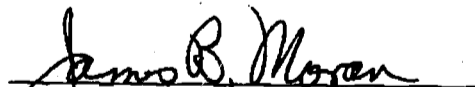
4) The parties shall provide the Court with an informal tutorial regarding the technology and prior art at issue. The informal tutorial will not involve testimony of witnesses and therefore there will be no cross examination of the presenters.

5) The Court sets the following preliminary injunction schedule:

Activity	Due Date
Defendant must identify all prior art it is aware of and provide a statement of the prior art's relevance to the patents-in-suit	September 21, 2004 (updated weekly thereafter, i.e. 9/28, 10/5, 10/12, 10/19, 10/26, etc.)
Defendant's Response to Plaintiff's Motion for a Preliminary Injunction (may be supplemented if necessary)	October 15, 2004
Plaintiff's Reply in Support of Its Motion for a Preliminary Injunction (may be supplemented if necessary); Plaintiff provides its preliminary witness list for the Preliminary Injunction Hearing.	October 29, 2004
Defendant provides its preliminary witness list for the Preliminary Injunction Hearing	November 1, 2004
Status Hearing; Informal Tutorial for the Court	November 2, 2004
Hearing On Plaintiff's Motion for a Preliminary Injunction	December 2, 2004

It is so ordered:

Date: 9/16/04

  
James B. Moran  
United States District Court Judge

# WINSTON & STRAWN LLP

35 WEST WACKER DRIVE  
CHICAGO, ILLINOIS 60601-9703

43 RUE DU RHONE  
1204 GENEVA, SWITZERLAND

CITY POINT  
1 ROPEMAKER STREET  
LONDON, EC2Y 9HT

MARY J. WALKER  
(202) 371-5904  
mwalker@winston.com

1400 L STREET, N.W.  
WASHINGTON, D.C. 20005-3502

(202) 371-5700

FACSIMILE (202) 371-5950

www.winston.com

333 SOUTH GRAND AVENUE  
LOS ANGELES, CALIFORNIA 90071

200 PARK AVENUE  
NEW YORK, NEW YORK 10166-4193

21 AVENUE VICTOR HUGO  
75116 PARIS, FRANCE

101 CALIFORNIA STREET  
SAN FRANCISCO, CALIFORNIA 94111-5894

November 15, 2004

Via Fax

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450  
Attention: Certification Branch

Re: **Certified Copies of Patent Prosecution Histories**

AHn. Fontella Gray  
703-308-7248  
Cert. Branch per  
Phone conversation  
w/ Christopher Riley  
202-216-8724  
301-466-3766

Dear Sir:

I am working for an attorney who is working on a patent infringement case pending in the Northern District of Illinois, Eastern Division, *Trading Technologies International, Inc., v. eSpeed, Inc.*, C.A. No. 04-C-5312. I am writing to request expedited ~~delivery~~ of certified patent prosecution histories for the patents in suit. These patents and their parent applications are as follows:

U.S. Patent No. 6,772,132 B1

U.S. Patent No. 6,766,304 B1

U.S. Provisional Patent Application No. 60/186,322

At  
cost per  
Fontella Gray

Please supply these file histories on an "at cost" basis. Please charge Deposit Account 50-1814 for all charges for supplying these file histories.

The reason for the expedited request is that the Court set a hearing date of December 2, 2004, for a Preliminary Injunction Motion as set forth in the attached scheduling order. The certified patent prosecution histories are necessary to present to the judge in the case, and thus are needed by the date of the hearing. We appreciate any and all efforts to provide these documents to us in advance of the trial date.

Sincerely,

*Mary J. Walker*

Mary J. Walker  
Patent Operations Supervisor

WINSTON & STRAWN LLP

CHRISTOPHER JOHN EDWARD RILEY  
PATENT OPERATIONS SPECIALIST

DOCKET  
(202) 371-8724  
216

1400 L Street, N.W., Washington, D.C. 20005-3502  
Fax (202) 371-5950 criley@winston.com www.winston.com  
CHICAGO • GENEVA • LONDON • LOS ANGELES • NEW YORK • PARIS  
SAN FRANCISCO • WASHINGTON D.C.

000427



Atty. Dkt. No. 024051-0155

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Gary Alan KEMP et al.

Title: CLICK BASED TRADING WITH  
INTUITIVE GRID DISPLAY OF  
MARKET DEPTH

Appl. No.:

Filing Date: 6/27/2001

Examiner: R. Weisberger

Art Unit: 3624

Confirmation  
Number:

**WITHDRAWAL OF ATTORNEY OF RECORD AND  
CHANGE OF CORRESPONDENCE ADDRESS**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Effective immediately, Foley & Lardner LLP attorneys associated with CUSTOMER NUMBER: 22428, withdraw as Attorney of Record for the captioned application, due to Applicant's request to transfer all files to McDonnell, Boehnen, Hulbert & Berghoff LLP, dated June 2, 2007.

The undersigned is signing this withdrawal on behalf of himself and all the aforementioned attorneys.

Atty. Dkt. No. 024051-0155

All further correspondence should be sent to:

Joe Herndon  
McDonnell, Boehnen, Hulbert, & Berghoff LLP  
300 South Wacker Drive  
Chicago, IL 60606-6709

Respectfully submitted,

Date 11/26/07

By 

FOLEY & LARDNER LLP  
Customer Number: 22428  
Telephone: (202) 672-5485  
Facsimile: (202) 672-5399

William T. Ellis  
Attorney for Applicant  
Registration No. 26,874

05-04-06

3624



THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent Applications of: Kemp *et al.*

- 1) U.S. Patent Application No. 09/590,692 filed June 9, 2000  
For: Click based trading with intuitive grid display of market depth  
Now U.S. Patent No. 6,772,132 issued August 3, 2004; and

- 2) U.S. Patent Application No. 09/894,637 filed June 27, 2001  
For: Click based trading with intuitive grid display of market depth  
Now U.S. Patent No. 6,766,304 issued July 20, 2004

RECEIVED

MAY 16 2006

OFFICE OF PETITIONS

MAIL STOP PETITION,  
COMMISSIONER FOR PATENTS,  
P.O. BOX 1450,  
ALEXANDRIA, VIRGINIA 22313-1450

**PETITION TO RECONSTRUCT THE OFFICIAL FILES FOR  
U.S. PATENT APPLICATIONS NOS. 09/590,692 AND 09/894,637**

The Director is respectfully requested to reconstruct the official files for U.S. Patent Applications Nos. 09/590,692 and 09/894,637 by, and through counsel for, GL Trade Americas, Inc. (f/k/a GL Consultants, Inc. ("GL")) because a number of written communications between the applicants and the Patent and Trademark Office ("USPTO") are missing from the Official Record.

- 1) U.S. Patent No. 6,772,132 (the "132 patent"), which matured from U.S. Patent Application No. 09/590,692, and U.S. Patent No. 6,766,304 (the "304 patent"), which matured from U.S. Patent Application No. 09/894,637 each lists Trading Technologies International, Inc. ("TT") as the assignee.

2) TT has sued a number of companies, including GL, for infringement of the '132 and '304 patents in District Court for the Northern District of Illinois. The action against GL is captioned *Trading Technologies International, Inc. v. GL Consultants, Inc. et al.*, Civil Action No. 05C 4120. Other actions concerning the '132 and '304 patents that are pending in District Court for the Northern District of Illinois are captioned, *Trading Technologies International, Inc. v. FuturePath Trading LLC*, Civil Action No. 05C 5164; *Trading Technologies International, Inc. v. eSpeed, Inc. et al.*, Civil Action No. 04C 5312; *Trading Technologies International, Inc. v. CQGT, LLC, et al.*, Civil Action No. 05C 4811; and *Rosenthal Collins Group, LLC v. Trading Technologies International, Inc.*, Civil Action No. 05C 4088.

3) The attached documents which were obtained from TT in discovery under Rule 34 Fed. R. Civ. P. are the subject of this Petition and are not part of either Official Record. True and accurate copies of these documents referencing U.S.S.N. 09/590,692 (the "692 application") are attached hereto as Exhibit A (chronologically TT 0099454, TT 0099464, TT 0099450, TT 0099453, TT 0099449, TT 0099448, TT 0099467 - 68, TT 0099473 - 74, TT 0099472, TT 0099471, TT 0099490, TT 0099491, TT 0099447, TT 0099446, TT 0099493 - 94, TT 0099459 - 60, TT 0099458, TT 0099598 - 99, TT 0099480, TT 0099461 - 62, TT 0099481 - 89, TT 0099511 - 12, TT 0099507, TT 0099519 - 20, TT 0099549, TT 0099550, TT 0099514, TT 0099551 - 55, TT 0099513, TT 0099557 - 59, TT 0099562, and TT 0099591). True and accurate copies of these documents referencing U.S.S.N. 09/894,637 (the "637 application") are attached hereto as Exhibit B (chronologically TT 0099502, TT 0099597, TT 0099534, TT 0099506, TT 0099497 - 98, TT 0099532 - 33, TT 0099503, TT 0099566 - 68, and TT

0099505). True and accurate copies of these documents referencing the '692 and the '637 applications are attached hereto as Exhibit C (chronologically TT 0099615 - 16, TT 0099619 - 40, TT 0099641 - 42, TT 0099609 - 11, TT 0099604 - 08, TT 0099569 - 70, TT 0099588, TT 0099444, and TT 0099589 -90). True and accurate copies of these documents referencing unspecified applications are attached hereto as Exhibit D (chronologically TT 0099500, TT 0099522, TT 0099504, TT 0099618, TT 0099617, TT 0099548, TT 0099510, TT 0099560, TT 0099561, TT 0099565, TT 0099535, TT 0099564, TT 0099571 - 72, TT 0099583 - 84, TT 0099573 - 74, TT 0099576, TT 0099524 - 26, TT 0099580 - 82, TT 0099516, and TT 0099585).

4) All of these documents are correspondence between the Office and one or more of the applicants' representatives concerning either the '692 application or the '637 application and are not found in the Official Record of either of these applications.

5) All of this correspondence between the Office and the applicants' representative dates between May, 2002 and June, 2004, a time when both the '692 and the '637 applications were pending before the USPTO.

6) All of this correspondence is either to, or from, Examiner Richard Weisberger, the USPTO official charged with examining both the '692 and the '637 applications.

7) In this correspondence, the applicants' representatives are Steve Borsand (Reg. No. 36752), Ankur Shah (Reg. No. 41514), or both.

8) Neither the Transaction History of the '692 application nor the Transaction History of the '637 application, however, lists this correspondence between the Office and the applicants' representative. A true and accurate copy of the print out of



the "Transaction History" of the '692 application obtained from

<http://portal.uspto.gov/external/portal!/ut/p/s.7.0.A/7.0.CH/cmd/ad/.ar/sa.getBib/.c/6.0.69/.ce/7.0.1ET/.p/5.0.18L/.d/3?selectedTab=fileHistorytab&isSubmitted=isSubmitted&dosnum=09590692> on May 2, 2006 is attached hereto as Exhibit E. A true and

accurate copy of the print out of the "Transaction History" of the '637 application obtained from

<http://portal.uspto.gov/external/portal!/ut/p/s.7.0.A/7.0.CH/cmd/ad/.ar/sa.getBib/.c/6.0.69/.ce/7.0.1ET/.p/5.0.18L/.d/0?selectedTab=fileHistorytab&isSubmitted=isSubmitted&dosnum=09894637#> on May 2, 2006 is attached hereto as Exhibit F.

9) Section 502.03 II of the Eight Edition of the Manual of Patent Examining Procedure, which was in effect during the time period relevant to the attached correspondence, directs that such correspondence with an Examiner concerning an application is to be printed and placed in the official file for each application. ("A paper copy of [ any email] correspondence **will be placed** in the appropriate patent application." Emphasis added.)

10) Correspondence, which is directly material to the Official Record – the file histories – of the '692 and the '637 applications, but missing from the Official Record, includes the following:

- a. A written communication dated March 19, 2002 from Examiner Weisberger proposing language for an amendment to the claims of the '692 application. *See* TT 0099519.
- b. A written communication dated May 14, 2002 concerning the '692 application from Examiner Weisberger to Mr. Shah stating "[f]or

reasons I prefer not to discuss, an impediment to the allowance of this case will be overcome. . . ." See TT 0099467.

- c. A written communication dated September 26, 2002 from Mr. Shah to Examiner Weisberger concerning an amendment to the '637 application stating that the applicants representatives need to discuss the application "to clear up the last issues in these cases." (GL's counsel has been unable to find an Interview Summary corresponding to this Interview in the Official Record of the '637 application.) See TT 0099501.
- d. In a written communication dated September 26, 2002, Examiner Weisberger advised Mr. Shah and Mr. Borsand that the second set of eyes review of the applications would be a "perfunctory step". See TT 0099532.
- e. A written communication dated October 1, 2002 from Mr. Shah to Examiner Weisberger concerning "Interview Summaries and Reasons for Allowance" states, "I await to hear from you regarding the Interview Summaries and language for Reasons for Allowance. I think **the deal you proposed** during the Interviews was prompt Interview Summaries in exchange for our submissions of Amendments." (Emphasis added). See TT 0099500
- f. A written communication dated October 2, 2002 from Examiner Weisberger also concerning "Interview Summaries and Reasons for Allowance" stating, among things, "[a]s for the reasons for allowance,

as discussed, the contents thereof are not of record until the case has been reviewed. Reasons for allowance are generally not subject to negotiation . . .” *See* TT 0099495-96.

- g. In a written communication to Examiner Weisberger dated March 20, 2003, the applicants’ representative proposed several amendments to both the ‘692 and the ‘637 applications. *See* TT 0099531.
- h. A written communication dated March 21, 2003 from Examiner Weisberger acknowledging applicants’ representative email of March 20, 2003 stating that the Examiner is “quite satisfied with the amendments.” *See* TT 0099523.
- i. In a written communication dated May 27, 2003, applicants’ representative forwarded to Examiner Weisberger several lists of references to be cited in each of several applications. *See* TT0099551 – 55.

11) Petitioner notes that additional correspondence/papers appear to be missing. For instance, the above referenced of September 26, 2002 correspondence references Interview Summaries that not in the Official Record.

12) Petitioner not only respectfully requests that copies of the attached correspondence between the Office and the applicants’ representative be made part of the Official Record of the ‘692 and the ‘637 application files, but that all correspondence including, the attached correspondence between the Office and applicants and/or their representatives, that is not part of the Official Record be made part of the Official Record when found.

13) The attached collection of correspondence between the Office and the applicants' representatives may not be all of the emails that were exchanged between Examiner Weisberger and the applicants' representatives. An eFOIA request was filed with the Office on April 25, 2006 to locate any other communications. (Exhibit G is a true and accurate copy of GL's eFOIA request.)

14) As such, Petitioner respectfully requests that the Director, pursuant to his supervisory authority, reconstruct the official files for the '692 and the '637 applications by adding all missing correspondence, including the attached emails to the official files. *See* 37 C.F.R. § 1.251 ("Unlocatable File").

15) The correspondence between the Office and the applicants' representative(s) is part of the intrinsic evidence of every patent and is essential to the construction of a patent claim. *See Phillips v. AWH Corp.* 415 F3d 1303 (Fed. Cir. 2005).

16) The Director is hereby authorized to charge any fees associated with this communication, including any petition fee, to Deposit Account No. 16-0605.

Respectfully submitted,



Walter Scott

Registration No. 30,588

**Customer No. 00826**  
**ALSTON & BIRD LLP**  
Bank of America Plaza  
101 South Tryon Street, Suite 4000  
Charlotte, NC 28280-4000  
Tel New York Office (212) 210-9518  
Fax Charlotte Office (704) 444-1111

U.S.S.N. 09/590,692 & 09/894,637

**Certificate of Service**

It is certified that a copy of the Petition to Reconstruct the Official Files for U.S. Patent Applications Nos. 09/590,692 and 09/894,637 has been served in its entirety on the attorneys of record for the above-identified applications. The name and address of the party served and the date of service are:

**FOLEY & LARDNER  
WASHINGTON HARBOUR  
3000 K STREET, N.W. SUITE 500  
WASHINGTON DC 20007-5143**

Date of Mailing: May 2, 2006

  
Walter Scott

A

RECEIVED  
MAY 16 2006  
OFFICE OF PETITIONS

-----Original Message-----

From: AShah@foleylaw.com [mailto:AShah@foleylaw.com]  
Sent: Monday, May 06, 2002 4:09 PM  
To: richard.weisberger@uspto.gov  
Subject: 09/590,692

Hello Richard:

I just left you a short voice-mail. You had indicated that we could talk today at 4:00pm about the subject case. I just wanted to find out how your meeting with Jack Harvey went and what may need to be done at this point to move the case forward.

Also, I wanted to ask you about the status of the divisional to the subject case in which we filed a petition to make special last August (09/894,637). It apparently just needs to be forwarded to Exr. Pinchus Laufer (703/306-4160) for the petition to be acted upon.

Please let me know about these things by e-mail or voice-mail. Thanks for your assistance.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099454

000439

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
Sent: Monday, May 06, 2002 5:12 PM  
To: AS Shah@foleylaw.com  
Subject: RE: 09/590,692

Ankur ---

The meeting was rescheduled for Wednesday. I'll update you via email later that afternoon.

Richard --

TT 0099464

000440



-----Original Message-----

From: AShah@foleylaw.com [<mailto:AShah@foleylaw.com>]

Sent: Thursday, May 09, 2002 9:30 AM

To: Richard.Weisberger@USPTO.GOV

Subject: RE: 09/590,692

Richard -

Any news? Please update me. Thanks.

-Ankur D. Shah

TT 0099450

000441

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]

Sent: Thursday, May 09, 2002 11:03 AM

To: AS Shah@foleylaw.com

Subject: RE: 09/590,692

i should have an update by the end of the day.

TT 0099453

000442

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]

Sent: Thursday, May 09, 2002 5:40 PM

To: ASHah@foleylaw.com

Subject: RE: 09/590,692

work in progress

TT 0099449

000443

-----Original Message-----

From: Shah, Ankur D.

Sent: Thursday, May 09, 2002 6:09 PM

To: 'Richard.Weisberger@USPTO.GOV'

Subject: RE: 09/590,692

Thanks. Can we find out how your meetings went? Is the case back on track for allowance? Can I help in any way?

-Ankur D. Shah

TT 0099448

000444

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]

Sent: Tuesday, May 14, 2002 3:49 PM

To: AShah@foleylaw.com

Subject: RE: 09/590,692

Ankur :

For reasons I prefer not to discuss, an impediment to the allowance of this case will be overcome. I should be able to wrap it up by Tuesday May 21.

-- Richard

TT 0099467

000445

-----Original Message-----

From: AShah@foleylaw.com [mailto:AShah@foleylaw.com]

Sent: Tuesday, May 14, 2002 3:38 PM

To: Richard.Weisberger@USPTO.GOV

Subject: RE: 09/590,692

Richard:

Can we get any information on the progress of subject case or on the movement of the divisional to the petitions examiner (see below)? Thanks in advance.

-Ankur

TT 0099468

000446

-----Original Message-----

From: Shah, Ankur D.

Sent: Tuesday, May 21, 2002 3:16 PM

To: 'Richard.Weisberger@USPTO.GOV'

Subject: RE: 09/590,692

TT 0099473

000447

Hello Richard:

Can you update me on the progress of the case? Thanks.

-Ankur D. Shah

TT 0099474



-----Original Message-----

From: AS Shah@foleylaw.com [<mailto:AS Shah@foleylaw.com>]

Sent: Friday, May 31, 2002 2:31 PM

To: Richard.Weisberger@USPTO.GOV

Subject: RE: 09/590,692

Richard:

Per our discussion, the information for forwarding the divisional app. is at the bottom of this e-mail chain. I look forward to hearing from you on Monday or Tuesday of next week. Thanks.

-Ankur D. Shah

TT 0099472

000449

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]  
Sent: Monday, June 24, 2002 4:08 PM  
To: AShah@foleylaw.com  
Subject: RE: 09/590,692

Ankur :

I'm out of the office today. I'll call you tomorrow afternoon (I should have favorable news). Can you forward the serial number and filing date for the specification incorporated by reference on page 8 of the instant specification.

Richard --

How are mother and child?

TT 0099471

000450

-----Original Message-----

From: AS Shah@foleylaw.com [mailto:AS Shah@foleylaw.com]

Sent: Tuesday, June 25, 2002 10:08 AM

To: Richard.Weisberger@USPTO.GOV

Subject: RE: 09/590,692

Richard:

Mother and daughter are fine. I am a bit sleepy.

TT 0099490

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [mailto:[Richard.Weisberger@USPTO.GOV](mailto:Richard.Weisberger@USPTO.GOV)]

Sent: Tuesday, June 25, 2002 2:51 PM

To: AShah@foleylaw.com

Subject: RE: 09/590,692

I had an unscheduled meeting today with the Federal Reserve Bank. I may not be able to speak with you today. If not, I'll contact you tomorrow.

Richard --

PS Her mother's looks, I pray.

TT 0099491

000452

-----Original Message-----

From: AS Shah@foleylaw.com [mailto:AS Shah@foleylaw.com]

Sent: Wednesday, June 26, 2002 3:19 PM

To: Richard.Weisberger@USPTO.GOV

Subject: RE: 09/590,692

Richard:

We were anxious to find out the latest developments and learn the good news today. I just left you a voice-mail to that effect. I look forward to hearing from you. Thanks.

-Ankur D. Shah

TT 0099447

000453

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]

Sent: Wednesday, June 26, 2002 4:01 PM

To: AS Shah@foleylaw.com

Subject: RE: 09/590,692

It turns that our meeting was scheduled for two days. I'll call you when upon its completion.

Richard --

TT 0099446

000454

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]

Sent: Thursday, June 27, 2002 4:56 PM

To: ASbah@foleylaw.com

Subject: RE: 09/590,692

Ankur -

TT 0099493

000455

No new prior art was found showing the combination of features of the MD software characterized in claims 22,29 and 35, and the Notice of Allowance will be mailed early next week, In addition, I've ordered SN 09/971087 and 09/894637. Let's see if we can quickly dispose of these cases. Lastly, I'm looking at 09/589,751 to see if the lack of the static pricing display presents issues under 112 1st or 2nd and/or 103.

Richard

TT 0099494

000456



-----Original Message-----

From: Shah, Ankur D.

Sent: Thursday, June 27, 2002 5:20 PM

To: 'Richard.Weisberger@USPTO.GOV'

Subject: RE: 09/590,692

Richard:

Thank for you this positive information.

Regarding the subject case in which the Notice of Allowance will be issued early next week, you are no doubt aware of the sense of urgency associated

**TT 0099459**

000457

with it and of my client's strong interest in its prosecution. Accordingly, please send me a copy of the Notice of Allowance via facsimile as early as possible next week. My facsimile number is (202) 672-5399. We will then await receipt of the official notice by U.S. mail.

Also, regarding the other cases you mentioned below, I have those files in my office and am ready to work with you on rapidly advancing their prosecution.

