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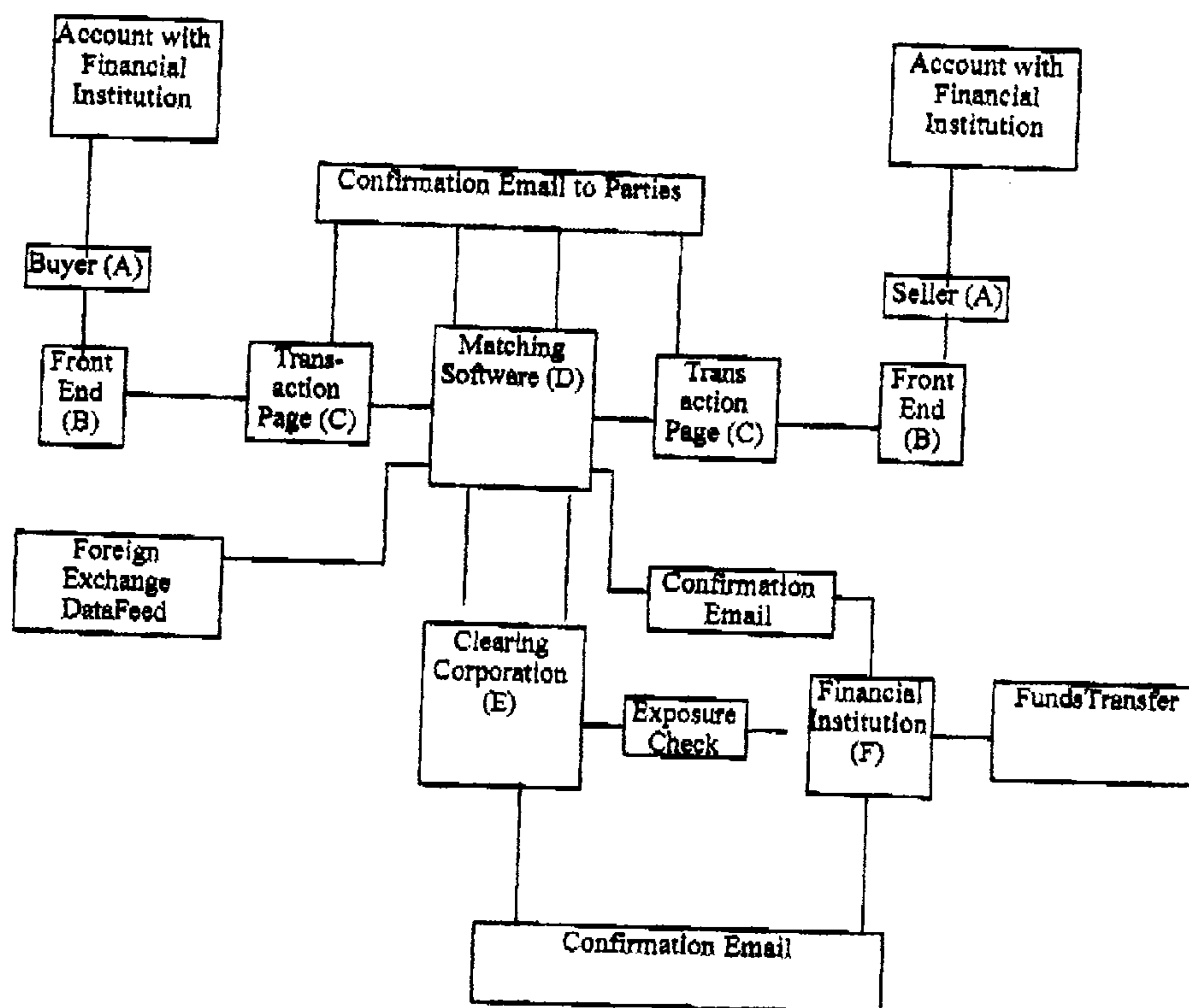
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(54) **SYSTEME DE CONNEXION INFORMATIQUE POUR
ECHANGES ENTRE PARTIE ET CONTREPARTIE**

(54) **COMPUTER BASED MATCHING SYSTEM FOR PARTY AND
COUNTERPARTY EXCHANGES**



(57) A computer based system is disclosed which enables a party and counterparty can be efficiently matched. The system comprises a first computer terminal into which the party inputs details of a potential first transaction, a second computer terminal into which the counterparty inputs details of a potential second transaction, a computer network connecting the first and second terminals; characterised in there being a computer program arranged to determine a net payment position if both the first and second transactions occur and to complete each transaction on the basis of the net payment position.

