

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
16 July 2009 (16.07.2009)

PCT

(10) International Publication Number  
**WO 2009/089358 A3**

(51) International Patent Classification:  
**G06Q 40/00** (2006.01)

(21) International Application Number:  
PCT/US2009/030449

(22) International Filing Date:  
8 January 2009 (08.01.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
61/020,138 9 January 2008 (09.01.2008) US  
61/020,374 10 January 2008 (10.01.2008) US  
12/014,027 14 January 2008 (14.01.2008) US  
61/022,591 22 January 2008 (22.01.2008) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

**Published:**

— with international search report (Art. 21(3))

(88) Date of publication of the international search report:  
30 December 2009

(54) Title: AUTOMATIC FINANCIAL INSTRUMENT TRANSACTION SYSTEM

(57) Abstract: A computer-based transaction system manages representations of a plurality of positions in a first type of financial instrument, such as bond future contracts. From time to time, transaction system converts traders' positions in the first type of financial instrument into corresponding positions in a second type of financial instrument, such as bonds. Later, the transaction system converts each position in the second type of financial instrument into a position in the first type of financial instrument.



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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 09/30449

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06Q 40/00 (2009.01)

USPC - 705/37

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)

USPC: 705/37

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
USPTO WEST (PGPB, USPT, EPAB, JPAB); GOOGLE

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

Search Terms Used: bond, future, contract, option, trader, delivery, clearing, network, terminal, convert, transform, translate, transaction, time, date, format, instrument, overflow, overload, automatic, derivative, dv01, equal, length, duration

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2003/0110107 A1 (HIATT et al.) 12 June 2003 (12.06.2003), entire document, especially para [0032], [0112], [0118], [0333]-[0335], [0345] and Figs 1, 20	1-10, 19
Y	US 2007/0219882 A1 (MAY) 20 September 2007 (20.09.2007), entire document, especially para [0012]-[0014], [0022], [0027] and abstract	1-10, 19
Y	US 2006/0224492 A1 (PINKAVA) 05 October 2006 (05.10.2006), entire document, especially [0056]-[0057], [0143]-[0150], [0513]-[0516]	3-7
A	US 2004/0199451 A1 (BENNING et al.) 07 October 2004 (07.10.2004)	1-10, 19
A	US 2007/0011068 A1 (ZAJKOWSKI) 11 January 2007 (11.01.2007)	1-10, 19
A	US 2002/0156719 A1 (FINEBAUM et al.) 24 October 2002 (24.10.2002)	1-10, 19



Further documents are listed in the continuation of Box C.



\* 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 application or patent 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

"&amp;"

document member of the same patent family

Date of the actual completion of the international search

05 May 2009 (05.05.2009)

Date of mailing of the international search report

13 MAY 2009

Name and mailing address of the ISA/US

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P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

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PCT OSP: 571-272-7774

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 09/30449

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
 Group 1: claims 1-10 and 19 directed to a computer network to provide redundancy for a first transaction clearing computer.  
 Group 2: claims 11-18 and 58-67 directed to a method and tangible media for an electronic trading system for trading bond futures contracts.  
 Group 3: claims 20-30 and 68-78, directed to a method and tangible media for an electronic trading system for trading assets of an asset type.  
 Group 4: claims 31-41 and 79-89, directed to a method and tangible media for trading assets.  
 Group 5: claim 43 directed to an apparatus for trading instruments.  
 Group 6: claim 44-48 directed to a method and apparatus for executing trades of bond future contracts on a computer-based apparatus.  
 Group 7: claim 49-52 directed to an apparatus for executing trades.  
 Group 8: claim 53-57 directed to directed to a method for executing trades of bond future contracts on a computer-based apparatus.

-- see p. 7 of this form --

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-10, 19

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.

PCT/US 09/30449

- continuation of Box III -

The inventions listed as Groups 1-8 do not relate to a single general inventive concept under PCT Rule 13.1 because under PCT Rule 13.2 they lack the same or corresponding technical features for the following reasons:

Groups 2-8 do not include the inventive concept of a transaction processor programmed to communicate network messages with the second server to effect trades in the second type of instrument over time, the messages containing data describing transactions in the second instrument having times, prices, quantities and delivery dates designed to create the functional effect of holding the first instrument of Group 1.

Groups 1 and 3-8 do not include the inventive concept of from time to time on a plurality of occasions and as a component of the contractual relationship among the traders of the trading system and the trading system, by computer purchasing or selling bonds economically equivalent to a trader's position in bond futures and relieving the trader of delivery obligations under the bond futures contract, and later reselling or repurchasing the bonds and reestablishing the delivery obligations of Group 2.

Groups 1-2 and 4-8 do not include the inventive concept of from time to time and as a component of the contractual relationship among the traders of the trading system and the trading system, transferring traders' positions in the traded asset type into positions in the underlying asset type for a period of time, and later transferring the positions in the underlying asset claims back into positions in the traded asset type of Group 3.

Groups 1-3 and 5-8 do not include the inventive concept of at about the close of trading days, transferring positions held by traders from the first asset type to positions in a second asset type having similar economic characteristics; and at about the opening of trading days, transferring the traders' positions back from the second asset type to the first asset type of Group 4.

Groups 1-4 and 6-8 do not include the inventive concept of at a first predetermined time, converting each position in the first type of financial instrument into a corresponding position in a second type of financial instrument, and at a second predetermined time that is after the first predetermined time, converting each position in the second type of financial instrument into a position in the first type of financial instrument of Group 5.

Groups 1-5 and 7-8 do not include the inventive concept of at a first predetermined time, converting each bond futures contract into a corresponding pair of positions in bonds, and at a second predetermined time that is after the first predetermined time, converting each pair of positions in the bonds into a bond futures contract of Group 6.

Groups 1-6 and 8 do not include the inventive concept of after a first predetermined time, for each bond future contract, calculating a first price of bonds based on the bond futures contract and entering, with a clearinghouse, a buy trade and a sell trade for the bonds at the first price of Group 7.

Groups 1-7 do not include the inventive concept of approximately at the beginning of a second trading day, in which the second trading day is the soonest trading day that is after the first trading day, for each of the positions in the bonds of Group 8.

None of these technical features are common to the other groups, nor do they correspond to a special technical feature in the other groups. Therefore, unity of invention is lacking.