Best regards.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099460

-----Original Message-----

From: Shah, Ankur D.

Sent: Wednesday, July 03, 2002 2:53 PM

To: 'Richard.Weisberger@USPTO.GOV'

Subject: RE: 09/590,692

Richard:

I tried to contact you a few times yesterday and today, sometimes with my client on the line as well, regarding the Notice of Allowance that was to have been mailed early this week. I left you a voice-mail yesterday regarding the same.

Please let me know the situation. Based on your e-mail from last week, the president of the company was expecting that we would have be able to confirm that the case had been allowed before the 4th of July holiday.

Any information you can provide would be helpful.

Thank you.

-Ankur D. Shah  
(202) 945-6132

TT 0099458

000459

**From:** Shah, Ankur D. [AShah@foleylaw.com]  
**Sent:** Wednesday, July 03, 2002 5:34 PM  
**To:** Steve Borsand (TT)  
**Subject:** NOA

**Attachments:** Untitled.pdf

Steve:

Here is a copy of the cover of the notice of allowability. It was just faxed to me by the Examiner.

-Ankur  
<<Untitled.pdf>>

TT 0099598

000460

<b>Notice of Allowability</b>	Application No.	Applicant(s)	
	09/590,692	KEMP ET AL.	
	Examiner	Art Unit	
	Richard C. Weisberger	2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to amendment A.

2.  The allowed claim(s) is/are 22-70.

3.  The drawings filed on \_\_\_\_\_ are accepted by the Examiner.

4.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some\* c)  None of the:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

5.  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
(a)  The translation of the foreign language provisional application has been received.

6.  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

8.  CORRECTED DRAWINGS must be submitted.  
(a)  including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  
1)  hereto or 2)  to Paper No. \_\_\_\_\_  
(b)  including changes required by the proposed drawing correction filed \_\_\_\_\_ which has been approved by the Examiner.  
(c)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the top margin (not the back) of each sheet. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

9.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1 <input type="checkbox"/> Notice of References Cited (PTO-892)	2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____
5 <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. <u>1,13</u>	6 <input checked="" type="checkbox"/> Examiner's Amendment/Comment
7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material	8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance
	9 <input type="checkbox"/> Other

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]

Sent: Wednesday, July 03, 2002 5:50 PM

To: ASah@foleylaw.com

Subject: RE: 09/590,692

I think I mentioned to you that I'm studying for a Master's in Finance.  
Anyway, I tend to keep odd office hours. If you are still there, I can FAX  
you a copy of the Notice of Allowance.

Richard --

TT 0099480

000462

-----Original Message-----

From: AShah@foleylaw.com [mailto:AShah@foleylaw.com]

Sent: Friday, July 12, 2002 10:11 AM

To: Richard.Weisberger@USPTO.GOV

Subject: RE: 09/590,692

Hello Richard:

I just tried calling but your voice-mail was full. How did you do that?

I informed our client last Wednesday evening, July 3rd, of the good news after you faxed me a copy of the Notice of Allowability. Based on your e-mails, I expected to have received the original Notices of Allowance and Allowability in the mail by now. Our firm hasn't received it and according to the PTO computer, nothing has been sent out.

Please contact me by telephone or e-mail to let me know the status.

TT 0099461

Thank you.

000463

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashab@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099462

000464



-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [mailto:[Richard.Weisberger@USPTO.GOV](mailto:Richard.Weisberger@USPTO.GOV)]  
Sent: Friday, July 12, 2002 12:16 PM  
To: AS Shah@foleylaw.com  
Subject: RE: 09/590,692

I check on it today (I've been out on holiday).

PS I have over 200 cases on my docket. If you multiply that by the number of times that you called, you can see how ones voice mail can fill.

Richard -

TT 0099481

000465

-----Original Message-----

From: Shah, Ankur D.

Sent: Tuesday, July 16, 2002 4:12 PM

To: 'Richard.Weisberger@USPTO.GOV'

Subject: RE: 09/590,692

Richard,

We await your update regarding the mailing of the official Notice of Allowance and Notice of Allowability, a copy of which you faxed to me on July 3, 2002.

Thanks.

-Ankur D. Shah

TT 0099482

000466

-----Original Message-----

From: AS Shah@foleylaw.com [mailto:AS Shah@foleylaw.com]  
Sent: Thursday, July 18, 2002 4:21 PM  
To: Richard.Weisberger@USPTO.GOV  
Subject: RE: 09/590,692

Richard:

We just tried reaching you by telephone and your mailbox is still full. The PTO customer service representative said that the notice of allowance had not yet been mailed.

It has now been over two weeks since your fax and three weeks since you indicated that it would be mailed. Please let me know if there is any problem. I might be able to help.

The delays in this case have been significant and patent term extension won't be of much use in this technical field. Of utmost importance is that the patent be able to issue promptly so that we can help our client stop the present infringement of their technology.

Your response is urgently sought.

Thanks.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099483

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]

Sent: Friday, July 19, 2002 3:21 PM

To: AS Shah@foleylaw.com

Subject: RE: 09/590,692

I'll personally walk it through the mail room on monday?

Richard

TT 0099484

000468

-----Original Message-----

From: Shah, Ankur D.

Sent: Friday, July 19, 2002 3:35 PM

To: 'Richard.Weisberger@USPTO.GOV'

Subject: RE: 09/590,692

Thank you. That would be appreciated. I will let my client know.

Best regards.

-Ankur D. Shah

TT 0099485

000469

-----Original Message-----

From: AS Shah@foleylaw.com [mailto:AS Shah@foleylaw.com]

Sent: Wednesday, July 24, 2002 2:24 PM

To: Richard.Weisberger@USPTO.GOV

Subject: RE: 09/590,692

Richard:

If you did indeed follow through on your e-mail below and had it mailed out on Monday, thank you. According to the USPTO computer, however, nothing was mailed out. This is causing much consternation at this end.

You indicated the case had been allowed and, on July 3rd, faxed us a copy of the notice of allowability. We were simply awaiting the official notice of allowability and notice of allowance and issue fee due papers. I don't have any explanation to provide my client as to why nothing has yet been received, since presumably your substantive work has been completed. If there is a problem, I am not quite sure what it might be.

Please respond. Thanks.

-Ankur D. Shah

TT 0099486

000470

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]

Sent: Wednesday, July 24, 2002 4:53 PM

To: AS Shah@foleylaw.com

Subject: RE: 09/590,692

I'm out of the office today: will check on the mail status tomorrow.

Rich

TT 0099487

000471

-----Original Message-----

From: AS Shah@foleylaw.com [mailto:AS Shah@foleylaw.com]

Sent: Thursday, July 25, 2002 6:55 PM

To: Richard.Weisberger@USPTO.GOV

Subject: RE: 09/590,692

Richard:

I hope you were able to resolve the problem today. Please let me know.

If not, I would like to schedule a meeting with you for this coming Monday so that I can come there personally and we can address and resolve any remaining issues. While perhaps unorthodox, at this point, such a meeting and visit are warranted in view of the importance of the patent to my client, the ongoing infringement of their technology and the sheer number of delays to which the prosecution of this application has been subjected.

Your prompt response is appreciated.

Best regards.

-Ankur D. Shah

TT 0099488



-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [mailto:[Richard.Weisberger@USPTO.GOV](mailto:Richard.Weisberger@USPTO.GOV)]

Sent: Friday, July 26, 2002 2:12 PM

To: AS Shah@foleylaw.com

Subject: RE: 09/590,692

Ankur-

According to my docket clerk the case has been forwarded to the mail room.  
Check the palm system Monday.

Richard

TT 0099489

000473

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Monday, March 03, 2003 10:48 AM  
**To:** Steve Borsand (TT)  
**Subject:** RE: 09/590,692 et al.

Steve -

My schedule is very tight both today and tomorrow. I'm available Wednesday afternoon, between 1:00-5:00. We can pick it up from there.

Richard -

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[\[mailto:Steve.Borsand@tradingtechnologies.com\]](mailto:Steve.Borsand@tradingtechnologies.com)  
**Sent:** Monday, March 03, 2003 8:45 AM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

Richard -- I would like to talk with you regarding these cases and the new references. Are you available to talk today or tomorrow? Also, I am going to be travelling to the east coast possibly next week and I would be happy to meet in person to try to reach closure on these cases (for that matter, I can come anytime that suits your schedule).

Thanks,

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [\[mailto:Richard.Weisberger@USPTO.GOV\]](mailto:Richard.Weisberger@USPTO.GOV)  
**Sent:** Tuesday, December 17, 2002 11:00 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: 09/590,692 et al.

I've been in sunny warm Miami this past week. I'll check the status of your cases this week.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[\[mailto:Steve.Borsand@tradingtechnologies.com\]](mailto:Steve.Borsand@tradingtechnologies.com)  
**Sent:** Tuesday, December 17, 2002 10:32 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/590,692 et al.

Richard -- Have you had a chance to look at the new references that we cited? I would like to talk with you about these at your convenience.

Thanks,

Steve

TT 0099511

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099512

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Tuesday, March 18, 2003 4:00 PM  
**To:** Steve Borsand (TT)  
**Subject:** RE: 09/590,692 et al.

Steve -

I'll call you between 4:00 and 4:15.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Tuesday, March 18, 2003 4:24 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

Richard -- I was hoping we can pick a time tomorrow to talk. I can be available any time that is good for you.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099507

000476

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Wednesday, March 19, 2003 11:36 AM  
**To:** Steve Borsand (TT)  
**Subject:** RE: 09/590,692 et al.

Steve -

Please consider the following amendment in combination -

said dynamic display of bids and asks traversing said static price column in response to changes in the inside market,

said column static price axis responsive to a one click centering feature that re-centers the inside market of the traders screen,

Richard -

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Wednesday, March 19, 2003 12:06 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

I am faxing them right now.

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV **[mailto:Richard.Weisberger@USPTO.GOV]**  
**Sent:** Wednesday, March 19, 2003 10:32 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: 09/590,692 et al.

Steve,

The RCE requests for 09/590,692 and 09/894,637 have not been matched to their files. Can you fax a copy to me at 703 872 9025?

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Tuesday, March 18, 2003 4:24 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

Richard -- I was hoping we can pick a time tomorrow to talk. I can be available any time that is good for you.

TT 0099519

Thanks,

000477

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099520

000478

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Thursday, March 27, 2003 10:39 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/590,692 et al.

Richard – I was wondering if you met with quality on Wed. and if you have a better idea of how long the review will take?

Thanks, Steve

TT 0099549

000479

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Friday, April 25, 2003 9:14 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/590,692 et al.

Richard – Did you find anything out yesterday re: the status of our cases in quality review?

Thanks, Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099550

000480



**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Friday, April 25, 2003 11:00 AM  
**To:** Steve Borsand (TT)  
**Subject:** RE: 09/590,692 et al.

Yes. The cases are scheduled to be reviewed within the three weeks. Again, I do foresee any issues, as I am co-editing with the reviewer an internal news letter on the patent board's business method decisions. We have a very strong working relationship.

Richard --

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Friday, April 25, 2003 10:14 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/590,692 et al.

Richard -- Did you find anything out yesterday re: the status of our cases in quality review?

Thanks, Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099514

000481

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, May 27, 2003 4:42 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** 09/590,692 et al.

**Attachments:** references.doc

Examiner Weisberger – Attached is a list of the references that we would prefer to be made of record in the various cases. Each page of the attached corresponds to a different case. Every reference listed on the attached was either cited by you or initialed as being considered by you in at least one of the four pending cases. Also, the most relevant references are already officially of record in each of the four cases and we are doing this clean-up out of an abundance of caution. Call me if you have any questions. Please tell us if you want us to prepare PTO 892 forms with all of the references listed. Also, if there is a need for copies of any references, let me know and I can have those made.

In addition, there is one other reference (US 2002/0138401 A1) that I believe should already be of record in each of the cases. This was a reference that was discussed at the interviews of March 13, 2003, but this reference has yet to be listed on a PTO form that we have seen. In the spirit of completeness, I wanted to make sure I list that here as well (it is not listed in the attached).

Thanks for considering this,

Steve

<<references.doc>>

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099551

000482

**09/590,692:**

4,903,201 (cited in 09/589,751)

5,101,353 (cited in 09/589,751)

5,946,667 (cited in 09/589,751)

6,035,287 (cited in 09/589,751)

WO 95/26005 (cited in 09/589,751)

WO 99/30259 (cited in 09/894,637)

TT 0099552

**09/894,637:**

4,903,201 (cited in 09/589,751)  
5,101,353 (cited in 09/589,751)  
5,946,667 (cited in 09/589,751)  
6,035,287 (cited in 09/589,751)  
WO 95/26005 (cited in 09/589,751)

**TT 0099553**

09/971,087:

- 5,689,651 (cited in 09/590,692 and 09/894,637)
- 5,774,877 (cited in 09/590,692 and 09/894,637)
- 5,793,301 (cited in 09/590,692 and 09/894,637)
- 5,797,002 (cited in 09/590,692 and 09/894,637)
- 5,845,266 (cited in 09/590,692 and 09/894,637)
- 5,915,245 (cited in 09/590,692 and 09/894,637)
- 5,963,923 (cited in 09/590,692 and 09/894,637)
- 6,012,046 (cited in 09/590,692 and 09/894,637)
- 6,014,643 (cited in 09/590,692 and 09/894,637)
- 6,098,051 (cited in 09/590,692 and 09/894,637)
- 6,195,647 (cited in 09/590,692 and 09/894,637)
- 6,272,474 (cited in 09/590,692 and 09/894,637)
- 6,278,982 (cited in 09/590,692 and 09/894,637)
- 4,903,201 (cited in 09/589,751)
- 5,101,353 (cited in 09/589,751)
- 5,946,667 (cited in 09/589,751)
- 6,035,287 (cited in 09/589,751)
- WO 95/26005 (cited in 09/589,751)
- 4,674,044 (cited in 09/590,692 and 09/894,637)
- 4,750,135 (cited in 09/590,692 and 09/894,637)
- 5,270,922 (cited in 09/590,692 and 09/894,637)
- 5,924,083 (cited in 09/590,692 and 09/894,637)
- WO 99/30259 (cited in 09/894,637)
- [www.tradingtechnologies.com/products/xtrade\\_full.html](http://www.tradingtechnologies.com/products/xtrade_full.html) (viewed 5/22/2001)  
(cited in 09/590,692 and 09/894,637)
- Kharouf, a trading room with a view, Futures 27, 11-11/1998  
(cited in 09/590,692 and 09/894,637)

09/589,751:

5,038,284 (cited in all other cases)  
5,077,665 (cited in all other cases)  
5,136,501 (cited in all other cases)  
5,297,031 (cited in all other cases)  
5,297,032 (cited in all other cases)  
5,689,651 (cited in all other cases)  
5,774,877 (cited in all other cases)  
5,793,301 (cited in all other cases)  
5,797,002 (cited in all other cases)  
5,915,245 (cited in 09/590,692 and 09/894,637)  
5,924,082 (cited in all other cases)  
5,963,923 (cited in 09/590,692 and 09/894,637)  
6,014,643 (cited in 09/590,692 and 09/894,637)  
6,098,051 (cited in 09/590,692 and 09/894,637)  
6,131,087 (cited in all other cases)  
6,134,535 (cited in all other cases)  
6,195,647 (cited in 09/590,692 and 09/894,637)  
6,272,474 (cited in 09/590,692 and 09/894,637)  
6,278,982 (cited in 09/590,692 and 09/894,637)  
6,282,521 (cited in all other cases)  
2002/0055899 (cited in all other cases)  
4,674,044 (cited in 09/590,692 and 09/894,637)  
4,750,135 (cited in 09/590,692 and 09/894,637)  
5,270,922 (cited in 09/590,692 and 09/894,637)  
5,924,083 (cited in 09/590,692 and 09/894,637)  
WO 00/65510 (cited in all other cases)  
WO 01/16830 (cited in all other cases)  
WO 01/22315 (cited in all other cases)  
WO 01/88808 (cited in all other cases)  
WO 99/30259 (cited in 09/894,637)  
[www.tradingtechnologies.com/products/xtrade\\_full.html](http://www.tradingtechnologies.com/products/xtrade_full.html) (viewed 5/22/2001)  
(cited in 09/590,692 and 09/894,637)  
Kharouf, a trading room with a view, Futures 27, 11-11/1998  
(cited in 09/590,692 and 09/894,637)

TT 0099555

From: Richard.Weisberger@USPTO.GOV  
Sent: Monday, August 25, 2003 3:39 PM  
To: Steve Borsand (TT)  
Subject: RE: 09/590,692 et al.

Steve -

I'll give you a ring tomorrow.

Richard

-----Original Message-----

From: Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
Sent: Monday, August 25, 2003 2:12 PM  
To: Richard.Weisberger@uspto.gov  
Subject: 09/590,692 et al.

Rich -- Could you please give me a call? I would just like to get a status on what is going on in the quality review of the various cases. I will try to reach you by phone as well.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099513

000487

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Monday, September 08, 2003 12:47 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/590,692 et al.

Rich -- Could you please call me at 312-476-1018? (I left you a voicemail as well).

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099557

000488



**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Friday, October 03, 2003 1:27 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/590,692 et al.

Rich – I left you a voicemail as well. Could you please give me a call to tell me at least a quick status? Last time we talked, we agreed to talk on 10/3.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099558

000489

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, October 07, 2003 9:30 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/690,052 et al.

Rich -- I am hoping we can talk today about status. Several weeks ago we agreed to talk on 10/3.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099559

000490

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, October 21, 2003 2:34 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/590,692 et al.

Rich – I left you a voicemail as well. I believe all of the documents have been filed. Please confirm that you have everything you need to mail the notice of allowance. Also, will you be sending that shortly?

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099562

000491

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, March 16, 2004 11:32 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 10/237,131

Richard – I wanted to give you a heads up that on 3/12/04, we filed amended claims as we had discussed in this continuation directed to the feature of repositioning/recentering. You had actually suggested that we propose independent claims with this limitation in the past. This is the file that I think was originally assigned to a different examiner even though it is a straight continuation from the 09/590,692 case. In the next week or so I will be checking to make sure that the IDSs in this case are up to date and if they are not we will file an additional IDS.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099591

000492



**From:** Shah, Ankur D. [AShah@foleylaw.com]  
**Sent:** Wednesday, September 11, 2002 4:50 PM  
**To:** Richard.Weisberger@USPTO.GOV  
**Cc:** Steve Borsand (TT)  
**Subject:** Scheduling Interviews (09/589,751;09/894,637;09/971,087)

Richard:

You have my condolences on this anniversary of the tragedy.

We tried calling you a few times today without much luck.

So that my client can make the necessary travel arrangements, I propose we schedule the interviews for Wednesday, September 18th in the afternoon. This will allow us enough time to discuss the issues and made any changes necessary to place the cases in condition for allowance before the end of the month.

Please let me know by e-mail or voice-mail if this is agreeable to you. We can still discuss the cases by telephone this week to remove some issues in advance if you like.

Thanks.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099502

000494

<b>Interview Summary</b>	Application No. 09/894,637	Applicant(s) KEMP ET AL	
	Examiner Richard C Weisberger	Art Unit 3624	

All participants (applicant, applicant's representative, PTO personnel):

- (1) Richard C Weisberger. (3) Steve Borsand.  
 (2) Ankur Shaw. (4) \_\_\_\_\_

Date of Interview: 18 September 2002.

Type: a)  Telephonic b)  Video Conference  
 c)  Personal [copy given to: 1)  applicant 2)  applicant's representative]

Exhibit shown or demonstration conducted: d)  Yes e)  No.  
 If Yes, brief description: Trading Technologies Software.

Claim(s) discussed: 1-21.

Identification of prior art discussed: \_\_\_\_\_

Agreement with respect to the claims f)  was reached. g)  was not reached. h)  N/A.

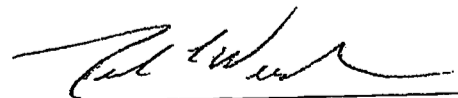
Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The subject matter of the interview was directed to a preferred embodiment of the invention. Claim language was proposed by the examiner to capture this embodiment. Agreement was reached that the applicant would file an amendment canceling claims 1-21 (without prejudice) and adding claims comprising the agreed upon language.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

i)  It is not necessary for applicant to provide a separate record of the substance of the interview (if box is checked).

Unless the paragraph above has been checked, THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

  
 Examiner's signature, if required

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Monday, September 23, 2002 2:05 PM  
**To:** Steve Borsand (TT)  
**Subject:** RE: 09/894,637 and 09/971,087

Hi Steve

Did you consider claim amendments for 09/589751?

Richard -

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Monday, September 23, 2002 2:47 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/894,637 and 09/971,087

Examiner Weisberger:

I left you a voicemail on this as well today. I thought I would also drop you an email (I think Ankur told me that you prefer communicating thru email when possible). I just wanted to see when we can talk about the proposed new claims that were faxed to you last week. Hopefully we can talk asap to bring those two cases to closure. Once we reach agreement on the claims, we can immediately turn around an amendment to you.

Please call me at 312-476-1018 to discuss. Ankur is out of the office most of this week so I will be the contact on this.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099534

000496



From: Richard.Weisberger@USPTO.GOV  
Sent: Tuesday, September 24, 2002 4:15 PM  
To: Steve Borsand (TT)  
Subject: RE: 09/894,637 et al.

Steve --

I have your FAX. I'll try to get to you this afternoon. If not, I'll call you in the morning.

Richard --

-----Original Message-----

From: Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
Sent: Tuesday, September 24, 2002 12:22 PM  
To: richard.weisberger@uspto.gov  
Subject: 09/894,637 et al.

Richard -- I sent you a fax this morning with proposed changes to the claims for 09/589,751. Can we talk today by phone re: all three cases?

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099506

000497

-----Original Message-----

From: Shah, Ankur D.

Sent: Thursday, September 26, 2002 4:09 PM

To: 'Richard.Weisberger@USPTO.GOV'

Cc: Steven F. Borsand (E-mail)

Subject: Amendments (09/894,637; 09/589,751; 09/971,087)

Richard -

We have the amendments in the three cases ready to fax to you. Please give me call and we will fax it to you immediately.

Thanks.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

TT 0099497

000498

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099498

000499

From: Richard.Weisberger@USPTO.GOV  
Sent: Thursday, September 26, 2002 5:04 PM  
To: AShah@foleylaw.com  
Cc: Steve Borsand (TT)  
Subject: RE: Amendments (09/894,637; 09/589,751; 09/971,087)

Have the amendments hand delivered to the 7th floor receptionist at Crystal Park 5. If you are still around, you can Fax the draft to 703 308 3637. I'll call you in the late morning (11:00 or so) to discuss any remaining issues, which should be few to none.

PS I can FAX you a copy of the interview summary record, but the notice of allowance will have to wait until the case is reviewed by our second set of eyes (This should be a perfunctory step in view of the parent application).