Abstract

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Computer Based Matching System for Party and CounterParty Exchanges

10 A computer based system is disclosed which enables a party and counterparty can
be efficiently matched. The system comprises a first computer terminal into which
the party inputs details of a potential first transaction, a second computer terminal
into which the counterparty inputs details of a potential second transaction, a
computer network connecting the first and second terminals; characterised in there
being a computer program arranged to determine a net payment position if both the
15 first and second transactions occur and to complete each transaction on the basis of
the net payment position.

Computer Based Matching System for Party and CounterParty Exchanges

5 Field of the Invention

This invention relates to a computer based system which enables transfers between parties and counterparties to be efficiently matched.

Description of the prior art

10 The Internet offers the promise of allowing buyers and sellers of goods and services to communicate directly with one another, eliminating the need for some of the intermediaries and the associated economic inefficiencies present in conventional selling. Hence, for example, it is in 1998 possible to transact many kinds of business using the Internet, which formerly would have required a broker or agent.
15 Examples include the purchase of insurance, airline tickets, books and holidays.

The Internet also enables new models of buying and selling as well: for example, there are now many Internet auction sites, on which a wide range of goods and services are auctioned to the highest bidder, with the seller merely setting a reserve
20 price or a bid start price. The terms to 'buy' and 'sell' and related expressions should be broadly construed to include any kind of transfer of rights or interests; 'buyers' and 'sellers' should be also broadly construed to include any transferee and transferor of any kind of right or interest. The terms 'party' and 'counterparty' are commonly used to describe a situation in which a given party is
25 both a buyer and simultaneously a seller. This can arise, for example, where a party wishes to exchange US\$100 for the equivalent in Sterling. That party is simultaneously a seller of US\$ and a buyer of Sterling.

Computer systems linking many potential buyers and sellers of goods and services over an extensive computer network also existed prior to the widespread adoption

of the Internet, particularly in the financial services sector. One example is the foreign exchange dealing systems developed and run by organisations such as Reuters plc and the EBS Partnership. In these systems, banks post the prices at which they are willing to buy or sell defined quantities of currencies. The systems may automatically spot matches – i.e. where a buyer is willing to buy at a price at which a seller is willing to sell – and complete the trade. If a potential buyer of currency can find no-one willing to sell at a price it considers low enough, then typically, that potential buyer will simply have to either wait for the pricing in the market to become more favourable, or else be prepared to pay more. Such systems are commonly used for currency speculation, namely taking a trading position with respect to one or more given currencies to exploit favourable pricing movements.

Where a buyer and seller regularly trade with one another, it is normal to aggregate all transactions over a defined period of time and for just a single net payment to be made. Hence, for example, if party A buys 50 units at \$1 from party B over a week, and counterparty B buys 20 units at \$1 from party A over that same week, then the respective payment obligations can be netted off so that A pays \$30 to B at the end of the week. This same principle applies to the more sophisticated environment of trading foreign exchange and other financial property. Where more than a single party and counter-party pair are involved, for example, a 3 way group or even higher orders, multilateral netting can be applied.

In addition to the need for speculative currency trading, there exists also a very substantial need for corporations to buy and sell foreign currency, for example, to pay overseas suppliers. Similarly, individuals travelling abroad or making foreign investments need to obtain foreign currencies as well. Currently, corporations and individuals will approach a bank or foreign currency vendor (such as American

Express Inc.) to obtain foreign currency. The bank or foreign currency vendor will in turn often have obtained its stocks of foreign currency from other banks, in many cases having used an inter-bank trading system such as the Reuters or EBS systems. Because of the chain of intermediaries, the transaction cost of buying or selling foreign exchange in this way is quite high: this is reflected in the commission charged and the difference between the bid and the offer prices: a bank will typically sell foreign currency at a rate considerably higher than the rate at which it will buy it back. For small transactions, the difference can be 4%. For larger transactions, the difference is typically 5 basis points.