Richard --

-----Original Message-----

From: AShah@foleylaw.com [mailto:AShah@foleylaw.com]  
Sent: Thursday, September 26, 2002 5:22 PM  
To: Richard.Weisberger@USPTO.GOV  
Cc: steve.borsand@tradingtechnologies.com  
Subject: RE: Amendments (09/894,637; 09/589,751; 09/971,087)

Richard:

The amendments were faxed to your attention to the TC 3600 main fax no. with a cover entitled "Courtesy Copy". The hard copies are being hand-delivered to you tomorrow morning.

Steve Borsand and I need to discuss these with you to ensure that everything is in order and to clear up the last issues in these cases. Please give me a call in the morning and I will connect Steve. I will also try calling you in the morning.

Best regards.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

-----Original Message-----

From: Shah, Ankur D.  
Sent: Thursday, September 26, 2002 4:09 PM  
To: 'Richard.Weisberger@USPTO.GOV'  
Cc: Steven F. Borsand (E-mail)  
Subject: Amendments (09/894,637; 09/589,751; 09/971,087)

TT 0099532

000500

Richard -

We have the amendments in the three cases ready to fax to you. Please give me call and we will fax it to you immediately.

Thanks.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099533

000501

**From:** Shah, Ankur D. [AShah@foleylaw.com]  
**Sent:** Friday, September 27, 2002 2:44 PM  
**To:** Richard.Weisberger@USPTO.GOV  
**Cc:** Steve Borsand (TT)  
**Subject:** RE: Amendments (09/894,637; 09/589,751; 09/971,087)

Richard:

I assume you have now received and reviewed the amendments faxed yesterday and hand-carried today.

We need to talk to you today to ensure that everything is in order and to address any final issues, such as:

- 1) The language of the interview summary and Reasons for Allowance remarks in the Notice of Allowability
- 2) The manner in which you will be dealing with the effective reopening of prosecution in the 09/589,751 case after the Ex parte Quayle action, the corresponding withdrawal of the double patenting rejection and the revocation of the now unnecessary terminal disclaimer in that case.

I have tried calling you but got voice-mail.

Please give me a call soon. Thanks.

-Ankur

TT 0099503

000502

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Friday, March 21, 2003 11:50 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** FW: proposed amendments

**Attachments:** newwording.doc

woops, I forgot to attach the document. Here it is:

-----Original Message-----

**From:** Steve Borsand (TT)  
**Sent:** Friday, March 21, 2003 11:49 AM  
**To:** 'Richard.Weisberger@USPTO.GOV'  
**Subject:** RE: proposed amendments

Richard -- Attached is the language that we will use to replace the selecting limitation in what was numbered claims 41 and 76 of the '637 case. I know you said you didn't need to see it, but I just wanted to get this to you while we are preparing the amendment papers.

Thanks,

steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Friday, March 21, 2003 10:25 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: proposed amendments

Steve -

I'm quite satisfied with the amendments. The claims reflect with great precision the various functions of TT products. This process although somewhat arduous yielded a clear and definitive set of property boundaries, without limiting the scope of the claimed inventions unnecessarily. Follow up with the amendments and email your any notes that you have prepared directed to reasons for allowance.

Richard --

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Thursday, March 20, 2003 3:58 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** proposed amendments

TT 0099566

000503

Richard - Here are the proposed amendments in the 3 cases. The first file goes with the 590,692 case, the second is the 894,637 and the third is 589,751. The documents have redlined turned on to show the differences with the previous claims and which dependent claims are new. In the '751, the document contains just each independent claim and the changes thereto.

I will call you shortly.

Steve

<<692claimsamended.doc>> <<637claimsamend.doc>> <<751amend.doc>>

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099567

000504



in response to a selection of a particular location of the order entry region by a single action of a user input device, setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange.

**TT 0099568**

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Wednesday, February 04, 2004 10:49 AM  
**To:** Steve Borsand (TT)  
**Subject:** RE: 09/894,637

I'll check that as well.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Wednesday, February 04, 2004 11:48 AM  
**To:** Weisberger, Richard  
**Subject:** 09/894,637

Richard -- one more thing, the public pair system does not show a terminal disclaimer being entered or any of the recently filed IDSs.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099505

000506



**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Wednesday, March 19, 2003 2:04 PM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** RE: 09/590,692 et al.

ok

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Wednesday, March 19, 2003 1:54 PM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: 09/590,692 et al.

Steve -

I'll need to back up our interview to 5:00.

Richard --

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Wednesday, March 19, 2003 12:06 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

I am faxing them right now.

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Wednesday, March 19, 2003 10:32 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: 09/590,692 et al.

Steve,

The RCE requests for 09/590,692 and 09/894,637 have not been matched to their files. Can you fax a copy to me at 703 872 9025?

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, March 18, 2003 4:24 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

TT 0099615

000508

Richard – I was hoping we can pick a time tomorrow to talk. I can be available any time that is good for you.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099616

000509

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Thursday, March 20, 2003 2:58 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** proposed amendments

**Attachments:** 692claimsamended.doc; 637claimsamend.doc; 751amend.doc

Richard - Here are the proposed amendments in the 3 cases. The first file goes with the 590,692 case, the second is the 894,637 and the third is 589,751. The documents have redlined turned on to show the differences with the previous claims and which dependent claims are new. In the '751, the document contains just each independent claim and the changes thereto.

I will call you shortly.

Steve

<<692claimsamended.doc>> <<637claimsamend.doc>> <<751amend.doc>>

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099619

000510

09/590,692 PROPOSED AMENDMENT (3/20/03)

22. A method of placing a trade order for a commodity on an electronic exchange having an inside market with a highest bid price and a lowest ask price, using a graphical user interface and a user input device, said method comprising:

Deleted: ¶

setting a preset parameter for the trade order;

Deleted: and having preset parameters for trade orders

displaying market depth of the commodity, through a dynamic display of a plurality of bids and a plurality of asks in the market for the commodity, including at least a portion of the bid and ask quantities of the commodity, the dynamic display being aligned with a static display of prices corresponding thereto, wherein the static display of prices does not move in response to a change in the inside market;

Deleted: the

Deleted: a

Deleted: traded in a market

displaying an order entry region aligned with the static display of prices

comprising a plurality of areas for receiving commands from the user input device to send trade orders, each area corresponding to a price of the static display of prices; and

Deleted: and

selecting a particular area in the order entry region through a single action of the

Deleted: initiating placement of a

Deleted: trade order of the commodity

user input device with a pointer of the user input device positioned over the particular area to set a plurality of additional parameters for the trade order and send the trade order to the electronic exchange.

Deleted: an

Deleted: in said dynamic displays of bids and asks

Deleted: ;

Deleted: wherein the contents of the trade order are based in part upon the preset parameters and the position of the pointer at the time of said single action.

Deleted: 23.

23. A method of placing a trade order according to claim 22, wherein said trade order is a buy order if the position of the pointer at the time of said single action is within a bid order entry region and wherein said trade order is a sell order if the position of the pointer at the time of said single action is within an ask order entry region.

Deleted: display

Deleted: display

24. The method of claim 23 wherein the bid order entry region overlaps with a bid display region and the ask order entry region overlaps with an ask display region.

Formatted: Bullets and Numbering

25. A method of placing a trade order according to claim 23, wherein the trade order is for a pre-determined fixed quantity and for a price corresponding to the position of the pointer at the time of said single action.

Deleted: 4

26. A method of placing a trade order according to claim 23, wherein the trade order is for a quantity equal to a current net position of the user in the commodity and for a price corresponding to the position of the pointer at the time of said single action.

Deleted: 5

27. A method of placing a trade order according to claim 23, wherein the trade order is for a quantity equal to a pre-determined fixed offset plus the sum of all quantities in the market at prices better than or equal to a price corresponding to the position of the pointer at the time of said single action and for a price corresponding to said position.

Deleted: 6

28. A method of placing a trade order according to claim 27, wherein said offset is equal to a first pre-determined value if a single action of a first type is taken and said offset is equal to a second pre-determined value if a single action of a second type is taken.

Deleted: 7

Deleted: 6

29. A method of placing a trade order according to claim 22, further comprising canceling said trade order in response to a subsequent single action of the user input device.

Deleted: 8

30. A computer readable medium having program code recorded thereon, for execution on a computer having a graphical user interface and a user input device, to place a trade order for a commodity on an electronic exchange having an inside market with a highest bid price and a lowest ask price, comprising:

Deleted: 29

Deleted: and having preset parameters for trade orders

a first program code for setting a preset parameter for the trade order;

a second program code displaying market depth of a commodity, through a dynamic display of a plurality of bids and a plurality of asks in the market for the commodity, including the bid and ask quantities of the commodity, aligned with a static

Deleted: first

Deleted: the

Deleted: traded in a market



display of prices corresponding thereto, wherein the static display of prices does not move in response to a change in the inside market;

a third program code for displaying an order entry region comprising a plurality of areas for receiving commands from the user input device to send trade orders, aligned with the static display of prices, each are corresponding to a price of the static display of prices; and

a fourth program code for receiving a command as a result of a selection of a particular area in the order entry region by a single action of the user input device with a pointer of the user input device positioned over the particular area, to set a plurality of additional parameters for the trade order and send the trade order to the electronic exchange.

Deleted: second

Deleted: initiating placement of

Deleted: a

Deleted: of the commodity

Deleted: through a single action of the user input device with a pointer of the user input device positioned over an area in said dynamic displays of bids and asks

Deleted: ; and

Deleted: a third program code for setting characteristics of the trade order based in part upon the preset parameters and the position of the pointer at the time of said single action.

Deleted: 0

Deleted: 29

Deleted: display

Deleted: display

31. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 30, further comprising program code for establishing that said trade order is a buy order if the position of the pointer at the time of said single action is within a bid order entry region and that said trade order is a sell order if the position of the pointer at the time of said single action is within an ask order entry region.

32. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 31, wherein the bid order entry region overlaps with a bid display region and the ask order entry region overlaps with an ask display region.

33. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 31, further comprising program code for establishing that the trade order is for a pre-determined fixed quantity and for a price corresponding to the position of the pointer at the time of said single action.

Deleted: 1

Deleted: 0

34. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 31, further comprising program code for establishing that the trade order is for a quantity equal to a current net position of the user in the commodity and for a price corresponding to the position of the pointer at the time of said single action.

Deleted: 2

Deleted: 0

35. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 31, further comprising program code for establishing that the trade order is for a quantity equal to a pre-determined fixed offset plus the sum of all quantities in the market at prices better than or equal to a price corresponding to the position of the pointer at the time of said single action and for a price corresponding to said position.

Deleted: 3

Deleted: 0

36. A computer readable medium having program code recorded thereon, for execution on a computer to place a trade order according to claim 35, further comprising program code for establishing that said offset is equal to a first pre-determined value if a single action of a first type is taken and said offset is equal to a second pre-determined value if a single action of a second type is taken.

Deleted: 4

Deleted: 3

37. A client system for placing a trade order for a commodity on an electronic exchange having an inside market with a highest bid price and a lowest ask price, the system comprising:

Deleted: 5

a parameter setting component for setting a preset parameter for the trade order;  
a display device for displaying market depth of a commodity, through a dynamic display of a plurality of bids and a plurality of asks in the market for the commodity, including the bid and ask quantities of the commodity, aligned with a static display of prices corresponding thereto, wherein the static display of prices does not move when the inside market changes, and for displaying an order entry region aligned with the static display of prices, comprising a plurality of areas for receiving commands to send trade orders, each area corresponding to a price of the static display of prices;

Deleted: the

Deleted: traded in a market

a user input device for positioning a pointer thereof over an area in the order entry region; and

Deleted: said dynamic displays of bids and asks and for initiating placement of a trade order of the commodity through a single action of the user input device

a trade order sending component for receiving a command as a result of a selection of the area in the order entry region by a single action of the user input device with a pointer of the user input device positioned over the area, to set a plurality of additional parameters for the trade order and send the trade order to the electronic exchange.

Deleted: and] a trade order characteristics setting component for setting characteristics of the trade order based in part upon preset parameters and the position of the pointer at the time of said single action.

38. A client system for placing a trade order for a commodity according to claim 37, wherein said trade order sending component establishes that said trade order is a buy order if the position of the pointer at the time of said single action is within a bid order entry region and that said trade order is a sell order if the position of the pointer at the time of said single action is within an ask order entry region.

Deleted: 6  
Deleted: 5  
Deleted: characteristics setting  
Deleted: display  
Deleted: display

39. A client system for placing a trade order for a commodity according to claim 38, wherein the bid order entry region overlaps with a bid display region and the ask order entry region overlaps with an ask display region.

40. A client system for placing a trade order for a commodity according to claim 38, wherein said trade order sending component establishes that the trade order is for a pre-determined fixed quantity and for a price corresponding to the position of the pointer at the time of said single action.

Deleted: 37  
Deleted: 6  
Deleted: characteristics setting

41. A client system for placing a trade order for a commodity according to claim 38, wherein said trade order sending component establishes that the trade order is for a quantity equal to a current net position of the user in the commodity and for a price corresponding to the position of the pointer at the time of said single action.

Deleted: 38  
Deleted: 6  
Deleted: characteristics setting

42. A client system for placing a trade order for a commodity according to claim 38, wherein said trade order sending component establishes that the trade order is

Deleted: 39  
Deleted: 6  
Deleted: characteristics setting

for a quantity equal to a pre-determined fixed offset plus the sum of all quantities in the market at prices better than or equal to a price corresponding to the position of the pointer at the time of said single action and for a price corresponding to said position.

43. A client system for placing a trade order for a commodity according to claim 42, wherein said trade order sending component establishes that said offset is equal to a first pre-determined value if a single action of a first type is taken and said offset is equal to a second pre-determined value if a single action of a second type is taken.

Deleted: 0

Deleted: 39

Deleted: characteristics setting

44. A method according to claim 22, wherein said displaying the market depth of a commodity traded in a market further comprises displaying said bids and asks in a vertical orientation.

Deleted: 1

45. A method according to claim 22, wherein said displaying the market depth of a commodity traded in a market further comprises displaying said bids and asks in a horizontal orientation.

Deleted: 2

46. A method according to claim 22, wherein a plurality of said displayed bids and asks in the market include bid and ask quantities of the commodity.

Deleted: 3

47. A method according to claim 22, wherein said displaying the market depth of a commodity traded in a market further comprises displaying said bids and asks in different colors.

Deleted: 4

48. A method according to claim 22, further comprising re-centering said prices corresponding to the bids and asks about an inside market price upon receipt of a re-centering instruction.

Deleted: 5

49. A method according to claim 22, further comprising dynamically displaying working orders in alignment with the prices corresponding thereto.

Deleted: 6

50. A method of displaying according to claim 22, further comprising dynamically displaying entered orders in alignment with the prices corresponding thereto, wherein said entered orders indicate a quantity of said commodity for which a trader's orders have been filled at said corresponding prices.

Deleted: 47

51. A method according to claim 22, wherein said displaying the market depth of a commodity traded in a market further comprises displaying said statically displayed prices in at least one direction in numerical order.

Deleted: 48

52. A method according to claim 22, wherein said displaying the market depth of a commodity traded in a market further comprises displaying said statically displayed prices along a single line in numerical order.

Deleted: 49

53. A method of displaying according to claim 22, wherein said displaying the market depth of a commodity traded in a market further comprises dynamically displaying a last traded quantity for said commodity in alignment with the price corresponding thereto.

Deleted: 0

54. A computer readable medium according to claim 30, further comprising program code to ensure that said displayed bids, asks and prices are oriented vertically.

Deleted: 1

Deleted: 29

55. A computer readable medium according to claim 30, further comprising program code to ensure that said displayed bids, asks and prices are oriented horizontally.

Deleted: 2

Deleted: 29

56. A computer readable medium according to claim 30, further comprising program code to ensure that a plurality of bids and asks in the market include bid and ask quantities of the commodity.

Deleted: 3

Deleted: 29

57. A computer readable medium according to claim 30, further comprising program code to ensure that bids and asks are displayed in different colors.

Deleted: 4

Deleted: 29

58. A computer readable medium according to claim 30, further comprising program code to ensure that said displayed prices corresponding to the bids and asks are re-centered about an inside market price upon receipt of a re-centering instruction.

Deleted: 5

Deleted: 29

59. A computer readable medium according to claim 30, further comprising program code for dynamically displaying working orders in alignment with the prices corresponding thereto.

Deleted: 6

Deleted: 29

60. A computer readable medium according to claim 30, further comprising program code for dynamically displaying entered orders in alignment with the prices corresponding thereto, wherein said entered orders indicate a quantity of said commodity for which a trader's orders have been filled at said corresponding prices.

Deleted: 57

Deleted: 29

61. A computer readable medium according to claim 30, further comprising program code to ensure that said statically displayed prices are displayed in at least one direction in numerical order.

Deleted: 58

Deleted: 29

62. A computer readable medium according to claim 30, further comprising program code to ensure that said statically displayed prices are displayed along a single line in numerical order.

Deleted: 59

Deleted: 29

63. A computer readable medium according to claim 30, further comprising program code for dynamically displaying a last traded quantity for said commodity in alignment with the price corresponding thereto.

Deleted: 0

Deleted: 29

64. A client system according to claim 37, wherein said displays are oriented vertically.

Deleted: 1

Deleted: 5

65. A client system according to claim 37, wherein said displays are oriented horizontally.

Deleted: 2

Deleted: 5

66. A client system according to claim 37, wherein said displays of the pluralities of bids and asks in the market include bid and ask quantities of the commodity.

Deleted: 3  
Deleted: 5

67. A client system according to claim 37, wherein said displays are displayed in different colors.

Deleted: 4  
Deleted: 5

68. A client system according to claim 37, wherein said display of prices corresponding to the bids and asks is re-centered about an inside market price upon re-centering instruction from a user.

Deleted: 5  
Deleted: 5

69. A client system according to claim 37, further comprising a display of working orders displayed in alignment with the prices corresponding thereto.

Deleted: 6  
Deleted: 5

70. A client system according to claim 37, wherein said display device displays entered orders in alignment with the prices corresponding thereto and wherein said entered orders indicate a quantity of said commodity for which a trader's orders have been filled at said corresponding prices.

Deleted: 67  
Deleted: 5

71. A client system according to claim 37, wherein said static display of prices is displayed in at least one direction in numerical order.

Deleted: 68  
Deleted: 5

72. A client system according to claim 37, wherein said static display of prices is displayed along a single line in numerical order.

Deleted: 69  
Deleted: 5

73. A client system according to claim 37, wherein said display device displays a last traded quantity for said commodity in alignment with the price corresponding thereto.

Deleted: 0  
Deleted: 5

74. The method of claim 22 wherein the market depth is based on an exchange order book and wherein the static display of prices does not move in response to the addition of a price to the exchange order book, the additional price comprising a displayed price.

75. The method of claim 74 wherein the static display of prices does not move in response to the removal of a price from the exchange order book, the removed price comprising a displayed price.

76. The method of claim 22 wherein the market depth is based on an exchange order book and the static display of prices never moves in response to a price change in the exchange order book relating to a price which is displayed.

77. The method of claim 22 wherein the plurality of additional parameters comprises a price and type of order.



09/894,637 PROPOSED CLAIM AMENDMENTS (3/20/03)

41. A method for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the method comprising:

Deleted: market

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a price level along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

Deleted: in association with

Deleted: s

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a price level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

Deleted: in association with the

Deleted: s

Deleted: and

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators moves in the bid or ask display regions relative to the common static price axis;

Deleted: can

Deleted: and

Deleted: when the inside market changes

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

selecting a particular location in the order entry region through a single action of a user input device to set a plurality of parameters for a trade order relating to the commodity and send the trade order to the electronic exchange.

Deleted: .

42. The method of claim 41 wherein the bid and ask display regions and the order entry region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

43. The method of claim 41 wherein the bid and ask display regions and the order entry region are oriented vertically.

44. The method of claim 41 wherein the bid and ask display regions and the order entry region are oriented horizontally.

45. The method of claim 41 wherein one of the plurality of locations of the bid display region comprises a blank region in which there is no first indicator displayed.

46. The method of claim 41 wherein one of the plurality of locations of the ask display region comprises a blank region in which there is no first indicator displayed.

47. The method of claim 41 further comprising the step of displaying at least a portion of the common static price axis in a price display region.

48. The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region comprise columns with a plurality of cells that are displayed as a grid such that the cells of each column are aligned.

49. The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented vertically.

50. The method of claim 47 wherein the bid display region, the ask display region, the order entry region and the price display region are oriented horizontally.

51. The method of claim 41 further comprising the steps of:

dynamically displaying a third indicator at one of the plurality of locations in the bid display region, the third indicator representing quantity associated with at least one

order to buy the commodity at a price different than the highest bid price currently available in the market; and

dynamically displaying a fourth indicator at one of the plurality of locations in the ask display region, the fourth indicator representing quantity associated with at least one order to sell the commodity at a price different than the lowest ask price currently available in the market.

52. The method of claim 51 wherein the first and third indicators are displayed in locations of the bid display region that are arranged along an axis which is parallel to the common static price axis.

53. The method of claim 51 wherein the second and fourth indicators are displayed in locations of the ask display region that are arranged along an axis which is parallel to the common static price axis.

54. The method of claim 51 wherein a location of the plurality of locations of the bid display region comprises a blank region in which there is no first or third indicator displayed.

Deleted: 2

Deleted: one of

55. The method of claim 51 wherein a location of the plurality of locations of the ask display region comprises a blank region in which there is no second or fourth indicator displayed.

Deleted: 3

Deleted: 4

Deleted: one of

56. The method of claim 51 further comprising the steps of:

displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and

displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

57. The method of claim 56 wherein the third and fourth indicators remain in the same location in the bid and ask display regions, respectively, before and after the first indicator is displayed at the second location.

58. The method of claim 57 wherein each location of the bid display region corresponds to a different price level along the common static price axis and each location of the ask display region corresponds to a different price level along the common static price.

59. The method of claim 51 further comprising the steps of:

displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and

displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

60. The method of claim 59 wherein the third and fourth indicators remain in the same location in the bid and ask display regions, respectively, before and after the second indicator is displayed at the second location.

61. The method of claim 60 wherein each location of the bid display region corresponds to a different price level along the common static price axis and each location of the ask display region corresponds to a different price level along the common static price.

62. The method of claim 41 wherein the order entry region comprises a bid order entry region comprising a plurality of locations for receiving commands to send buy orders, each location corresponding to a price level along the common static price axis, and an ask order entry region comprising a plurality of locations for receiving commands to send sell orders, each location corresponding to a price level along the common static price axis.

Deleted: 54

Deleted: further comprising the steps of:  
1 displaying

Deleted: ;

Deleted: 1 displaying

63. The method of claim 62 wherein the bid order entry region overlaps with the bid display region and the ask order entry region overlaps with the ask display region.

Deleted: 55. The method of claim 54 wherein the bid and ask order entry regions are displayed in association with the common static price axis such that each of the plurality of locations for receiving commands is associated with a price level on the common static price axis.

Deleted: 56

Deleted: 54

Deleted: comprises

Deleted: comprises

64. The method of claim 41 further comprising dynamically displaying an entered order indicator in association with the price levels arranged along the common static price axis.

Deleted: 5  
Deleted: 7

65. The method of claim 64 wherein the entered order indicator is displayed in an entered order region.

Deleted: 58  
Deleted: 57

66. The method of claim 41 further comprising dynamically displaying a last trade indicator in association with the common static price axis.

Deleted: 59

67. The method of claim 66 wherein the last trade indicator is displayed in a last trade region.

Deleted: 60  
Deleted: 59

Deleted: 1

68. The method of claim 41 further comprising the steps of:  
displaying the first indicator at a first location associated with a first price level on the common static price axis at a first time; and

displaying the first indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

Deleted: updating the display to  
Deleted: 1

Deleted: 2

69. The method of claim 41 further comprising the steps of:  
displaying the second indicator at a first location associated with a first price level on the common static price axis at a first time; and

displaying the second indicator at a second location associated with a different price level on the common static price axis at a second time subsequent to the first time.

Deleted: updating the display to

Deleted: 63

70. The method of claim 41 further comprising the steps of:  
displaying the first indicator at a first location associated with a particular price level on the common static price axis; and

repositioning the common static price axis such that the first indicator is displayed at a second location associated with the particular price level on the common static price axis.

71. The method of claim 41 further comprising the steps of:

Deleted: 64

displaying the second indicator at a first location associated with a particular price level on the common static price axis; and

repositioning the common static price axis such that the second indicator is displayed at a second location associated with the particular price level on the common static price axis.

72. The method of claim 41 wherein the bid and ask display regions are displayed in different colors.

Deleted: 65

73. The method of claim 41 wherein the first and second indicators are displayed in different colors.

Deleted: 66

74. The method of claim 41 wherein the bid and ask display regions are displayed in a window further comprising centering the display of the first and second indicators in the window upon receipt of a centering instruction.

Deleted: 67

Deleted: 1

75. The method of claim 41 wherein the bid and ask display regions are displayed separately.

76. The method of claim 41 wherein the first and second indicators are based on an exchange order book and wherein the price levels along the common static price axis do not move in response to the addition of a price to the exchange order book, the additional price comprising a price for which there is a corresponding displayed location in at least one of the bid and ask display regions.

77. The method of claim 76 wherein the price levels along the common static price axis do not move in response to the removal of a price from the exchange order

book, the removed price comprising a price for which there is a corresponding displayed location in at least one of the bid and ask display regions.

78. The method of claim 41 wherein the first and second indicators are based on an exchange order book and the price levels along the common static price axis never move in response to a price change in the exchange order book relating to a price which corresponds to a displayed location in at least one of the bid and ask display regions.

79. The method of claim 41 wherein the plurality of parameters comprises a price and type of order.

76. A computer readable medium having program code recorded thereon for execution on a computer for displaying market information relating to and facilitating trading of a commodity being traded in an electronic exchange having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the program code causing a machine to perform the following method steps:

Deleted: 68

Deleted: market

dynamically displaying a first indicator in one of a plurality of locations in a bid display region, each location in the bid display region corresponding to a price level along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

Deleted: in association with

Deleted: s

dynamically displaying a second indicator in one of a plurality of locations in an ask display region, each location in the ask display region corresponding to a price level along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market;

Deleted: in association with the

Deleted: s

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that when the inside market changes, the price levels along the common static price axis do not move and at least one of the first and second indicators moves in the bid or ask display regions relative to the common static price axis;

Deleted: can

Deleted: and

Deleted: when the inside market changes

Deleted: .

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

selecting a particular location in the order entry region through a single action of a user input device to set a plurality of parameters for a trade order relating to the commodity and send the trade order to the electronic exchange.

Deleted: 1



09/589,751 PROPOSED AMENDMENT (3/20/03)

1. A method of placing a trade order for a commodity on an electronic exchange using a client system with a user input device, the method comprising:

Deleted: and with preset parameters for trade orders

dynamically displaying a market depth of the commodity comprising information representing orders at an inside market and orders outside of the inside market through a display of prices and quantities of a plurality of bids and asks in the market for the commodity; displaying an order entry region comprising a plurality of areas for receiving commands to send trade orders. each area associated with a price of the display of prices;

Deleted: dynamic

Deleted: and

initiating placement of a trade order relating to the commodity at a price outside of the inside market in response to a single action of the user input device with a pointer of the user input device positioned over an area in said order entry region associated with the price;

Deleted: dynamic display

changing the price of the trade order based upon a preset parameter; and

Deleted: setting

Deleted: a

Deleted: in part

sending the trade order to the electronic exchange in response to the single action of the user input device wherein the trade order comprises the modified price.

Deleted: and the position of the pointer at the time of said single action.

15. A computer readable medium having program code recorded thereon for execution on a computer to place a trade order for a commodity on an electronic exchange, comprising:

a first program code for dynamically displaying a market depth of the commodity comprising information representing orders at an inside market and orders outside of the inside market through a display of prices and quantities of a plurality of bids and asks in the market for the commodity;

Deleted: dynamic

a second program code for displaying an order entry region comprising a plurality of areas for receiving commands to send trade orders, each area associated with a price of the display of prices;

a third program code for initiating placement of a trade order relating to the commodity at a price outside of the inside market in response to a single action of the user input device with a pointer of the user input device positioned over an area in said order entry region associated with the price; and

a fourth program code for changing the price of the trade order based upon a preset parameter; and

a fifth program code for sending the trade order to the electronic exchange in response to the single action of the user input device wherein the trade order comprises the modified price.

Deleted: second

Deleted: dynamic display

Deleted: third

Deleted: setting

Deleted: a

Deleted: in part

Deleted: and the position of the pointer at the time of said single action.

29. A client system for placing a trade order for a commodity on an electronic exchange, the system comprising:

a display device for dynamically displaying a market depth of the commodity comprising information representing orders at an inside market and orders outside of the inside market through a display of prices and quantities of a plurality of bids and asks in the market for the commodity;

a user input device for positioning a pointer thereof over an area in an order entry region, the order entry region comprising a plurality of areas, each area associated with a price of the display of prices, and for initiating placement of a trade order relating to the commodity at a price level away from the inside market through a single action of the user input device; and

Deleted: dynamic

Deleted: said dynamic display

a trade order characteristics setting component for changing the price of the trade order based upon a preset parameter; and

Deleted: setting

Deleted: a

Deleted: in part

Deleted: and the position of the pointer at the time of said single action.

a trade order sending component for sending the trade order to the electronic exchange in response to the single action of the user input device wherein the trade order comprises the modified price.

43. A method of placing a trade order for a commodity on an electronic exchange using a client system with a user input device, the method comprising:

dynamically displaying a market depth of the commodity comprising information representing orders at an inside market and orders outside of the inside market through a display of prices and quantities of a plurality of bids and asks in the market for the commodity;

Deleted: dynamic

setting a plurality of parameters for trading;

displaying an order entry region comprising a plurality of areas for receiving commands to send trade orders, each area associated with a price of the display of prices;

initiating placement of a trade order relating to the commodity at a price outside of the inside market in response to a single action of the user input device with a pointer of the user input device positioned over an area in said order entry region associated with the price; and

Deleted: dynamic display

changing the price of the trade order based upon at least one of the preset parameters.

Deleted: wherein a price of the trade order is based in part upon at least one of the parameters and the position of the pointer at the time of said single action.

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Friday, March 21, 2003 11:49 AM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** RE: proposed amendments

Richard -- Attached is the language that we will use to replace the selecting limitation in what was numbered claims 41 and 76 of the '637 case. I know you said you didn't need to see it, but I just wanted to get this to you while we are preparing the amendment papers.

Thanks,

steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Friday, March 21, 2003 10:25 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: proposed amendments

Steve -

I'm quite satisfied with the amendments. The claims reflect with great precision the various functions of TT products. This process although somewhat arduous yielded a clear and definitive set of property boundaries, without limiting the scope of the claimed inventions unnecessarily. Follow up with the amendments and email your any notes that you have prepared directed to reasons for allowance.

Richard --

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Thursday, March 20, 2003 3:58 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** proposed amendments

Richard - Here are the proposed amendments in the 3 cases. The first file goes with the 590,692 case, the second is the 894,637 and the third is 589,751. The documents have redlined turned on to show the differences with the previous claims and which dependent claims are new. In the '751, the document contains just each independent claim and the changes thereto.

I will call you shortly.

Steve

<<692claimsamended.doc>> <<637claimsamend.doc>> <<751amend.doc>>

TT 0099641

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099642

000533

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Friday, March 21, 2003 4:51 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** notes

**Attachments:** reasons.doc

Richard – here is my stab at the notes we discussed. I will fax you an additional copy of the amendments on Sunday. As I mentioned, if you have any questions feel free to call me at 847-477-9818.

Thanks,

Steve

<<reasons.doc>>

**TT 0099609**

000534

09/590,692:

None of the art of record teaches or suggests methods and/or systems having elements as recited in the claims. For at least the following reasons, the claims are allowable. The references do not teach or suggest a method of placing a trade order, computer readable medium with instructions for placing a trade order, and/or a client system for placing a trade order that dynamically displays bids and asks for a commodity in alignment with a static display of prices. Also, the references do not teach or suggest the combination of such a static display of prices and allowing for parameters of a trade order to be set and for the trade order to be sent to an electronic exchange in response to a selection of an area in an order region through a single action of a user input device. In addition, these features in combination with the other claim features of claims \_\_\_\_, \_\_\_\_ and/or \_\_\_\_ render the claims allowable.

09/894,637:

None of the art of record teaches or suggests methods and/or systems having elements as recited in the claims. For at least the following reasons, the claims are allowable. The references do not teach or suggest a method for displaying market information and facilitating trading and/or a computer readable medium having program code for displaying market information and facilitating trading that dynamically displays indicators representing quantity associated with orders to buy or sell a commodity in display regions having locations corresponding to price levels along a common static price axis. Also, the references do not teach or suggest the combination of such a display of market information in association with a common static price axis and allowing for parameters of a trade order to be set and for the trade order to be sent to an electronic exchange in response to a selection of a location in an order entry region through a single action of a user input device. In addition, these features in combination with other claim features of claim \_\_\_\_ and \_\_\_\_ render the claims allowable.

09/589,751:

None of the art of record teaches or suggests methods and/or systems having elements as recited in the claims. For at least the following reasons, the claims are allowable. The references do not teach or suggest a method of placing a trade order, a computer readable medium having program code for execution on a computer to place a trade order, and/or a client system for placing a trade order in which market information is displayed through a display of prices and quantities of bids and asks and in which orders are initiated at prices outside of the inside market in response to a single action of a user input device with a pointer associated with a price, where the price of the trade order is changed based upon a preset parameter. In addition, these features in combination with other claim features of claims \_\_\_\_, \_\_\_\_, \_\_\_\_, and \_\_\_\_ render the claims allowable.

TT 0099610

09/971,087

None of the art of record teaches or suggests methods and/or systems having elements as recited in the claims. For at least the following reasons, the claims are allowable. The references do not teach or suggest a method of displaying market information relating to a commodity and/or a computer readable medium having program code for displaying market information relating to a commodity that consolidates price levels of a common static price axis such that a plurality of price levels are combined into a consolidated price level and consolidates a display of bid and/or ask indicators into consolidated indicators. In addition, these features in combination with other claim features in claims \_\_\_ and \_\_\_ render the claims allowable.

TT 0099611



-----Original Message-----

**From:** Steve Borsand (TT)  
**Sent:** Tuesday, May 27, 2003 4:42 PM  
**To:** 'Richard.Weisberger@uspto.gov'  
**Subject:** 09/590,692 et al.

Examiner Weisberger – Attached is a list of the references that we would prefer to be made of record in the various cases. Each page of the attached corresponds to a different case. Every reference listed on the attached was either cited by you or initialed as being considered by you in at least one of the four pending cases. Also, the most relevant references are already officially of record in each of the four cases and we are doing this clean-up out of an abundance of caution. Call me if you have any questions. Please tell us if you want us to prepare PTO 892 forms with all of the references listed. Also, if there is a need for copies of any references, let me know and I can have those made.

In addition, there is one other reference (US 2002/0138401 A1) that I believe should already be of record in each of the cases. This was a reference that was discussed at the interviews of March 13, 2003, but this reference has yet to be listed on a PTO form that we have seen. In the spirit of completeness, I wanted to make sure I list that here as well (it is not listed in the attached).

Thanks for considering this,

Steve

<<references.doc>>

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099604

000537

**09/590,692:**

4,903,201 (cited in 09/589,751)  
5,101,353 (cited in 09/589,751)  
5,946,667 (cited in 09/589,751)  
6,035,287 (cited in 09/589,751)  
WO 95/26005 (cited in 09/589,751)  
WO 99/30259 (cited in 09/894,637)

**TT 0099605**

09/894,637:

4,903,201 (cited in 09/589,751)  
5,101,353 (cited in 09/589,751)  
5,946,667 (cited in 09/589,751)  
6,035,287 (cited in 09/589,751)  
WO 95/26005 (cited in 09/589,751)

TT 0099606

09/971,087:

5,689,651 (cited in 09/590,692 and 09/894,637)  
5,774,877 (cited in 09/590,692 and 09/894,637)  
5,793,301 (cited in 09/590,692 and 09/894,637)  
5,797,002 (cited in 09/590,692 and 09/894,637)  
5,845,266 (cited in 09/590,692 and 09/894,637)  
5,915,245 (cited in 09/590,692 and 09/894,637)  
5,963,923 (cited in 09/590,692 and 09/894,637)  
6,012,046 (cited in 09/590,692 and 09/894,637)  
6,014,643 (cited in 09/590,692 and 09/894,637)  
6,098,051 (cited in 09/590,692 and 09/894,637)  
6,195,647 (cited in 09/590,692 and 09/894,637)  
6,272,474 (cited in 09/590,692 and 09/894,637)  
6,278,982 (cited in 09/590,692 and 09/894,637)  
4,903,201 (cited in 09/589,751)  
5,101,353 (cited in 09/589,751)  
5,946,667 (cited in 09/589,751)  
6,035,287 (cited in 09/589,751)  
WO 95/26005 (cited in 09/589,751)  
4,674,044 (cited in 09/590,692 and 09/894,637)  
4,750,135 (cited in 09/590,692 and 09/894,637)  
5,270,922 (cited in 09/590,692 and 09/894,637)  
5,924,083 (cited in 09/590,692 and 09/894,637)  
WO 99/30259 (cited in 09/894,637)  
[www.tradingtechnologies.com/products/xtrade\\_full.html](http://www.tradingtechnologies.com/products/xtrade_full.html) (viewed 5/22/2001)  
(cited in 09/590,692 and 09/894,637)  
Kharouf, a trading room with a view, Futures 27, 11-11/1998  
(cited in 09/590,692 and 09/894,637)

TT 0099607

**09/589,751:**

5,038,284 (cited in all other cases)  
5,077,665 (cited in all other cases)  
5,136,501 (cited in all other cases)  
5,297,031 (cited in all other cases)  
5,297,032 (cited in all other cases)  
5,689,651 (cited in all other cases)  
5,774,877 (cited in all other cases)  
5,793,301 (cited in all other cases)  
5,797,002 (cited in all other cases)  
5,915,245 (cited in 09/590,692 and 09/894,637)  
5,924,082 (cited in all other cases)  
5,963,923 (cited in 09/590,692 and 09/894,637)  
6,014,643 (cited in 09/590,692 and 09/894,637)  
6,098,051 (cited in 09/590,692 and 09/894,637)  
6,131,087 (cited in all other cases)  
6,134,535 (cited in all other cases)  
6,195,647 (cited in 09/590,692 and 09/894,637)  
6,272,474 (cited in 09/590,692 and 09/894,637)  
6,278,982 (cited in 09/590,692 and 09/894,637)  
6,282,521 (cited in all other cases)  
2002/0055899 (cited in all other cases)  
4,674,044 (cited in 09/590,692 and 09/894,637)  
4,750,135 (cited in 09/590,692 and 09/894,637)  
5,270,922 (cited in 09/590,692 and 09/894,637)  
5,924,083 (cited in 09/590,692 and 09/894,637)  
WO 00/65510 (cited in all other cases)  
WO 01/16830 (cited in all other cases)  
WO 01/22315 (cited in all other cases)  
WO 01/88808 (cited in all other cases)  
WO 99/30259 (cited in 09/894,637)  
[www.tradingtechnologies.com/products/xtrade\\_full.html](http://www.tradingtechnologies.com/products/xtrade_full.html) (viewed 5/22/2001)  
(cited in 09/590,692 and 09/894,637)  
Kharouf, a trading room with a view, Futures 27, 11-11/1998  
(cited in 09/590,692 and 09/894,637)

TT 0099608

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Thursday, December 11, 2003 10:54 AM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** RE: status

Rich – I left you a voicemail as well. I assume that the recently allowed case you are referring is the case in which we filed an RCE (09/589,751). If that is correct, could you sign the IDSs and complete and send the notices of allowances in the other 3 cases (09/590,692, 09/894,637 and 09/971,087) now so that the only case being held up by quality would be 09/589,751?

Thanks,

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]  
**Sent:** Thursday, December 11, 2003 10:38 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: status

Steve -

I was on leave to attend to finals and end of semester (MS of Finance) issues. I have the cases in my possession and removed the recently allowed case from the normal quality cue. Spoke with quality this morning, it should no longer than three days to remove the hold.

Regards,

Richard -

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[\[mailto:Steve.Borsand@tradingtechnologies.com\]](mailto:Steve.Borsand@tradingtechnologies.com)  
**Sent:** Tuesday, December 09, 2003 2:33 PM  
**To:** Weisberger, Richard  
**Subject:** status

Rich – I learned you were out of the office last week but that you are back in now. Could you please call me at 312-476-1018?

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.

TT 0099569

000542

ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099570

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]

**Sent:** Thursday, February 26, 2004 8:41 AM

**To:** richard.weisberger@uspto.gov

**Subject:** FW: Unacknowledged IDS forms

Richard – Following up on my voicemail yesterday, below is an list of the IDS that were filed in the 590,692 and 894,637 that we have not received acknowledged forms. If they have been signed, could you fax us copies? Otherwise, we deliver copies of the forms to you. I will follow up with you by phone.

Thanks,

Steve

-----Original Message-----

**From:** Shah, Ankur D. [mailto:AShah@foley.com]

**Sent:** Wednesday, February 25, 2004 4:36 PM

**To:** 'Steven F. Borsand (steve.borsand@tradingtechnologies.com)'

**Subject:** Unacknowledged IDS forms

Steve:

Here is the list of IDSs by date where the corresponding 1449 or SB08 form has not been initialed and returned to us by the Examiner.

09/590,692

November 11, 2002  
December 18, 2002  
February 11, 2003  
October 20, 2003  
November 12, 2003

09/894,637

September 7, 2001  
September 20, 2002  
November 14, 2002  
December 18, 2002  
February 13, 2003  
November 12, 2003

-Ankur D. Shah  
Foley & Lardner  
3000 K Street NW, Suite 500  
Washington, DC 20007  
(202) 945-6132  
(202) 672-5399 (fax)  
ashah@foley.com

**IMPORTANT NOTICE:** The preceding message may be confidential or protected by the attorney-client privilege. It is not intended for transmission to, or receipt by, any unauthorized persons. If you believe that it has been sent to you in error, do not read it. Please reply to the sender that you have received the message in error. Then destroy it. Thank you.

TT 0099588

000544



**From:** Weisberger, Richard [Richard.Weisberger@USPTO.GOV]  
**Sent:** Thursday, February 26, 2004 1:52 PM  
**To:** Steve Borsand (TT)  
**Subject:** RE: Unacknowledged IDS forms  
I'll have to pick this up with you tomorrow.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com [mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Thursday, February 26, 2004 9:41 AM  
**To:** Weisberger, Richard  
**Subject:** FW: Unacknowledged IDS forms

Richard – Following up on my voicemail yesterday, below is an list of the IDS that were filed in the 590,692 and 894,637 that we have not received acknowledged forms. If they have been signed, could you fax us copies? Otherwise, we deliver copies of the forms to you. I will follow up with you by phone.

Thanks,

Steve

TT 0099444

000545

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Monday, March 01, 2004 11:12 AM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** Re: Unacknowledged IDS forms

Richard -- Any way we can talk today about this? I can be reached on my cell at 847-915-1411. Thanks, Steve

-----Original Message-----

**From:** Weisberger, Richard <Richard.Weisberger@USPTO.GOV>  
**To:** Steve.Borsand@tradingtechnologies.com <Steve.Borsand@tradingtechnologies.com>  
**Sent:** Thu Feb 26 13:51:41 2004  
**Subject:** RE: Unacknowledged IDS forms

I'll have to pick this up with you tomorrow.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com [mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Thursday, February 26, 2004 9:41 AM  
**To:** Weisberger, Richard  
**Subject:** FW: Unacknowledged IDS forms

Richard -- Following up on my voicemail yesterday, below is a list of the IDS that were filed in the 590,692 and 894,637 that we have not received acknowledged forms. If they have been signed, could you fax us copies? Otherwise, we deliver copies of the forms to you. I will follow up with you by phone.

Thanks,

Steve

-----Original Message-----

**From:** Shah, Ankur D. [mailto:AShah@foley.com]  
**Sent:** Wednesday, February 25, 2004 4:36 PM  
**To:** 'Steven F. Borsand (steve.borsand@tradingtechnologies.com)'  
**Subject:** Unacknowledged IDS forms

Steve:

Here is the list of IDSs by date where the corresponding 1449 or SB08 form has not been initialed and returned to us by the Examiner.

09/590,692  
November 11, 2002  
December 18, 2002  
February 11, 2003  
October 20, 2003  
November 12, 2003

TT 0099589

09/894,637  
September 7, 2001  
September 20, 2002  
November 14, 2002  
December 18, 2002  
February 13, 2003

November 12, 2003

-Ankur D. Shah  
Foley & Lardner  
3000 K Street NW, Suite 500  
Washington, DC 20007  
(202) 945-6132  
(202) 672-5399 (fax)  
ashah@foley.com

**IMPORTANT NOTICE:** The preceding message may be confidential or protected by the attorney-client privilege. It is not intended for transmission to, or receipt by, any unauthorized persons. If you believe that it has been sent to you in error, do not read it. Please reply to the sender that you have received the message in error. Then destroy it. Thank you.

**TT 0099590**

000547



-----Original Message-----

From: AShah@foleylaw.com [mailto:AShah@foleylaw.com]

Sent: Tuesday, October 01, 2002 6:13 PM

To: Richard.Weisberger@USPTO.GOV

Subject: Interview Summaries and Reasons for Allowance

Hi Richard:

I await to hear from you regarding the Interview Summaries and language for Reasons for Allowance. I think the deal you proposed during the Interviews was prompt Interview Summaries in exchange for our submissions of Amendments. Please let me know where this stands. Thanks.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099500

000549

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Wednesday, October 02, 2002 11:22 AM  
**To:** AShah@foleylaw.com  
**Cc:** Steve Borsand (TT)  
**Subject:** RE: Interview Summaries and Reasons for Allowance

Ankur

The cases have been submitted for allowance. The interview summary records should have been faxed. I'll have each faxed again. As for the reasons for allowance, as discussed, the contents thereof are not of record until the case has been reviewed. Reasons for allowance are generally not subject to negotiation, but you will be granted an opportunity to respond. Your comments should follow the receipt of the notice of allowance and should be submitted no later than the payment of the issue fee. I do not anticipate any problems but should we disagree, you should not expect any further comment on my part. See 37 CFR 1.104(e).

Richard -

-----Original Message-----

**From:** AShah@foleylaw.com [<mailto:AShah@foleylaw.com>]  
**Sent:** Tuesday, October 01, 2002 6:13 PM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** Interview Summaries and Reasons for Allowance

Hi Richard:

I await to hear from you regarding the Interview Summaries and language for Reasons for Allowance. I think the deal you proposed during the Interviews was prompt Interview Summaries in exchange for our submissions of Amendments. Please let me know where this stands. Thanks.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099522

000550

**From:** Shah, Ankur D. [AShah@foleylaw.com]  
**Sent:** Wednesday, October 02, 2002 12:41 PM  
**To:** Richard.Weisberger@USPTO.GOV  
**Cc:** Steve Borsand (TT)  
**Subject:** RE: Interview Summaries and Reasons for Allowance

Richard:

I just received the fax of the Interview Summaries. Thank you.

The reason I mentioned Reasons for Allowance was not to negotiate, but rather to follow-up on our discussion Friday regarding the withdrawal of the double patenting rejection and the terminal disclaimer in the 09/589,751 case. I believe we had discussed that you would include language either in the Interview Summary or in the Reasons for Allowance to the effect that the double patenting rejection was withdrawn in view of the agreement reached regarding the claim amendments, and that the Terminal Disclaimer was no longer necessary. This will support our filing of a petition to revoke the Term. Discl. and the PTO granting the same.

Also, please let me know what you find out from your supervisors regarding the Terminal Disclaimer and whether we should go ahead and file the petition to revoke it. We don't want to delay matters by making any unnecessary filings.

Thanks.

Best regards.

-Ankur D. Shah  
Foley & Lardner  
(202) 945-6132  
ashah@foleylaw.com

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

TT 0099504

000551

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Wednesday, March 19, 2003 4:29 PM  
**To:** richard.weisberger@uspto.gov

22. A method of placing a trade order for a commodity on an electronic exchange, using a graphical user interface and a user input device, said method comprising:

setting a preset parameter for the trade order;

displaying the market depth of a commodity traded in a market, through a dynamic display of a plurality of bids and a plurality of asks in the market for the commodity, including the bid and ask quantities of the commodity, aligned with a static display of prices corresponding thereto; and

setting a plurality of additional parameters for the trade order and sending the trade order to the electronic exchange through a single action of the user input device with a pointer of the user input device positioned over an area in said dynamic displays of bids and asks;

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099618

000552



**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Wednesday, March 19, 2003 5:46 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** another claim

41. (New) A method for displaying market information relating to [and facilitating trading of] a commodity being traded in an electronic exchange-market having an inside market with a highest bid price and a lowest ask price on a graphical user interface, the method comprising:

dynamically displaying a first indicator in one of a plurality of locations in a bid display region in association with price levels along a common static price axis, the first indicator representing quantity associated with at least one order to buy the commodity at the highest bid price currently available in the market;

dynamically displaying a second indicator in one of a plurality of locations in an ask display region in association with the price levels along the common static price axis, the second indicator representing quantity associated with at least one order to sell the commodity at the lowest ask price currently available in the market; ~~and~~

displaying the bid and ask display regions in relation to fixed price levels positioned along the common static price axis such that the first and second indicators can move in the bid and ask display regions relative to the common static price axis when the inside market changes;

displaying an order entry region comprising a plurality of locations for receiving commands to send trade orders, each location corresponding to a price level along the common static price axis; and

setting a plurality of parameters for a trade order relating to the commodity and sending the trade order to the electronic exchange through a single action of a user input device which selects a particular location in the order entry region;-

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099617

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Friday, March 21, 2003 10:05 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** amendments

The three amendments were filed by fax to you earlier this evening. I will also fax you copies to the other fax # you gave me on Sunday.

Would it be possible to actually see your reasons for allowance and to see your interview summary before they are entered? If so, you could email me a draft.

Thanks,

Steve

TT 0099548

000554

**From:** Weisberger, Richard [Richard.Weisberger@USPTO.GOV]  
**Sent:** Wednesday, October 08, 2003 3:34 PM  
**To:** Steve Borsand (TT)  
**Subject:** RE: 09/690,052 et al.

Steve,

Sorry. I decided to take most of the week off. I'm scheduling a wrap up meeting quality for next Wednesday. I hope to remove the flag on that day.

Richard -

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[\[mailto:Steve.Borsand@tradingtechnologies.com\]](mailto:Steve.Borsand@tradingtechnologies.com)  
**Sent:** Tuesday, October 07, 2003 10:30 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/690,052 et al.

Rich -- I am hoping we can talk today about status. Several weeks ago we agreed to talk on 10/3.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
[steve.borsand@tradingtechnologies.com](mailto:steve.borsand@tradingtechnologies.com)

---

TT 0099510

000555

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Wednesday, October 15, 2003 11:15 AM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** RE: 09/690,052 et al.

Richard,

I will be out there tomorrow for our industry presentation. Are you going to attend? Lets plan on talking after.

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Wednesday, October 15, 2003 11:13 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: 09/690,052 et al.

Steve,

I'll have an update late tomorrow.

Richard.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, October 07, 2003 10:30 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/690,052 et al.

Rich -- I am hoping we can talk today about status. Several weeks ago we agreed to talk on 10/3.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099560

000556

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Thursday, October 16, 2003 4:09 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** meeting tomorrow

Rich -- Too bad you couldn't make our presentation. Someone gave me a message that you could talk tomorrow. I am actually staying over tonight and would like to stop by and talk with in person either tomorrow morning or early afternoon. I plan on coming over there around 10:00 am. Let me know if there are any problems with this or if there is a better time.

You can reach me on my cell at 847-477-9818.

Steve Borsand

TT 0099561

000557

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Friday, October 17, 2003 4:26 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** terminal disclaimer and IDSs

Rich – I left you a voicemail on this as well. I received your voicemail with the fax. The only issue is that the IDSs need to include copies of the references. Should we just submit everything by hand or should we submit the IDS forms and terminal disclaimer by fax and then deliver the copies?

We plan on filing everything on Monday.

Thanks,

Steve

TT 0099565

000558

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Thursday, October 23, 2003 11:16 AM  
**To:** Steve Borsand (TT)  
**Subject:** RE: terminal disclaimer and IDSs

The PTO has an independent contractor perform this task.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[\[mailto:Steve.Borsand@tradingtechnologies.com\]](mailto:Steve.Borsand@tradingtechnologies.com)  
**Sent:** Wednesday, October 22, 2003 6:20 PM  
**To:** Weisberger, Richard  
**Subject:** RE: terminal disclaimer and IDSs

How do the faxed papers get matched? Is there anything I can do to make this happen right away -- are files still with the quality reviewer?

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [\[mailto:Richard.Weisberger@USPTO.GOV\]](mailto:Richard.Weisberger@USPTO.GOV)  
**Sent:** Wednesday, October 22, 2003 12:17 PM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: terminal disclaimer and IDSs

The faxed papers need to be matched to the case and forwarded to me. When they arrive on my desk I will call you.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[\[mailto:Steve.Borsand@tradingtechnologies.com\]](mailto:Steve.Borsand@tradingtechnologies.com)  
**Sent:** Friday, October 17, 2003 5:26 PM  
**To:** Weisberger, Richard  
**Subject:** terminal disclaimer and IDSs

Rich -- I left you a voicemail on this as well. I received your voicemail with the fax. The only issue is that the IDSs need to include copies of the references. Should we just submit everything by hand or should we submit the IDS forms and terminal disclaimer by fax and then deliver the copies?

We plan on filing everything on Monday.

Thanks,

Steve

TT 0099535

000559

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Thursday, December 04, 2003 12:53 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** trying to reach you

Rich – Are you in today? I have been trying to reach you (and left you a voicemail yesterday).

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099564

000560



**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, December 16, 2003 1:58 PM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** RE: status

Richard -- Any update?

Thanks,

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Thursday, December 11, 2003 10:38 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: status

Steve -

I was on leave to attend to finals and end of semester (MS of Finance) issues. I have the cases in my possession and removed the recently allowed case from the normal quality cue. Spoke with quality this morning, it should no longer than three days to remove the hold.

Regards,

Richard -

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, December 09, 2003 2:33 PM  
**To:** Weisberger, Richard  
**Subject:** status

Rich -- I learned you were out of the office last week but that you are back in now. Could you please call me at 312-476-1018?

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018

TT 0099571

000561

fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099572

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Friday, December 19, 2003 12:03 PM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** RE: status

I left you a voicemail as well. Could you please call me at 312-476-1018?

Thanks,

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]  
**Sent:** Thursday, December 18, 2003 12:27 PM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: status

I'll check on it tomorrow. The office is having a holiday party today.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[\[mailto:Steve.Borsand@tradingtechnologies.com\]](mailto:Steve.Borsand@tradingtechnologies.com)  
**Sent:** Tuesday, December 16, 2003 2:58 PM  
**To:** Weisberger, Richard  
**Subject:** RE: status

Richard -- Any update?

Thanks,

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [<mailto:Richard.Weisberger@USPTO.GOV>]  
**Sent:** Thursday, December 11, 2003 10:38 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: status

Steve -

I was on leave to attend to finals and end of semester (MS of Finance) issues. I have the cases in my possession and removed the recently allowed case from the normal quality cue. Spoke with quality this morning, it should no longer than three days to remove the hold.

Regards,

Richard -

TT 0099583

000563

-----Original Message-----

From: Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
Sent: Tuesday, December 09, 2003 2:33 PM  
To: Weisberger, Richard  
Subject: status

Rich -- I learned you were out of the office last week but that you are back in now. Could you please call me at 312-476-1018?

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099584

000564

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Monday, December 22, 2003 4:38 PM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** RE: status

Richard -- Are we done?

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Thursday, December 18, 2003 12:27 PM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: status

I'll check on it tomorrow. The office is having a holiday party today.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, December 16, 2003 2:58 PM  
**To:** Weisberger, Richard  
**Subject:** RE: status

Richard -- Any update?

Thanks,

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Thursday, December 11, 2003 10:38 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: status

Steve -

I was on leave to attend to finals and end of semester (MS of Finance) issues. I have the cases in my possession and removed the recently allowed case from the normal quality cue. Spoke with quality this morning, it should no longer than three days to remove the hold.

Regards,

Richard -

TT 0099573

000565

-----Original Message-----

From: Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
Sent: Tuesday, December 09, 2003 2:33 PM  
To: Weisberger, Richard  
Subject: status

Rich -- I learned you were out of the office last week but that you are back in now. Could you please call me at 312-476-1018?

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099574

000566

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Tuesday, December 23, 2003 4:12 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** status

Richard – Are you in the office?

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099576

000567

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Sunday, January 11, 2004 8:15 PM  
**To:** Steve Borsand (TT)  
**Subject:** RE: status

Steve -

I just returned to the office. I know your anxious for a reply, but please be patient as I have a few dozen messages and four cases that have to be moved by the end of the day, Monday. I'll call you either way by the end of the day Monday.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[\[mailto:Steve.Borsand@tradingtechnologies.com\]](mailto:Steve.Borsand@tradingtechnologies.com)  
**Sent:** Monday, January 05, 2004 11:16 AM  
**To:** Weisberger, Richard  
**Subject:** RE: status

Richard

I am sorry to hear that. My condolences to you and your family.

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [\[mailto:Richard.Weisberger@USPTO.GOV\]](mailto:Richard.Weisberger@USPTO.GOV)  
**Sent:** Friday, January 02, 2004 1:42 PM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: status

Steve

My grandmother past away. I'll be out of the office most of next week. I'll call you when I return.

Richard

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[\[mailto:Steve.Borsand@tradingtechnologies.com\]](mailto:Steve.Borsand@tradingtechnologies.com)  
**Sent:** Monday, December 22, 2003 5:38 PM  
**To:** Weisberger, Richard  
**Subject:** RE: status

Richard -- Are we done?

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [\[mailto:Richard.Weisberger@USPTO.GOV\]](mailto:Richard.Weisberger@USPTO.GOV)  
**Sent:** Thursday, December 18, 2003 12:27 PM  
**To:** Steve.Borsand@tradingtechnologies.com

TT 0099524

000568



Subject: RE: status

I'll check on it tomorrow. The office is having a holiday party today.

-----Original Message-----

From: Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
Sent: Tuesday, December 16, 2003 2:58 PM  
To: Weisberger, Richard  
Subject: RE: status

Richard -- Any update?

Thanks,

Steve

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
Sent: Thursday, December 11, 2003 10:38 AM  
To: Steve.Borsand@tradingtechnologies.com  
Subject: RE: status

Steve -

I was on leave to attend to finals and end of semester (MS of Finance) issues. I have the cases in my possession and removed the recently allowed case from the normal quality cue. Spoke with quality this morning, it should no longer than three days to remove the hold.

Regards,

Richard -

-----Original Message-----

From: Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
Sent: Tuesday, December 09, 2003 2:33 PM  
To: Weisberger, Richard  
Subject: status

Rich -- I learned you were out of the office last week but that you are back in now. Could you please call me at 312-476-1018?

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property

TT 0099525

000569

Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099526

000570

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Monday, January 12, 2004 2:32 PM  
**To:** Richard.Weisberger@USPTO.GOV  
**Subject:** RE: status

Richard --

Thanks. I look forward to hearing from you this afternoon.

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Sunday, January 11, 2004 8:15 PM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: status

Steve -

I just returned to the office. I know your anxious for a reply, but please be patient as I have a few dozen messages and four cases that have to be moved by the end of the day, Monday. I'll call you either way by the end of the day Monday.

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
**Sent:** Monday, January 05, 2004 11:16 AM  
**To:** Weisberger, Richard  
**Subject:** RE: status

Richard

I am sorry to hear that. My condolences to you and your family.

Steve

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
**Sent:** Friday, January 02, 2004 1:42 PM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: status

Steve

My grandmother past away. I'll be out of the office most of next week. I'll call you when I return.

TT 0099580

000571

Richard

-----Original Message-----

From: Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
Sent: Monday, December 22, 2003 5:38 PM  
To: Weisberger, Richard  
Subject: RE: status

Richard -- Are we done?

Steve

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
Sent: Thursday, December 18, 2003 12:27 PM  
To: Steve.Borsand@tradingtechnologies.com  
Subject: RE: status

I'll check on it tomorrow. The office is having a holiday party today.

-----Original Message-----

From: Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
Sent: Tuesday, December 16, 2003 2:58 PM  
To: Weisberger, Richard  
Subject: RE: status

Richard -- Any update?

Thanks,

Steve

-----Original Message-----

From: Richard.Weisberger@USPTO.GOV [mailto:Richard.Weisberger@USPTO.GOV]  
Sent: Thursday, December 11, 2003 10:38 AM  
To: Steve.Borsand@tradingtechnologies.com  
Subject: RE: status

Steve -

I was on leave to attend to finals and end of semester (MS of Finance) issues. I have the cases in my possession and removed the recently allowed case from the normal quality cue. Spoke with quality this morning, it should no longer than three days to remove the hold.

TT 0099581

000572

Regards,

Richard -

-----Original Message-----

From: Steve.Borsand@tradingtechnologies.com  
[mailto:Steve.Borsand@tradingtechnologies.com]  
Sent: Tuesday, December 09, 2003 2:33 PM  
To: Weisberger, Richard  
Subject: status

Rich -- I learned you were out of the office last week but that you are back in now. Could you please call me at 312-476-1018?

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099582

000573

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Tuesday, January 13, 2004 11:17 AM  
**To:** Steve Borsand (TT)  
**Subject:** FW: Can i stop my this afternoon to follow up on a removing a fla g?

Steve -

I was unable to schedule a meeting with Quality yesterday or today, as you can see I have scheduled for tomorrow. Richard

> -----Original Message-----

> From: Weinhardt, Robert

> Sent: Tuesday, January 13, 2004 12:11 PM

> To: Weisberger, Richard

> Subject: RE: Can i stop my this afternoon to follow up on a removing a flag?

>

> Tomorrow would be better. Had an 8:30-12 meeting this morning then

> another meeting this afternoon. Tomorrow is wide open.

>

> -----Original Message-----

> From: Weisberger, Richard

> Sent: Tuesday, January 13, 2004 11:07 AM

> To: Weinhardt, Robert

> Subject: Can i stop my this afternoon to follow up on a removing a flag?

>

>

TT 0099516

000574

**From:** Steve Borsand (TT) [Steve.Borsand@tradingtechnologies.com]  
**Sent:** Friday, January 30, 2004 11:02 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** status

Richard – Any update?

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT 0099585

000575

E

000576



Search results as of: 05-02-2006::20:22:53 E.T.

<b>Transaction History</b>	
<b>Date</b>	<b>Transaction Description</b>
07-11-2005	Post Issue Communication - Certificate of Correction
08-03-2004	Recordation of Patent Grant Mailed
07-15-2004	Issue Notification Mailed
08-03-2004	Patent Issue Date Used in PTA Calculation
06-10-2004	Disposal Flag Change
06-23-2004	Receipt into Pubs
06-21-2004	Dispatch to FDC
03-08-2004	Issue Fee Payment Verified
08-12-2002	Workflow - Drawings Finished
08-12-2002	Workflow - Drawings Matched with File at Contractor
06-18-2004	Receipt into Pubs
06-14-2004	Record a Petition Decision of Granted for Patent Term Adjustment after Allowance
06-14-2004	Adjustment of PTA Calculation by PTO
06-14-2004	Adjustment of PTA Calculation by PTO
06-10-2004	Mailing Corrected Notice of Allowability
06-10-2004	Corrected Notice of Allowability
03-05-2004	Petition Entered
03-08-2004	Issue Fee Payment Received
03-03-2004	Power to Make Copies and/or Inspect
02-27-2004	Receipt into Pubs
02-25-2004	Dispatch to Publications
02-10-2004	Mail Notice of Allowance
02-09-2004	Notice of Allowance Data Verification Completed
03-21-2003	Date Forwarded to Examiner
03-21-2003	Supplemental Response
03-21-2003	Date Forwarded to Examiner
03-19-2003	Request for Continued Examination (RCE)
03-21-2003	DISPOSAL FOR A RCE/CPA/129 (express abandonment if CPA)
02-11-2003	Information Disclosure Statement (IDS) Filed
02-05-2003	Miscellaneous Incoming Letter
12-18-2002	Information Disclosure Statement (IDS) Filed
11-12-2002	Workflow - Petition - Begin
11-12-2002	Workflow - Request for RCE - Begin
11-13-2002	Record Petition Decision of Granted to Withdraw from Issue
11-12-2002	Petition Entered
10-31-2002	Application Is Considered Ready for Issue
08-12-2002	Issue Fee Payment Verified
08-12-2002	Workflow - Drawings Finished
08-12-2002	Workflow - Drawings Matched with File at Contractor
10-25-2002	Mail Response to 312 Amendment (PTO-271)
10-24-2002	Response to Amendment under Rule 312
08-12-2002	Amendment after Notice of Allowance (Rule 312)

10-22-2002	Receipt into Pubs
09-24-2002	Workflow - File Sent to Contractor
09-24-2002	Receipt into Pubs
09-23-2002	Dispatch to Publications
08-12-2002	Workflow - Drawings Received at Contractor
08-12-2002	Workflow - Drawings Sent to Contractor
08-12-2002	Issue Fee Payment Received
07-31-2002	Mail Notice of Allowance
07-31-2002	Mail Formal Drawings Required
07-26-2002	Formal Drawings Required
07-26-2002	Notice of Allowance Data Verification Completed
04-23-2002	Case Docketed to Examiner in GAU
03-12-2002	Information Disclosure Statement (IDS) Filed
01-02-2002	Case Docketed to Examiner in GAU
11-11-2001	Case Docketed to Examiner in GAU
10-17-2001	Information Disclosure Statement (IDS) Filed
10-12-2001	Date Forwarded to Examiner
10-09-2001	Response after Non-Final Action
10-09-2001	Request for Extension of Time - Granted
08-02-2001	Correspondence Address Change
06-08-2001	Mail Non-Final Rejection
06-06-2001	Non-Final Rejection
04-27-2001	Petition Decision - Granted
03-13-2001	Petition Entered
03-06-2001	Petition Decision - Denied
08-21-2000	Petition Entered
02-15-2001	Case Docketed to Examiner in GAU
12-19-2000	Application Dispatched from OIPE
12-19-2000	Application Is Now Complete
08-03-2000	Notice Mailed--Application Incomplete--Filing Date Assigned
08-03-2000	Correspondence Address Change
07-05-2000	IFW Scan & PACR Auto Security Review
06-09-2000	Initial Exam Team nn

**Close Window**

F

Search results as of: 05-02-2006::20:25:18 E.T.

**Transaction History**

<b>Date</b>	<b>Transaction Description</b>
10-26-2004	Post Issue Communication - Certificate of Correction
07-20-2004	Recordation of Patent Grant Mailed
07-01-2004	Issue Notification Mailed
07-01-2004	Application Is Considered Ready for Issue
06-30-2004	Workflow - Query Request - Finish
07-20-2004	Patent Issue Date Used in PTA Calculation
06-28-2004	Receipt into Pubs
03-08-2004	Issue Fee Payment Verified
06-23-2004	Receipt into Pubs
06-22-2004	Receipt into Pubs
06-17-2004	Record Petition Decision of Granted to Make Special
09-07-2001	Petition Entered
06-17-2004	Mail Miscellaneous Communication to Applicant
06-17-2004	Miscellaneous Communication to Applicant - No Action Count
06-15-2004	Correspondence Address Change
03-21-2003	Amendment Crossed in Mail
06-14-2004	File Marked Found
06-08-2004	File Marked Lost
03-03-2004	Workflow - Customer Service Request - Finish
04-01-2004	Receipt into Pubs
03-30-2004	Workflow - Query Request - Begin
03-08-2004	Issue Fee Payment Received
03-03-2004	Workflow - Customer Service Request - Begin
02-26-2004	Receipt into Pubs
02-25-2004	Workflow - File Sent to Contractor
02-25-2004	Receipt into Pubs
02-25-2004	Dispatch to Publications
11-12-2003	Information Disclosure Statement (IDS) Filed
12-18-2002	Information Disclosure Statement (IDS) Filed
11-14-2002	Information Disclosure Statement (IDS) Filed
02-10-2004	Mail Notice of Allowance
02-09-2004	Notice of Allowance Data Verification Completed
02-04-2004	Date Forwarded to Examiner
02-04-2004	Withdrawal of Notice of Allowance
02-11-2003	Information Disclosure Statement (IDS) Filed
09-20-2002	Information Disclosure Statement (IDS) Filed
03-21-2003	Date Forwarded to Examiner
03-19-2003	Request for Continued Examination (RCE)
03-21-2003	DISPOSAL FOR A RCE/CPA/129 (express abandonment if CPA)
03-10-2003	Workflow - Request for RCE - Begin
09-24-2002	Preliminary Amendment
07-27-2001	Preliminary Amendment

04-23-2002	Case Docketed to Examiner in GAU
04-23-2002	Case Docketed to Examiner in GAU
03-04-2002	Case Docketed to Examiner in GAU
10-24-2001	Application Dispatched from OIPE
10-16-2001	Application Is Now Complete
07-26-2001	Correspondence Address Change
07-26-2001	Correspondence Address Change
07-25-2001	Correspondence Address Change
07-13-2001	IFW Scan & PACR Auto Security Review
06-27-2001	Initial Exam Team nn

Close Window

G

000582

**From:** Scott, Walter  
**Sent:** Tuesday, April 25, 2006 6:00 PM  
**To:** 'efoia@uspto.gov'  
**Subject:** request made pursuant to the Freedom of Information Act

Pursuant to the Freedom of Information Act (FOIA), we request a copy of all documents (whether electronic or paper) concerning U.S. Patent Application No. 09/590,692, U.S. Patent Application No. 09/894,637, or both applications that are not in the official file of the for these applications. These patent applications matured into U.S. Patents Nos. 6,772,132 and 6,766,304, respectively.

This request includes all correspondence (including, but not limited to email correspondence) between the US Patent and Trademark Office (USPTO) -- e.g., Examiner Richard.Weisberger@USPTO.GOV -- and the applicants and/or their representatives -- including, but not limited to Ankur D. Shah (ashah@foleylaw.com) or Steve.Borsand@tradingtechnologies.com -- that is not in the official file of these applications. This request also includes all interview summaries (not entered into the official file) concerning either of the above-identified applications.

This request is for documents dated between March 1, 2002 to August 31, 2004.

In particular, we have reason to believe that there are a number of emails between Examiner Weisberger and the applicants' representatives that are not in the official file -- i.e., these emails do not appear in the certified copy of either application provided by USPTO -- of either of the above-identified U.S. patent applications. Thus, this request includes at least emails of the following dates:

May 6, 2002; May 9, 2002; May 14, 2002; May 21, 2002; June 24, 2002; June 26, 2002; June 27, 2002; July 12, 2002; September 11, 2002; September 24, 2002; September 26, 2002; September 27, 2002; October 1, 2002; October 2, 2002; December 17, 2002;

March 3, 2003; March 18, 2003; March 19, 2003; March 20, 2003; March 21, 2003; March 27, 2003; April 25, 2003; May 27, 2003; July 3, 2003; August 25, 2003; September 8, 2003; September 23, 2003; October 3, 2003; October 7, 2003; October 8, 2003; October 15, 2003; October 16, 2003; October 17, 2003; October 21, 2003; October 22, 2003; October 23, 2003; December 4, 2003; December 9, 2003; December 11, 2003; December 16, 2003; December 18, 2003; December 19, 2003; December 22, 2003; December 23, 2003; January 2, 2003; January 5, 2003; January 11, 2003; January 12, 2004; January 13, 2004; January 30, 2003;

February 3, 2004; February 4, 2004; February 26, 2004; March 1, 2004; and June 4, 2004.

Section 502.03(E)II of the Manual of Patent Examining Procedures ("MPEP") states that email correspondence with an Examiner concerning an application is to be printed out and placed in the official file for each application. ("A paper copy of such [email] correspondence **will be placed in the appropriate patent application.**" Emphasis added). Both the August 2001 and the current version of the MPEP make this statement.

The requested records were part of the examination of the above-identified patent applications and the patents that matured from these applications are the subject of a number of litigations pending in the Northern District of Illinois. A *Markman* hearing is currently scheduled to begin on June 1, 2006 in the case captioned Trading Technologies International, Inc. v. eSpeed et al. Case No. 04 C 5312 in the Northern District of Illinois.

Because the undersigned first learned of the existence of the requested records last week, and the incompleteness of the patent files can impact the *Markman* hearing, your requestor asks that this request for records be expedited.

Please send all copies being provided as well as the invoice for any fees and disbursements to the below stated address. However, please contact us if the fees and disbursements for this search are expected to exceed \$1000.

Respectfully submitted.

Walter Scott  
Alston & Bird LLP  
90 Park Avenue  
New York, New York 10016

Tel: (212) 210-9518  
Fax: (212) 210-9444



2006-08-11 08:24pm From-

T-038 P.001 F-247

This facsimile message and its contents are legally privileged and confidential information intended solely for the use of the addressee. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, copying or other use of this message and its contents is strictly prohibited. If you have received this telecopy in error, please notify us immediately by telephone and return the original message to us at the address shown below via the Postal Service. Thank You.

# ALSTON & BIRD LLP

90 Park Avenue  
New York, NY 10016  
212-210-9400  
Fax: 212-210-9444

**FAX RECEIVED**

AUG 11 2006

**OFFICE OF PETITIONS**

**RECEIVED**

SEP 20 2006

## TELECOPY

**PLEASE DELIVER AS SOON AS POSSIBLE**

**OFFICE OF PETITIONS**

**Date:**

August 11, 2006

**Recipient:**

Office of Petitions

**Company:**

United States Patent and Trademark  
Office

**Fax Number:** 273-0025

~~571-272-3882~~

**Voice Number:**

571-272-3282

Walter Scott

**Message:**

Number of Pages: (including cover page)

401

**IF NOT RECEIVED PROPERLY, PLEASE NOTIFY US IMMEDIATELY AT 212-210-1252.**

<b>USER CODE:</b> Scotw	<b>REQUESTED BY:</b> Yolanda Sanchez
<b>CLIENT/MATTER:</b> 049506/296191	<b>OPERATOR:</b>

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

FAX RECEIVED

In Re Patent Applications of: Kemp *et al.*

AUG 11 2006

1) U.S. Patent Application No. 09/590,692

filed June 9, 2000

OFFICE OF PETITIONS

For: Click based trading with intuitive grid display of market depth

Now U.S. Patent No. 6,772,132

issued August 3, 2004; and

2) U.S. Patent Application No. 09/894,637

filed June 27, 2001

For: Click based trading with intuitive grid display of market depth

Now U.S. Patent No. 6,766,304

issued July 20, 2004

OFFICE OF THE SOLICITOR,  
UNITED STATES PATENT AND TRADEMARK OFFICE  
C/O KYRA ABRAHAM, (571) 273 0373  
P.O. BOX 1450,  
ALEXANDRIA, VIRGINIA 22313-1450

RECEIVED  
SEP 20 2006  
OFFICE OF PETITIONS

**SUPPLEMENTAL PETITION TO RECONSTRUCT THE OFFICIAL FILES FOR  
U.S. PATENT APPLICATIONS NOS. 09/590,692 AND 09/894,637**

GL Trade Americas, Inc. (f/k/a GL Consultants, Inc. ("GL")) by and through its counsel filed a Petition to Reconstruct the Official Files with the Petitions Office (with a courtesy copy sent to the Solicitor's Office) on May 2, 2006. On or about July 21, 2006, the US Patent and Trademark Office ("Office") advised counsel for GL that it could not locate the Petition. On July 24, 2006 counsel for GL sent a copy to the Office by facsimile transmission to 571-273-8300 as evidenced by Exhibit A which is a copy of the July 24<sup>th</sup> facsimile confirmation sheet.

On August 7, 2006 counsel for GL spoke with a Customer Service Representative from the Petitions Office and on August 8, 2006 with Ms. Abraham of the Solicitor's

LEGAL02/30041617v2

Office. Each of these Office employees stated that they could not find a record of the Office's receipt of either the May 2<sup>nd</sup> or the July 24<sup>th</sup> copies of the Petition.

Counsel for GL is therefore filing, and incorporating herein by reference, the original Petition to ensure that it is entered into the records of the Office, and submits certain additional communications between the Office and the applicants (and their representatives) that reflect interviews, amendments and other substantive discussions with the Office concerning the above-identified patent applications, but which communications are presently not in the Official file histories.

17) As stated in the original Petition, the attached documents memorialize the substantive discussions between the examiner and the applicant's representatives concerning the above-identified patent applications. To assist the Office's review of the attached documents, counsel for GL has described some of these documents:<sup>1</sup>

- a. TT0101828, an Interview Summary from October, 2001 with respect to Serial No. 09/590,692, conducted between Examiner Weisberger, one of the applicants, and two of the applicants' representatives. The Interview Summary reports that the applicants demonstrated Trading Technologies' Prior Art Software to Examiner Weisberger.
- b. TT 0099467, an email communication from May 14, 2002 from Examiner Weisberger informing applicants' representative that there was an "impediment to the allowance of" Serial No. 09/590,692.
- c. TT 0099493 - 94, an email communication from June 27, 2002 from Examiner Weisberger informing applicants' representative that he had

---

<sup>1</sup> The discussion of the following documents is not intended to indicate that any of the documents not discussed are of a procedural nature, and thus should not be part of the official File Wrapper. See e.g., M.P.E.P. § 713.04.

found no new prior art concerning the subject matter claims in claims 22, 29 and 35 of Serial No. 09/590,692.

- d. TT 0099599, a July 3, 2002 Notice of Allowability faxed to the applicant with respect to Serial No. 09/590,692 initialed by Examiner Weisberger.
- e. TT 0099597, an Interview Summary of 18 September 2002 with respect to Serial No. 09/590,692 signed by Examiner Weisberger and faxed to applicant's representative. The Interview Summary states that the applicant's representatives conducted a demonstration of Trading Technologies Software. Additionally, the Interview Summary states that the Examiner and the applicants' representative agreed that certain language would be allowable.
- f. TT 0099532 - 33, an email communication from September 26, 2002 from Examiner Weisberger informing applicants' representative that the "second set of eyes [review of Serial No. 09/590,692] should be a perfunctory step . . . ."
- g. TT 0099500, an email communication from October 1, 2002 from applicants' representative to Examiner Weisberger concerning "Interview Summaries and Reasons for Allowance" for Serial No. 09/590,692 which states, "I await to hear from you regarding the Interview Summaries and language for Reasons for Allowance. I think **the deal you proposed during the Interviews was prompt Interview**

Summaries in exchange for our submissions of Amendments.”

(Emphasis added).

- h. TT 0099495-96A an email communication from October 2, 2002 from Examiner Weisberger informing applicants' representative that “the reasons for allowance, as discussed, the contents thereof are not of record until the case has been reviewed. Reasons for allowance are generally not subject to negotiation . . . .”
- i. TT 0099519 - 20, an email to applicant's representative from Examiner Weisberger on March 19, 2003 with respect to Serial No. 09/590,692 in which Examiner Weisberger proposes a new amendment to make the claims patentable.
- j. TT 0099617 - 37, a series of emails (and attachments) from applicant's representative S. Borsand to Examiner Weisberger on March 19 and 20, 2003 with respect to Serial No. 09/590,692 and 09/894,637 proposing amendments to the claims.
- k. TT 0099641-42, a series of emails between Examiner Weisberger and applicant's representative on March 20 and 21, 2003 in which amendments are proposed in both Serial No. 09/590,692 and 09/894,637 on March 20, 2003 at 4 PM, and Examiner Weisberger indicates his approval of the amendments on Friday, March 21, 2003 at 10:30 AM. Examiner Weisberger also asked for applicants' proposals for the Reasons for Allowance.

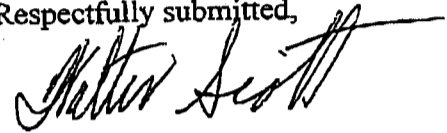
- l. TT 0099609-11, an email with an attachment from applicant's representative to Examiner Weisberger on March 21, 2003 at 5 PM forwarding applicant's proposed reasons for allowance for both Serial No. 09/590,692 and 09/894,637.
- m. TT 0099548, an email from applicant's representative to Examiner Weisberger on March 21, 2003 at 10 PM stating that the formal amendment had been faxed to the Office that evening and asking to see the official reasons for allowance and the interview summary before they are entered.<sup>2</sup>
- n. TT 0099514 - 33, an email communication from April 25, 2003 from Examiner Weisberger informing applicants' representative that he did not "foresee any issues [in the quality review of Serial No. 09/590,692] as [Weisberger is] co-editing [an newsletter] with the reviewer . . ."
- o. TT 0099551 - 55 is an email communication from May 27, 2003 from the applicants' representative forwarding to Examiner Weisberger lists of references that the applicants "would prefer to made of record" in, among applications, Serial No. 09/590,692 and 09/894,637.
- p. TT 0099516 is an email communication from January 13, 2004 from Examiner Weisberger forwarding to applicants' representative internal Office emails concerning removing a flag with respect to Serial No. 09/590,692 and/or 09/894,637.

---

<sup>2</sup> Counsel for GL notes that the March 21, 2003 amendment entered in Serial No. 09/590,692 thanks Examiner Weisberger for cntertaining an interview on the same day, but does not report the substance of that interview. Additionally, counsel for GL has not been able to find any Interview Summary for that date in the official file wrapper.

The Director is hereby authorized to charge any fees associated with this communication, including any petition fee, to Deposit Account No. 16-0605.

Respectfully submitted,



Walter Scott  
Registration No. 30,588

Customer No. 00826  
ALSTON & BIRD LLP  
Bank of America Plaza  
101 South Tryon Street, Suite 4000  
Charlotte, NC 28280-4000  
Tel New York Office (212) 210-9518  
Fax Charlotte Office (704) 444-1111

U.S.S.N. 09/590,692 & 09/894,637

**Certificate of Service**

It is certified that a copy of the Supplemental Petition to Reconstruct the Official Files for U.S. Patent Applications Nos. 09/590,692 and 09/894,637 has been served, by facsimile at (202) 672 5399, in its entirety on the attorneys of record for the above-identified applications. The name and address of the party served and the date of service are:

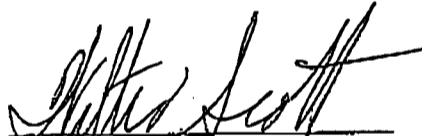
**FOLEY & LARDNER  
WASHINGTON HARBOUR  
3000 K STREET, N.W. SUITE 500  
WASHINGTON DC 20007-5143**

**RECEIVED**

SEP 20 2006

**OFFICE OF PETITIONS**

Date of Mailing: August 11, 2006

  
Walter Scott



2006-08-11 06:25pm From-

T-038 P.009 F-247

# Exhibit A

Alston & Bird

08/11/2006 FRI 18:29 [TX/RX NO 5754] 009

000593

MESSAGE CONFIRMATION

JUL-24-2006 07:00 PM MON

FAX NUMBER :  
NAME :

RECEIVED

SEP 20 2006

OFFICE OF PETITIONS

NAME/NUMBER : #023815712738300  
PAGE : 155  
START TIME : JUL-24-2006 06:33PM MON  
ELAPSED TIME : 27' 12"  
MODE : STD ECM  
RESULTS : [ O.K ]

This facsimile message and its contents are legally privileged and confidential information intended solely for the use of the addressee. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, copying or other use of this message and its contents is strictly prohibited. If you have received this telecopy in error, please notify us immediately by telephone and return the original message to us at the address shown below via the Postal Service. Thank You.

ALSTON & BIRD LLP

90 Park Avenue  
New York, NY 10016  
212-210-9400  
Fax: 212-210-9444

TELECOPY

PLEASE DELIVER AS SOON AS POSSIBLE

Date:  
July 24, 2006

Recipient:  
U.S. Patent and Trademark Office

Company:  
Mail Stop Petition

Fax Number:  
571-273-8300

Voice Number:

Sender:  
Linda Marie Sanchez

Message:

Number of Pages (including cover page)

IF NOT RECEIVED PROPERLY, PLEASE NOTIFY US IMMEDIATELY AT 212-210-9443

USER CODE: SANCL	REQUESTED BY: Linda Marie Sanchez
CLIENT/MATTER: 049506296191	OPERATOR:

Alston & Bird

2006-08-11 06:26pm From-

T-038 P.011 F-247

# Exhibit B

Alston & Bird

08/11/2006 FRI 18:29 [TX/RX NO 5754] 011

000595

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Patent Applications of: Kemp *et al.*

- 1) U.S. Patent Application No. 09/590,692 filed June 9, 2000  
 For: Click based trading with intuitive grid display of market depth  
 Now U.S. Patent No. 6,772,132 issued August 3, 2004; and

- 2) U.S. Patent Application No. 09/894,637 filed June 27, 2001  
 For: Click based trading with intuitive grid display of market depth  
 Now U.S. Patent No. 6,766,304 issued July 20, 2004

**MAIL STOP PETITION,  
 COMMISSIONER FOR PATENTS,  
 P.O. BOX 1450,  
 ALEXANDRIA, VIRGINIA 22313-1450**

**RECEIVED**

**SEP 20 2006**

**OFFICE OF PETITIONS**

**PETITION TO RECONSTRUCT THE OFFICIAL FILES FOR  
 U.S. PATENT APPLICATIONS NOS. 09/590,692 AND 09/894,637**

The Director is respectfully requested to reconstruct the official files for U.S. Patent Applications Nos. 09/590,692 and 09/894,637 by, and through counsel for, GL Trade Americas, Inc. (f/k/a GL Consultants, Inc. ("GL")) because a number of written communications between the applicants and the Patent and Trademark Office ("USPTO") are missing from the Official Record.

- 1) U.S. Patent No. 6,772,132 (the "132 patent"), which matured from U.S. Patent Application No. 09/590,692, and U.S. Patent No. 6,766,304 (the "304 patent"), which matured from U.S. Patent Application No. 09/894,637 each lists Trading Technologies International, Inc. ("TT") as the assignee.

NYC01/7825628v2

2) TT has sued a number of companies, including GL, for infringement of the '132 and '304 patents in District Court for the Northern District of Illinois. The action against GL is captioned *Trading Technologies International, Inc. v. GL Consultants, Inc. et al.*, Civil Action No. 05C 4120. Other actions concerning the '132 and '304 patents that are pending in District Court for the Northern District of Illinois are captioned, *Trading Technologies International, Inc. v. FuturePath Trading LLC*, Civil Action No. 05C 5164; *Trading Technologies International, Inc. v. eSpeed, Inc. et al.*, Civil Action No. 04C 5312; *Trading Technologies International, Inc. v. CQGT, LLC, et al.*, Civil Action No. 05C 4811; and *Rosenthal Collins Group, LLC v. Trading Technologies International, Inc.*, Civil Action No. 05C 4088.

3) The attached documents which were obtained from TT in discovery under Rule 34 Fed. R. Civ. P. are the subject of this Petition and are not part of either Official Record. True and accurate copies of these documents referencing U.S.S.N. 09/590,692 (the "692 application") are attached hereto as Exhibit A (chronologically TT 0099454, TT 0099464, TT 0099450, TT 0099453, TT 0099449, TT 0099448, TT 0099467 - 68, TT 0099473 - 74, TT 0099472, TT 0099471, TT 0099490, TT 0099491, TT 0099447, TT 0099446, TT 0099493 - 94, TT 0099459 - 60, TT 0099458, TT 0099598 - 99, TT 0099480, TT 0099461 - 62, TT 0099481 - 89, TT 0099511 - 12, TT 0099507, TT 0099519 - 20, TT 0099549, TT 0099550, TT 0099514, TT 0099551 - 55, TT 0099513, TT 0099557 - 59, TT 0099562, and TT 0099591). True and accurate copies of these documents referencing U.S.S.N. 09/894,637 (the "637 application") are attached hereto as Exhibit B (chronologically TT 0099502, TT 0099597, TT 0099534, TT 0099506, TT 0099497 - 98, TT 0099532 - 33, TT 0099503, TT 0099566 - 68, and TT

0099505). True and accurate copies of these documents referencing the '692 and the '637 applications are attached hereto as Exhibit C (chronologically TT 0099615 - 16, TT 0099619 - 40, TT 0099641 - 42, TT 0099609 - 11, TT 0099604 - 08, TT 0099569 - 70, TT 0099588, TT 0099444, and TT 0099589 -90). True and accurate copies of these documents referencing unspecified applications are attached hereto as Exhibit D (chronologically TT 0099500, TT 0099522, TT 0099504, TT 0099618, TT 0099617, TT 0099548, TT 0099510, TT 0099560, TT 0099561, TT 0099565, TT 0099535, TT 0099564, TT 0099571 - 72, TT 0099583 - 84, TT 0099573 - 74, TT 0099576, TT 0099524 - 26, TT 0099580 - 82, TT 0099516, and TT 0099585).

4) All of these documents are correspondence between the Office and one or more of the applicants' representatives concerning either the '692 application or the '637 application and are not found in the Official Record of either of these applications.

5) All of this correspondence between the Office and the applicants' representative dates between May, 2002 and June, 2004, a time when both the '692 and the '637 applications were pending before the USPTO.

6) All of this correspondence is either to, or from, Examiner Richard Weisberger, the USPTO official charged with examining both the '692 and the '637 applications.

7) In this correspondence, the applicants' representatives are Steve Borsand (Reg. No. 36752), Ankur Shah (Reg. No. 41514), or both.

8) Neither the Transaction History of the '692 application nor the Transaction History of the '637 application, however, lists this correspondence between the Office and the applicants' representative. A true and accurate copy of the print out of

the "Transaction History" of the '692 application obtained from

[http://portal.uspto.gov/external/portal!/ut/p/s.7.0.A/7.0.CH/cmd/ad/ar/sa.getBib/c/6\\_0.69/ce/7.0.1ET/p/5.0.18L/d/3?selectedTab=fileHistorytab&isSubmitted=isSubmitted&dosnum=09590692](http://portal.uspto.gov/external/portal!/ut/p/s.7.0.A/7.0.CH/cmd/ad/ar/sa.getBib/c/6_0.69/ce/7.0.1ET/p/5.0.18L/d/3?selectedTab=fileHistorytab&isSubmitted=isSubmitted&dosnum=09590692) on May 2, 2006 is attached hereto as Exhibit E. A true and

accurate copy of the print out of the "Transaction History" of the '637 application obtained from

[http://portal.uspto.gov/external/portal!/ut/p/s.7.0.A/7.0.CH/cmd/ad/ar/sa.getBib/c/6\\_0.69/ce/7.0.1ET/p/5.0.18L/d/0?selectedTab=fileHistorytab&isSubmitted=isSubmitted&dosnum=09894637#](http://portal.uspto.gov/external/portal!/ut/p/s.7.0.A/7.0.CH/cmd/ad/ar/sa.getBib/c/6_0.69/ce/7.0.1ET/p/5.0.18L/d/0?selectedTab=fileHistorytab&isSubmitted=isSubmitted&dosnum=09894637#) on May 2, 2006 is attached hereto as Exhibit F.

9) Section 502.03 II of the Eight Edition of the Manual of Patent Examining Procedure, which was in effect during the time period relevant to the attached correspondence, directs that such correspondence with an Examiner concerning an application is to be printed and placed in the official file for each application. ("A paper copy of [ any email] correspondence will be placed in the appropriate patent application." Emphasis added.)

10) Correspondence, which is directly material to the Official Record – the file histories – of the '692 and the '637 applications, but missing from the Official Record, includes the following:

- a. A written communication dated March 19, 2002 from Examiner Weisberger proposing language for an amendment to the claims of the '692 application. See TT 0099519.
- b. A written communication dated May 14, 2002 concerning the '692 application from Examiner Weisberger to Mr. Shah stating "[f]or

reasons I prefer not to discuss, an impediment to the allowance of this case will be overcome. . . ." See TT 0099467.

- c. A written communication dated September 26, 2002 from Mr. Shah to Examiner Weisberger concerning an amendment to the '637 application stating that the applicants representatives need to discuss the application "to clear up the last issues in these cases." (GL's counsel has been unable to find an Interview Summary corresponding to this Interview in the Official Record of the '637 application.) See TT 0099501.
- d. In a written communication dated September 26, 2002, Examiner Weisberger advised Mr. Shah and Mr. Borsand that the second set of eyes review of the applications would be a "perfunctory step". See TT 0099532.
- e. A written communication dated October 1, 2002 from Mr. Shah to Examiner Weisberger concerning "Interview Summaries and Reasons for Allowance" states, "I await to hear from you regarding the Interview Summaries and language for Reasons for Allowance. I think **the deal you proposed during the Interviews was prompt Interview Summaries in exchange for our submissions of Amendments.**" (Emphasis added). See TT 0099500
- f. A written communication dated October 2, 2002 from Examiner Weisberger also concerning "Interview Summaries and Reasons for Allowance" stating, among things, "[a]s for the reasons for allowance,



as discussed, the contents thereof are not of record until the case has been reviewed. Reasons for allowance are generally not subject to negotiation . . . ." See TT 0099495-96.

- g. In a written communication to Examiner Weisberger dated March 20, 2003, the applicants' representative proposed several amendments to both the '692 and the '637 applications. See TT 0099531.
- h. A written communication dated March 21, 2003 from Examiner Weisberger acknowledging applicants' representative email of March 20, 2003 stating that the Examiner is "quite satisfied with the amendments." See TT 0099523.
- i. In a written communication dated May 27, 2003, applicants' representative forwarded to Examiner Weisberger several lists of references to be cited in each of several applications. See TT0099551 - 55.

11) Petitioner notes that additional correspondence/papers appear to be missing. For instance, the above referenced of September 26, 2002 correspondence references Interview Summaries that not in the Official Record.

12) Petitioner not only respectfully requests that copies of the attached correspondence between the Office and the applicants' representative be made part of the Official Record of the '692 and the '637 application files, but that all correspondence including, the attached correspondence between the Office and applicants and/or their representatives, that is not part of the Official Record be made part of the Official Record when found.

Search results as of: 05-02-2006::20:25:18 E.T.

**Transaction History**

<b>Date</b>	<b>Transaction Description</b>
10-26-2004	Post Issue Communication - Certificate of Correction
07-20-2004	Recordation of Patent Grant Mailed
07-01-2004	Issue Notification Mailed
07-01-2004	Application Is Considered Ready for Issue
06-30-2004	Workflow - Query Request - Finish
07-20-2004	Patent Issue Date Used in PTA Calculation
06-28-2004	Receipt into Pubs
03-08-2004	Issue Fee Payment Verified
06-23-2004	Receipt into Pubs
06-22-2004	Receipt into Pubs
06-17-2004	Record Petition Decision of Granted to Make Special
09-07-2001	Petition Entered
06-17-2004	Mail Miscellaneous Communication to Applicant
06-17-2004	Miscellaneous Communication to Applicant - No Action Count
06-15-2004	Correspondence Address Change
03-21-2003	Amendment Crossed in Mail
06-14-2004	File Marked Found
06-08-2004	File Marked Lost
03-03-2004	Workflow - Customer Service Request - Finish
04-01-2004	Receipt into Pubs
03-30-2004	Workflow - Query Request - Begin
03-08-2004	Issue Fee Payment Received
03-03-2004	Workflow - Customer Service Request - Begin
02-26-2004	Receipt into Pubs
02-25-2004	Workflow - File Sent to Contractor
02-25-2004	Receipt into Pubs
02-25-2004	Dispatch to Publications
11-12-2003	Information Disclosure Statement (IDS) Filed
12-18-2002	Information Disclosure Statement (IDS) Filed
11-14-2002	Information Disclosure Statement (IDS) Filed
02-10-2004	Mail Notice of Allowance
02-09-2004	Notice of Allowance Data Verification Completed
02-04-2004	Date Forwarded to Examiner
02-04-2004	Withdrawal of Notice of Allowance
02-11-2003	Information Disclosure Statement (IDS) Filed
09-20-2002	Information Disclosure Statement (IDS) Filed
03-21-2003	Date Forwarded to Examiner
03-19-2003	Request for Continued Examination (RCE)
03-21-2003	DISPOSAL FOR A RCE/CPA/129 (express abandonment if CPA)
03-10-2003	Workflow - Request for RCE - Begin
09-24-2002	Preliminary Amendment
07-27-2001	Preliminary Amendment

[http://portal.uspto.gov/external/PA\\_1\\_0\\_18L/PrinterFriendlyServlet?selPriPage=fileHistory...](http://portal.uspto.gov/external/PA_1_0_18L/PrinterFriendlyServlet?selPriPage=fileHistory...) 5/2/2006

2006-08-11 06:39pm From-

T-038 P.013/261 F-248

04-23-2002	Case Docketed to Examiner in GAU
04-23-2002	Case Docketed to Examiner in GAU
03-04-2002	Case Docketed to Examiner in GAU
10-24-2001	Application Dispatched from OIPE
10-16-2001	Application Is Now Complete
07-26-2001	Correspondence Address Change
07-26-2001	Correspondence Address Change
07-25-2001	Correspondence Address Change
07-13-2001	IFW Scan & PACR Auto Security Review
06-27-2001	Initial Exam Team nn

Close Window

2006-08-11 06:39pm From-

T-039 P.014/261 F-248

**G**

Alston & Bird

08/11/2006 FRI 18:43 [TX/RX NO 5755] 014

000604

From: Scott, Walter  
 Sent: Tuesday, April 25, 2006 6:00 PM  
 To: 'efoia@uspto.gov'  
 Subject: request made pursuant to the Freedom of Information Act

Pursuant to the Freedom of Information Act (FOIA), we request a copy of all documents (whether electronic or paper) concerning U.S. Patent Application No. 09/590,692, U.S. Patent Application No. 09/894,637, or both applications that are not in the official file of the for these applications. These patent applications matured into U.S. Patents Nos. 6,772,132 and 6,766,304, respectively.

This request includes all correspondence (including, but not limited to email correspondence) between the US Patent and Trademark Office (USPTO) – e.g., Examiner Richard.Weisberger@USPTO.GOV – and the applicants and/or their representatives – including, but not limited to Ankur D. Shah (ashah@foleylaw.com) or Steve.Borsand@tradingtechnologies.com – that is not in the official file of these applications. This request also includes all interview summaries (not entered into the official file) concerning either of the above-identified applications.

This request is for documents dated between March 1, 2002 to August 31, 2004.

In particular, we have reason to believe that there are a number of emails between Examiner Weisberger and the applicants' representatives that are not in the official file – i.e., these emails do not appear in the certified copy of either application provided by USPTO – of either of the above-identified U.S. patent applications. Thus, this request includes at least emails of the following dates:

May 6, 2002; May 9, 2002; May 14, 2002; May 21, 2002; June 24, 2002; June 26, 2002; June 27, 2002; July 12, 2002; September 11, 2002; September 24, 2002; September 26, 2002; September 27, 2002; October 1, 2002; October 2, 2002; December 17, 2002;

March 3, 2003; March 18, 2003; March 19, 2003; March 20, 2003; March 21, 2003; March 27, 2003; April 25, 2003; May 27, 2003; July 3, 2003; August 25, 2003; September 8, 2003; September 23, 2003; October 3, 2003; October 7, 2003; October 8, 2003; October 15, 2003; October 16, 2003; October 17, 2003; October 21, 2003; October 22, 2003; October 23, 2003; December 4, 2003; December 9, 2003; December 11, 2003; December 16, 2003; December 18, 2003; December 19, 2003; December 22, 2003; December 23, 2003; January 2, 2003; January 5, 2003; January 11, 2003; January 12, 2004; January 13, 2004; January 30, 2003;

February 3, 2004; February 4, 2004; February 26, 2004; March 1, 2004; and June 4, 2004.

Section 502.03(E)II of the Manual of Patent Examining Procedures ("MPEP") states that email correspondence with an Examiner concerning an application is to be printed out and placed in the official file for each application. ("A paper copy of such [email] correspondence will be placed in the appropriate patent application." Emphasis added). Both the August 2001 and the current version of the MPEP make this statement.

The requested records were part of the examination of the above-identified patent applications and the patents that matured from these applications are the subject of a number of litigations pending in the Northern District of Illinois. A *Markman* hearing is currently scheduled to begin on June 1, 2006 in the case captioned Trading Technologies International, Inc. v. eSpeed et al. Case No. 04 C 5312 in the Northern District of Illinois.

Because the undersigned first learned of the existence of the requested records last week, and the incompleteness of the patent files can impact the *Markman* hearing, your requestor asks that this request for records be expedited.

Please send all copies being provided as well as the invoice for any fees and disbursements to the below stated address. However, please contact us if the fees and disbursements for this search are expected to exceed \$1000.

Respectfully submitted.

Alston & Bird

2006-08-11 06:39pm From-

T-039 P.016/261 F-248

Walter Scott  
Alston & Bird LLP  
90 Park Avenue  
New York, New York 10016

Tel: (212) 210-9518  
Fax: (212) 210-9444

- 2 -

Alston & Bird

08/11/2006 FRI 18:43 [TX/RX NO 5755] 016

000606

2006-08-11 06:40pm From-

T-039 P.017/261 F-248

# Exhibit C

Alston & Bird

08/11/2006 FRI 18:43 [TX/RX NO 5755] 017

000607

2006-08-11 06:40pm From-

T-039 P.018/261 F-248



ATTORNEYS AT LAW

Rockefeller Center, 620 Fifth Avenue, New York, NY 10020-2457, USA  
Tel | (212) 632.5500 Fax | (212) 632.5555  
newyork@salans.com www.salans.com

Lora A. Moffatt Partner  
Direct Dial (212) 632 8436  
Direct Fax (212) 307 3320  
lmoffatt@salans.com

August 1, 2006

**Via Hand Delivery**

Heather F. Auyang, Esq.  
Office of the General Counsel/Office of the Solicitor  
United States Patent and Trademark Office  
10B20, Madison Building East, 600 Dulany Street  
Alexandria, Virginia 22314

Re: Trading Technologies Int'l Inc. v. GL Trade Americas, et al.  
Case No. 05-C-4120: Demand for Deposition of Examiner Weisberger

Dear Ms. Auyang:

We are counsel for Defendants GL Trade Americas, Inc., et al. ("GL") in the above-captioned action. We have organized the documents listed below in production number order in preparing for the upcoming deposition of Examiner Weisberger. We believe this may be of assistance to you as well as the other parties and will hopefully contribute to an efficient deposition on Friday.

TT0099444  
TT0099446  
TT0099447  
TT0099448  
TT0099449  
TT0099450  
TT0099453  
TT0099454  
TT0099458  
TT0099459-460  
TT0099461-462  
TT0099464  
TT0099467-468  
TT0099471  
TT0099472  
TT0099473-474  
TT0099480  
TT0099481-489  
TT0099490

ALMATY BAKU BRATISLAVA BUCHAREST ISTANBUL KYIV LONDON MOSCOW NEWYORK  
PARIS PRAGUE SHANGHAI ST.PETERSBURG WARSAW

NEWYORK.529261.2



08/11/2006 FRI 18:43 [TX/RX NO 5755] 018

000608



Heather F. Auyang, Esq.  
August 1, 2006  
Page 2

TT0099491  
TT0099493-494  
TT0099497-498  
TT0099500  
TT0099502  
TT0099503  
TT0099504  
TT0099505  
TT0099506  
TT0099507  
TT0099510  
TT0099511-512  
TT0099513  
TT0099514  
TT0099516  
TT0099519-520  
TT0099522  
TT0099524-525  
TT0099526  
TT0099532-533  
TT0099534  
TT0099535  
TT0099548-550  
TT0099551-555  
TT0099557-559  
TT0099560  
TT0099561  
TT0099562  
TT0099564  
TT0099565  
TT0099566-568  
TT0099569-570  
TT0099571-572  
TT0099573-574  
TT0099576  
TT0099580-582  
TT0099583-584  
TT0099585  
TT0099588  
TT0099589-590  
TT0099591  
TT0099597  
TT0099598-599  
TT0099604-608  
TT0099609-611  
TT0099615-616  
TT0099617  
TT0099618  
TT0099619-640  
TT0099641-642

NEWYORK529261.2


Heather F. Auyang, Esq.  
August 1, 2006  
Page 3

In addition to the above documents, we have discovered a number of documents relating to the file histories that were not part of our previous correspondence but that we would like to question Examiner Weisberger. The documents are:

- ELLIS00574 -- one page PTO-413 Form, Interview Summary of March 13, 2003;
- TT0101178 -- one page email of 4/4/2006 from Karyon Owen to Examiner Weisberger regarding reconstructing patent files;
- TT0101826-TT0101915 -- Email with attached documents from Mark Triplet to Jackie Waldo at USPTO regarding reconstruction of missing documents from file wrappers;
- TT0100795-email exchange with Examiner Weisberger;
- TT100805-806-email exchange with Examiner Weisberger;
- TT100808-email exchange with Examiner Weisberger;
- TT100820-824-email exchange with Examiner Weisberger; and
- TT100872-email exchange with Examiner Weisberger.

Please let me know if you have any questions or comments.

Sincerely,

  
Lora A. Moffatt, Esq.

LAM/elp

cc: Walter Scott, counsel for GL Trade Americas  
Jennifer Kurcz, counsel for Trading Technologies (by overnight delivery)  
Raymond C. Perkins, counsel for eSpeed (by overnight delivery)  
Nina Wang, counsel for CQG (by overnight delivery)  
Geoffrey A. Baker, counsel for Rosenthal Collins (by overnight delivery)


NEWYORK.529261.2

7/3/01

$B_o = (A + D)Q$ $S_o = (B - D)Q$
-----------------------------------

**• INNOVATION #6: USE OF A THREE BUTTON MOUSE WHEN TRADING IN A HORIZONTALLY DISPLAYED DEPTH OF MARKET WHERE THE MIDDLE MOUSE BUTTON EFFECTS DIME TRADING AND THE RIGHT MOUSE BUTTON EFFECTS CLICK TRADING**


If using a three-button mouse, the trader would "dime" the market with a single click of the middle mouse button. If the trader selected a 3 button mouse in the Click Trading

Properties setup, these radio buttons are inactive . A trader would simply maneuver the screen cursor above the price in the market depth and click the middle button. A dime trading order would be sent to market in the manner described above.

Using the three button mouse, a click on the right mouse button with the cursor positioned above a price in the market depth would send a click trade to market as described above.


**• INNOVATION #7: USE OF A TWO BUTTON MOUSE WHEN TRADING IN A HORIZONTALLY DISPLAYED DEPTH OF MARKET WITH THE ABILITY TO TOGGLE (SWITCH BETWEEN) DIME AND CLICK TRADING WHERE THE RIGHT MOUSE BUTTON EFFECTS BOTH DIME AND CLICK TRADING DEPENDING ON WHICH IS ENABLED**

If using a two-button mouse, the dime radio button must be selected before using the right mouse button to send the order to market. If the trader's Click Trading Properties

designates a 2 button mouse, these radio buttons are active  and a trader must manually select Click or Dime trading modes. Once chosen, the trader can send as many orders as he desires, each with one click of the right mouse button and each either a Click or Dime order depending on which mode he chose.

**• INNOVATION #8: ABILITY TO AUGMENT CLICK TRADING LOGIC WITH THEO CHECK**

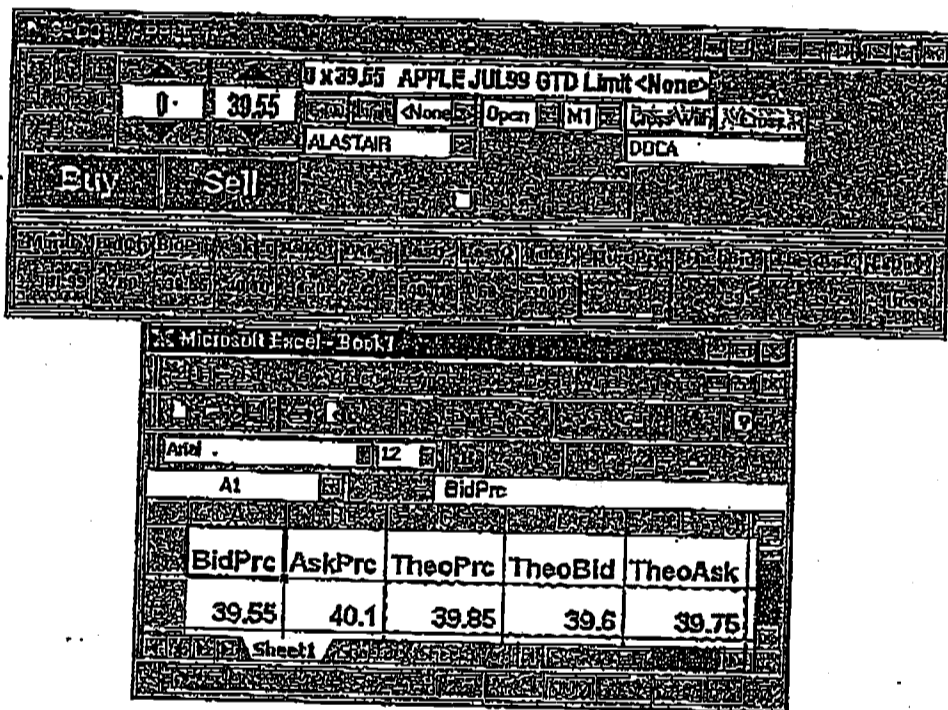
Traders may also enter or restrict trades based on pre-determined theoretical values. The values are derived from equations, which can be set up in various programs such as Excel (a Microsoft program) or other proprietary software other than X\_TRADER®. X\_TRADER® allows the trader to input the value derived from the equation into a field, which would appear below the following Theoretical Edge Implementation field:

 The trader's click trades would then be restricted by this value and no order would be allowed that was not as good or better than the theoretical value. This value would be applied regardless of whether the trader attempted to buy or sell. Thus, if

7/3/01

the theoretical value was 102 and the trader attempted to click trade in the BidPrc column at 101, no order would be sent because the clicked value was worse than the theoretical value. Clicks on 102, 103, 104 or higher in the BidPrc column would be allowed because these would send orders as good as or better than the theoretical value.

To engage the theoretical price feature, the trader would click in the box next to "Theo" in the screen shot above. The theoretical values would be imported into X\_TRADER@ as demonstrated in the following screen shot:



**• INNOVATION #9: ABILITY TO AUGMENT CLICK TRADING LOGIC WITH B/A**

If the trader clicked in the box next to B/A in the screen shot above, a separate theoretical value could be established for each bid and ask. Separate bid and ask theoretical values would be established for each row in the market depth. Each attempted bid or ask order would be checked against each corresponding theoretical bid or ask value. If the clicked price is as good or better than the corresponding Bid or Ask theoretical value, then the order will be sent.

7/3/01

• **INNOVATION #10: ABILITY TO MODIFY EDGE FOR THEO CHECK**

Traders may also edge their trades away from the theoretical values described above. When Theo or B/A are checked, a white field appears in the box to the left of "Theo" and "B/A." Traders can input a number of ticks here which allows them to enter orders that are within the specified number of ticks away from the corresponding theoretical value. For example, with a 12.2 theoretical, a 12.6 market bid, and an edge value of 4 ticks, a trader's order to sell the bid will pass the edge test. But if the bid moved one tick lower, to 12.5, an attempt to sell would fail the edge test, because only 3 ticks of edge would be made on the trade.

Edge trading can also be used with the Click +/- setting. A trader who sets the +/- value to 4 ticks will construct a bid 4 ticks higher than the offer or an offer 4 ticks lower than the bid. If this constructed price fails the edge test, the order won't be sent.

## **X\_TRADER MERCURY**

As explained above, X\_TRADER® greatly improves the speed and accuracy of electronic trading. However, the display of market depth and the manner in which traders trade within the market depth can be effected in different manners, which many traders will find materially better, faster and more accurate. Despite the safety feature of Click Offset and the innovative Click and Dime trading, which allow traders to keep up with fast moving markets, a fluid market can still leave a trader behind. Rapid price fluctuation may move the market beyond even the Click Offset and click and Dime trades. In addition, some traders may find the display of market depth to be difficult to follow. X\_TRADER® lists charts the market depth vertically so that both Bid and Ask prices descend the grid. In X\_TRADER®, the Bid prices descend the market grid as the prices decrease. However, in a somewhat counterintuitive manner, Ask prices also descend the market grid as these prices actually increase. Mercury remedies these issues in a new, innovative and logical manner. Mercury also provides an order entry system, market grid, fill window and summary of market orders in one simple window. Such a condensed display materially simplifies the trading system by entering a tracking trades in an extremely efficient manner.

• **INNOVATION #11: VERTICAL DISPLAY OF MARKET DATA INCLUDING MARKET DEPTH**

X\_TRADER Mercury displays market depth in a logical, vertical fashion or horizontally or at some other convenient angle or configuration. A vertical field will be shown and described for convenience, but the field could be horizontal or at an angle.

In turn, Mercury further increases the speed of trading and the likelihood of entering orders at desired prices with desired quantities. Mercury displays a static vertical column

Atty. Dkt. No. 024051-0135

**IN THE SPECIFICATION**

Column 9, line 65, delete "sell" and insert -buy-;

Column 10, line 2, delete "buy" and insert -sell-.

These changes were made in the amendment filed on March 21, 2003, a copy of which has been attached for your review.

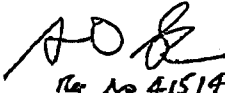
Applicant submits that the above changes would not constitute new matter, and correction thereof would not require reexamination.

Pursuant to 37 C.F.R. §1.322, Applicant requests that the enclosed Certificate of Correction be approved.

Although Applicant believes that no fee is required for this Request, the Commissioner is hereby authorized to charge any additional fees which may be required for this Request to Deposit Account No. 19-0741.

Respectfully submitted,

Date OCTOBER 4, 2004

By   
Reg. No 41514

FOLEY & LARDNER LLP  
Customer Number: 22428  
Telephone: (202) 672-5485  
Facsimile: (202) 672-5399

William T. Ellis  
Attorney for Applicant  
Registration No. 26,874

2006-08-11 07:04pm From-

T-039 P.244/261 F-248

(Page 85 of 90)

011188/0355 PAGE 2

ANTIONE ROYALL, EXAMINER  
ASSIGNMENT DIVISION  
OFFICE OF PUBLIC RECORDS

TT0101910

08/11/2006 FRI 18:43 [TX/RX NO 5755] 244

000615

Atty. Dkt. No. 024051/0135

**ASSIGNMENT AND AGREEMENT**

*WHEREAS*, Gary Allan Kemp II of 335 Fairview Avenue, Winnetka, IL 60093, and Jens-Uwe Schluetter of 2320 Grey, Evanston, IL 60201 Harris Brumfield of 1840 Cleveland, Chicago, IL 60614, (hereinafter referred to singly and collectively as "ASSIGNOR") have invented a certain invention entitled **CLICK BASED TRADING WITH INTUITIVE GRID DISPLAY OF MARKET DEPTH** (Atty. Dkt. No. 024051/0135) for which an application for United States Letters Patent was filed on June 9, 2000 as Application No. 09/590692; and

*WHEREAS*, Trading Technologies International, Inc., a corporation duly organized and existing under the laws of the State of Illinois, and having its principal place of business at 1603 Orrington Avenue, Suite 1300, Evanston, IL 60201 (hereinafter referred to as "ASSIGNEE") is desirous of acquiring the entire interest therein;

*NOW THEREFORE*, in consideration of One Dollar (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, ASSIGNOR has sold, assigned, and transferred, and by these presents hereby sells, assigns, and transfers, unto ASSIGNEE, its successors and assigns, the full and exclusive right, title, and interest in and to (a) the above-identified invention or inventions and all improvements and modifications thereof, (b) the above-identified application and all other applications for Letters Patent of the United States and countries foreign thereto for the above-identified invention or inventions and all improvements and modifications thereof, (c) all Letters Patent which may issue from said applications in the United States and countries foreign thereto, (d) all divisions, continuations, reissues, and extensions of said applications and Letters Patent, and (e) the right to claim for any of said applications the full benefits and priority rights under the International Convention and any other international agreement to which the United States adheres; such right, title, and interest to be held and enjoyed by ASSIGNEE, its successors and assigns, to the full end of the term or terms for which any and all such Letters Patent may be granted as fully and entirely as would have been held and enjoyed by ASSIGNOR had this Assignment not been made.

*ASSIGNOR HEREBY AUTHORIZES AND REQUESTS* the Commissioner of Patents and Trademarks to issue said Letters Patent to ASSIGNEE as assignee of the entire interest, for the sole use and benefit of ASSIGNEE, its successors and assigns.

*ASSIGNOR HEREBY AGREES* (a) to communicate to ASSIGNEE, its successors and assigns, or their representatives or agents, all facts and information known or available to ASSIGNOR respecting said invention or inventions, improvements, and modifications including evidence for interference, reexamination, reissue, opposition, revocation, extension, or infringement purposes or other legal, judicial, or administrative proceedings, whenever requested by ASSIGNEE; (b) to testify in person or by affidavit as required by ASSIGNEE, its successors and assigns, in any such proceeding in the United States or a country foreign thereto; (c) to execute and deliver, upon request by ASSIGNEE, all lawful papers including, but not limited to, original, divisional, continuation, and reissue applications, renewals, assignments, powers of attorney, oaths, affidavits, declarations, depositions; and (d) to provide all reasonable assistance to ASSIGNEE, its successors and assigns, in obtaining and enforcing proper title in and



**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Friday, March 21, 2003 4:25 PM (GMT)  
**To:** Steve Borsand (TT) <Steve.Borsand@tradingtechnologies.com>  
**Subject:** RE: proposed amendments

---

Steve -

I'm quite satisfied with the amendments. The claims reflect with great precision the various functions of TT products. This process although somewhat arduous yielded a clear and definitive set of property boundaries, without limiting the scope of the claimed inventions unnecessarily. Follow up with the amendments and email your any notes that you have prepared directed to reasons for allowance.

Richard --

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Thursday, March 20, 2003 3:58 PM  
**To:** richard.weisberger@uspto.gov  
**Subject:** proposed amendments

Richard - Here are the proposed amendments in the 3 cases. The first file goes with the 590,692 case, the second is the 894,637 and the third is 589,751. The documents have redlined turned on to show the differences with the previous claims and which dependent claims are new. In the '751, the document contains just each independent claim and the changes thereto.

I will call you shortly.

Steve

<<692claimsamended.doc>> <<637claimsamend.doc>> <<751amend.doc>>

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT0100808

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Friday, April 25, 2003 4:00 PM (GMT)  
**To:** Steve Borsand (TT) <Steve.Borsand@tradingtechnologies.com>  
**Subject:** RE: 09/590,692 et al.

---

Yes. The cases are scheduled to be reviewed within the three weeks. Again, I do foresee any issues, as I am co-editing with the reviewer an internal news letter on the patent board's business method decisions. We have a very strong working relationship.

Richard --

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Friday, April 25, 2003 10:14 AM  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/590,692 et al.

Richard -- Did you find anything out yesterday re: the status of our cases in quality review?

Thanks, Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT0100820

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Wednesday, March 19, 2003 7:54 PM (GMT)  
**To:** Steve Borsand (TT) <Steve.Borsand@tradingtechnologies.com>  
**Subject:** RE: 09/590,692 et al.

---

Steve -

I'll need to back up our interview to 5:00.

Richard -

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Wednesday, March 19, 2003 12:06 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

I am faxing them right now.

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV [**mailto:Richard.Weisberger@USPTO.GOV**]  
**Sent:** Wednesday, March 19, 2003 10:32 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: 09/590,692 et al.

Steve,

The RCE requests for 09/590,692 and 09/894,637 have not been matched to their files. Can you fax a copy to me at 703 872 9025?

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Tuesday, March 18, 2003 4:24 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

Richard - I was hoping we can pick a time tomorrow to talk. I can be available any time that is good for you.

Thanks,

Steve

TT0100821

2006-08-11 07:05pm From-

T-038 P.257/261 F-248

Page 147 of 212)

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT0100822

08/11/2006 FRI 18:43 [TX/RX NO 5755] 257

000620

**From:** Richard.Weisberger@USPTO.GOV  
**Sent:** Wednesday, March 19, 2003 5:36 PM (GMT)  
**To:** Steve Borsand (TT) <Steve.Borsand@tradingtechnologies.com>  
**Subject:** RE: 09/590,692 et al.

---

Steve -

Please consider the following amendment in combination -

said dynamic display of bids and asks traversing said static price column in response to changes in the inside market,

said column static price axis responsive to a one click centering feature that re-centers the inside market of the traders screen,

Richard -

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Wednesday, March 19, 2003 12:06 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

I am faxing them right now.

-----Original Message-----

**From:** Richard.Weisberger@USPTO.GOV **[mailto:Richard.Weisberger@USPTO.GOV]**  
**Sent:** Wednesday, March 19, 2003 10:32 AM  
**To:** Steve.Borsand@tradingtechnologies.com  
**Subject:** RE: 09/590,692 et al.

Steve,

The RCE requests for 09/590,692 and 09/894,637 have not been matched to their files. Can you fax a copy to me at 703 872 9025?

-----Original Message-----

**From:** Steve.Borsand@tradingtechnologies.com  
**[mailto:Steve.Borsand@tradingtechnologies.com]**  
**Sent:** Tuesday, March 18, 2003 4:24 PM  
**To:** Richard.Weisberger@uspto.gov  
**Subject:** RE: 09/590,692 et al.

TT0100823

2006-08-11 07:05pm From-

T-039 P.259/261 F-248

Page 149 of 212)

Richard - I was hoping we can pick a time tomorrow to talk. I can be available any time that is good for you.

Thanks,

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT0100824

08/11/2006 FRI 18:43 [TX/RX NO 5755] 259

000622

2006-08-11 07:05pm From-

T-039 P.260/261 F-248

Page 197 of 212)

**From:** Steve Borsand (TT) <Steve.Borsand@tradingtechnologies.com>  
**Sent:** Friday, June 4, 2004 4:04 PM (GMT)  
**To:** richard.weisberger@uspto.gov  
**Subject:** 09/894,637

---

Richard - I left you a voicemail as well. Just checking into the status of the search for the file. I would like to hear something back asap. I am thinking about sending a patent agent from our company out to the patent office first thing next week to make sure everything is in order with the two files in which we paid the issue fee. Please call me at 312-476-1018.

Steve

---

Steven F. Borsand  
Vice President, Intellectual Property  
Trading Technologies, Inc.  
ph: +1.312.476.1018  
fax: +1.312.476.1182  
steve.borsand@tradingtechnologies.com

---

TT0100872

08/11/2006 FRI 18:43 [TX/RX NO 5755] 260

000623

This facsimile message and its contents are legally privileged and confidential information intended solely for the use of the addressee. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, copying or other use of this message and its contents is strictly prohibited. If you have received this telecopy in error, please notify us immediately by telephone and return the original message to us at the address shown below via the Postal Service. Thank You.

# ALSTON & BIRD LLP

90 Park Avenue  
New York, NY 10016  
212-210-9400  
Fax: 212-210-9444

## TELECOPY

PLEASE DELIVER AS SOON AS POSSIBLE

Date:

August 11, 2006

Recipient:

Office of Petitions

Company:

United States Patent and Trademark  
Office

Fax Number: ~~273-0025~~  
~~571272-3882~~

Voice Number:  
571-272-3282

Walter Scott

Message:

Number of Pages: (including cover page)

401

**IF NOT RECEIVED PROPERLY, PLEASE NOTIFY US IMMEDIATELY AT 212-210-1252.**

USER CODE:	Scotw	REQUESTED BY:	Yolanda Sanchez
CLIENT/MATTER:	049506/296191	OPERATOR:	



5'-CATGGCTATC  
CGATAGACAT-5'

A second adaptor, for BglII/SalI, was also ligated to the env-1 segment. This second adaptor had the following sequence:

5'-GATCTTGATAGG  
AACTATCCAGCT-5'

The first synthetic adaptor contains an in-frame initiation codon, and the second synthetic adaptor contains an in-frame stop codon.

The env-1 segment modified with the synthetic adaptors was then ligated into pPGAP1 previously linearized with NcoI and SalI. Plasmid pPGAP1 has been previously described. EPO Pub. No. 164,556. It contains a yeast glyceraldehyde-3-phosphate dehydrogenase (GAPDH) promoter and terminator sequences flanking NcoI and SalI cloning sites. The ligation of the modified env-1 segment into pPGAP1 produces plasmid pPGAP/FGenv, which contains the env-1 sequence fused directly to the GAPDH promoter and terminator sequences. The expression cassette containing GAPDH promoter-env-1-GAPDH terminator was excised by digestion of pPGAP/FGenv with BamHI and gel purification of the fragment. The expression cassette was cloned into BamHI-digested pCI/1 (see Section 4.1.2) to yield pCI/1FGenv.

Plasmid pCI/1FGenv was used to transform yeast strain AB110 (Mata, ura 3-52, leu 2-04 or both leu 2-3 and leu 2-112, pep 4-3, his 4-580, cir<sup>+</sup>; see EPO Pub. No. 620,662 and Section 4.5.2) as described previously. Hinnen et al. (1978) *Proc. Natl. Acad. Sci. USA* 75:1929. Yeast colonies transformed with the expression plasmid were grown in synthetic complete media lacking leucine at a concentration of 2% glucose. Large-scale cultures were grown in YEP medium with 2% glucose as described in Section 4.1.3. Lysates were prepared from yeast cultures as described previously, and were then separated into soluble and insoluble fractions by centrifugation, and analyzed by polyacrylamide gel electrophoresis, see Section 4.1.4. A heavily expressed protein corresponding to env-1 was readily discernible in the insoluble fraction by Coomassie blue staining. This protein also migrated at a molecular weight of approximately 28 kD, as predicted from the DNA sequence.

#### 4.2.2. Env-2

The env-2 polypeptide is similar to the previously described envH (Section 4.1.1) and corresponds to the viral gp120 glycoprotein. Env-2 differs from envH in the 5 amino terminal residues and is under the regulatory control of the GAPDH promoter as described for the expression of env-1. Env-2 is a polypeptide having the amino acid sequence of gp120env residues 26510.

##### 4.2.2.1. Construction of pAB24-GAP-env2

Plasmid pAB24-GAP-env2 (FIG. 28) contains an "expression cassette" for the env gene cloned into the BamHI site of the yeast shuttle vector pAB24 (below). Expression of the env gene is under regulatory control of the GAPDH promoter and the PYK terminator. Construction of pAB24-GAP-env2 was accomplished by ligating (i) an approximately 952 bp BamHI-StuI fragment from plasmid pCI/1-FGenv (Section 4.2.1) which contains the GAPDH promoter and the envelope sequences coding for amino acids 26-267, and (ii) an approximately 1474 bp StuI-BamHI fragment from

plasmid pDPC302 (which is similar to pDPC303 in Section 4.1.1. except that it extends 57 nucleotides in the 3' direction of the envelope coding region), which codes for env amino acids 267-510 and the PYK terminator, into plasmid pAB24 which had been previously digested with BamHI and treated with alkaline phosphatase. The direction of transcription in the "expression cassette" is in the opposite direction of the tetracycline gene of the pBR322 sequences.

Plasmid pAB24 (FIG. 27) is a yeast shuttle vector which contains the complete 2 $\mu$  sequence [Broach, in: *Molecular Biology of the Yeast Saccharomyces*, Vol. 1, p. 445, Cold Spring Harbor Press (1981)] and pBR322 sequences. It also contains the yeast URA3 gene derived from plasmid YEp24 [Botstein et al. (1979) *Gene* 8:17] and the yeast LEU<sup>2d</sup> gene derived from plasmid pCI/1. EPO Pub. No. 116,201. Plasmid pAB24 was constructed by digesting YEp24 with EcoRI and religating the vector to remove the partial 2 $\mu$  sequences. The resulting plasmid, YEp24ARI, was linearized by digestion with ClaI and ligated with the complete 2 $\mu$  plasmid which had been linearized with ClaI. The resulting plasmid, pCBou, was then digested with XbaI and the 8605 bp vector fragment was gel isolated. This isolated XbaI fragment was ligated with a 4460 bp XbaI fragment containing the LEU<sup>2d</sup> gene isolated from pCI/1; the orientation of the LEU<sup>2d</sup> gene is in the same direction as the URA3 gene. Insertion of the expression cassette was in the unique BamHI site of the pBR322 sequences, this interrupting the gene for bacterial resistance to tetracycline.

##### 4.2.2.2. Transformation and expression

Yeast cells *S. cerevisiae* 2150-2-3 (Mat a, ade 1, leu 2-04, cir<sup>+</sup>) were transformed as described by Hinnen et al. [(1978) *Proc. Natl. Acad. Sci. USA* 75:1929-1933] and plated onto leu-selective plates. Single colonies were inoculated into leu-selective media and grown to saturation. The culture was further inoculated into YEP 2% glucose media. Cells were harvested and the env-2 protein was purified and characterized as described below.

##### 4.2.2.3. Purification of env-2 protein

Frozen *S. cerevisiae* 2150-2-3 (pAB24-GAP-env2) were thawed and suspended in 1 volume of lysis buffer (1  $\mu$ g/ml pepstatin, 0.001M PMSF, 0.001M EDTA, 0.15M NaCl, 0.05M Tris-HCl pH 8.0), and 1 volume of acid-washed glass beads are added. Cells are broken in a non-continuous system using a 300 ml glass unit of Dyno-mill at 3000 rpm for 10-25 min. The jacket is kept cool by a -20 $^{\circ}$  C. ethylene glycol solution. Glass beads are decanted by letting the mixture set for approximately 3 minutes on ice. The cell extract is recovered and centrifuged at 18,000 rpm (39,200 $\times$ g) for 35 min. The supernatant is discarded and the precipitate (pellet 1) is further treated as indicated below.

Pellet 1 is resuspended in 4 volumes of Tris-HCl buffer (0.01M Tris-HCl, pH 8.0, 0.01M NaCl, 0.001M PMSF, 1  $\mu$ g/ml pepstatin, 0.001M EDTA, 0.1% SDS) and extracted for 2 h at 4 $^{\circ}$  C. with agitation. The solution is centrifuged at 6,300 $\times$ g for 15 min. The insoluble fraction (pellet 2) is resuspended in 4 volumes of PBS (per liter: 0.2 g KCl, 0.2 g KH<sub>2</sub>PO<sub>4</sub>, 8.0 g NaCl, 2.9 g Na<sub>2</sub>HPO<sub>4</sub>·12H<sub>2</sub>O), 0.1% SDS, 0.001M EDTA, 0.001M PMSF, 1  $\mu$ g/ml pepstatin, and centrifuged at 6,300 $\times$ g for 15 min. The pellet (pellet 3) is suspended in 4 volumes of PBS, 0.2% SDS, 0.001M EDTA, 0.001M PMSF, 1  $\mu$ g/ml pepstatin and is extracted for 12 $\pm$ 3 h at

4° C. with agitation on a tube rocker. The solution is centrifuged at 6,300×g for 15 min. The soluble fraction is recovered for further purification as indicated below. (The pellet can be reextracted by resuspending it in 4 volumes of 2.3% SDS, 5% β-mercaptoethanol, and boiling for 5 min. After boiling, the solution is centrifuged at 6,300×g for 15 min. The soluble fraction is recovered for further purification.)

The soluble fraction is concentrated by precipitation with 30% ammonium sulfate at 4° C. The pellet (pellet 4) is resuspended in 2.3% SDS, 5% β-mercaptoethanol, and chromatographed on an ACA 34 (LKB Products) gel filtration column. The column is equilibrated with PBS, 0.1% SDS, at room temperature. Chromatography is developed in the same solution with a flow rate of 0.3±0.1 ml/min. 5±2 ml fractions are collected, pooled and characterized by protein gel electrophoresis, Western analysis, and ELISA. If needed, pooled fractions are concentrated by vacuum dialysis on Spectrapor #2 (MW cutoff 12-14K), or by membrane filtration using an Amicon concentrator using a PM10 membrane.

SDS polyacrylamide gel analysis (12% acrylamide gels) showed that a new 55,000 dalton protein was being synthesized in yeast cells transformed with the env-containing vector. The 55,000 dalton protein is absent from cells transformed with control plasmid (vector without env insert). The identity of env-2 was confirmed by both ELISA and Western analysis using AIDS patient serum. In both assays the 55,000 dalton protein showed immunoreactivity. No reactivity was obtained with serum from a pool of normal individuals.

#### 4.2.2.4. Immunogenicity

To determine the immunogenicity of polypeptides expressed in yeast, purified env-2 (Section 4.2.2.3) was used to immunize rabbits. Rabbits received perilymphnodal injections of 250 μg of purified env-2 polypeptide in complete Freund's adjuvant. Twenty-one days later, the rabbits were boosted with intramuscular injections of 250 μg of env-2 polypeptide in incomplete Freund's adjuvant. Ten days later the animals were bled and then set up on a schedule of boosting, bleeding 10 days later, and reboosting after 21 days. Antibody titers to env-2 polypeptide for the rabbits were measured using ELISA. Antibodies from the rabbits reacted specifically with env glycoproteins in virus (gp120) and in infected cells (gp160). Thus, the polypeptide moiety representing the N-terminal domain of the env region is immunogenic when expressed in a heterologous host species.

#### 4.2.3. Env-3

##### 4.2.3.1. GAP promoter

Env-3, the gp41env equivalent (AA 529-855 of env), was prepared by cutting the env insert of plasmid pUC19ARV7D/7 (Section 4.2.1.1) at the HgaI site (nt7401, FIG. 5) and at the XhoI site 3' to the env termination codon (nt8460, FIG. 5). The resulting env-3 segment was modified by the addition of synthetic adapters. The 5' end was modified by the addition of an NcoI/HgaI adapter which reintroduced the coding sequence to met529 (nt7817, FIG. 5). The linker had the following sequence:

5'-CATGGCGCCGTTTCTTTGACCTTGACC-3'  
3'-CCGCGGCAAAGAACTGGAAGTGGCATGT-5'

A second synthetic XhoI/SalI adapter molecule was prepared and ligated to the XhoI end of env-3, the adapter having the following sequence:

5'-TCGACCTCGAGG-3'  
3'-GGAAGCTCCAGCT-5'

The HgaI/XhoI fragment was cloned together with the above linkers into NcoI/SalI-digested pPGAP/FGenv (Section 4.2.1.1), and the resulting plasmid, pPGAP/HXenv, was digested with BamHI. The BamHI expression cassette was cloned into pCl/1. The resulting expression vector pCl/1GAP/HXenv was expressed as described above after transformation of yeast strain AB110 (Section 4.2.1). Extreme toxicity, as evidenced by slow growth of cells, was observed when this gene was expressed constitutively in yeast under control of the GAPDH promoter.

##### 4.2.3.2. ADH-2/GAPDH promoter

In order to express env-3 under the control of the glucose-regulable ADH-2/GAPDH (or ADH-2/GAP) promoter, the Nco-I/BamHI fragment containing the env-3 coding region and the GAPDH terminator was excised from pPGAP/HXenv. This was cloned together with the ADH-2/GAPDH promoter as a BamHI/Nco-I fragment (from pJS103) into BamHI-digested and phosphatized pCl/1. The resulting expression vector, pCl/1ADH-2/GAP/HXenv, was expressed as described below after transformation of yeast strain AB110.

Plasmid pJS103, which contains the hybrid ADH-2/GAPDH promoter employed above, was constructed as follows. The ADH-2 portion of the promoter was constructed by cutting a plasmid containing the wild-type ADH2 gene from plasmid pADR2 [Beier et al. (1982) *Nature* 300:724-728] with restriction enzyme EcoRV, which cuts at position +66 relative to the ATG start codon, as well as in two other sites in pADR2, outside of the ADH2 region. The resulting mixture of a vector fragment and two smaller fragments was resected with Bal31 exonuclease to remove about 300 bp. Synthetic XhoI linkers were ligated onto the Bal31-treated DNA. The resulting DNA linker vector fragment (about 5 kb) was separated from the linkers by column chromatography, cut with restriction enzyme XhoI, religated, and used to transform *E. coli* to ampicillin resistance. The positions of the XhoI linker were determined by DNA sequencing. One plasmid which contained an XhoI linker within the 5' nontranscribed region of the ADH2 gene (position -232 from ATG) was cut with the restriction enzyme XhoI, treated with nuclease S1, and subsequently treated with the restriction enzyme EcoRI to create a linear vector molecule having 1 blunt end at the site of the XhoI linker and an EcoRI end. The GAP portion of the promoter was constructed by cutting plasmid pPGAP with the enzymes BamHI and EcoRI, followed by the isolation of the 0.4 Kbp DNA fragment. This purified fragment was then completely digested with the enzyme AluI and an approximately 200 bp fragment was isolated. This GAP promoter fragment was ligated to the ADH-2 fragment present on the linear vector described above to give plasmid pJS103.

*S. cerevisiae* AB110 was transformed with the ADH-2/GAPDH constructions, and the cultures grown initially in synthetic complete media lacking leucine with 8% glucose. Env-3 was induced by diluting the culture