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Statement of the Present Invention

15 In accordance with a first aspect of the present invention, there is provided a computer based system which enables a party and counterparty to be efficiently matched, comprising a first computer terminal into which the party inputs details of a potential first transaction, a second computer terminal into which the counterparty inputs details of a potential second transaction, a computer network connecting the first and second terminals; characterised in there being a computer program arranged to determine a net payment position if both the first and second transactions occur and to complete each transaction on the basis of the net payment position.

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25 This approach can be contrasted with conventional netting, in which a transaction is completed and only subsequently does netting occur to reduce the number and size of payments. Typically, there might be several party/counterparty pairs in a connected series of transactions.

The Internet may comprise some of the network connecting the first and second terminals.

5 In one embodiment, the first and second transactions relate to the sale or transfer of financial property, such as foreign exchange, treasury bills, and stocks and shares. The term 'financial property' is used in this patent specification to embrace any and all financial products which are traded by financial institutions, and therefore includes, without limitation, derivatives, options, debentures, bonds as well as the foreign exchange, treasury bills, and stocks and shares referred to above.

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In another embodiment, the system handles the sale of contractual rights; and in a further embodiment, the sale of tangible property.

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In a third aspect of the present invention, there is provided a computer terminal participating in a computer based system which enables a party and counterparty to be efficiently matched, wherein the computer terminal is a terminal into which the party inputs details of a potential first transaction, and which receives details of a potential second transaction, a computer network connecting the first and second terminals; characterised in there being a computer program arranged to determine a net payment position if both the first and second transactions occur and to complete each transaction on the basis of the net payment position.

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Hence, if the first terminal is physically within the jurisdiction of Country A, then the location of the seller is irrelevant to the issue of infringement of this third aspect.

Preferably, in any of the above aspects or embodiments, the program is designed to identify and complete transactions in ascending order of the number of potential parties and counter-parties. This prioritises the series of transactions which will fully satisfy at least one party.

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Brief Description of the Figures

The invention will be described in more detail with reference to:

Figure 1, which is a schematic depiction of a computer based system according to this invention which enables buyers and sellers to be efficiently matched; and

10 Figure 2A, which is a table showing various foreign exchange positions of several parties using a computer based system according to this invention prior to a matching process; and

15 Figure 2B, which is a table showing various foreign exchange positions of several parties using a computer based system according to this invention after a matching process

Detailed Description

20 Currently, banks broker foreign exchange transactions, providing an intermediary to purchase and sell currency for both theirs' and their clients' accounts. For each transaction the bank garners the "spread", typically 5 basis points on large transactions and up to 4% on smaller transactions.

25 In the present invention, the appropriate underlying transactional software allows one end user of the foreign exchange (e.g. a first corporation, Corporation A, doing a cross border procurement) to liaise directly with a counterparty, a second corporation, Corporation B, which requires the home currency of Corporation A.

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The bank brokering function can be eliminated: that is, the spread currently absorbed by the two sample corporations would be negated. Each party would therefore improve their cash position by 2.5 basis points. For smaller customers the savings would be even greater.

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Moreover, transactions could be executed in a multitude of dimensions: two way; three way; four way; etc, since the software would expose the transactional opportunities available to each of the clients.

10 Sample problem

Imagine the following:

1. That the spot price of CDN\$ is US\$ 1.5363 - 1.5368 at November 27/98.
2. That Corporation A is buying US \$1M to purchase equipment at a cost of CDN \$1,536,800.00. Corporation A. has CDN \$1,536,800.00 on account with a bank for the transaction (note: this assumes that the bank provides the best rate to Corporation A).
3. That Corporation B Has US\$1M on account with the bank but requires CDN\$1,536,300.00 to purchase raw materials.

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If the bank matches its own funds to supply Corporation A with US\$1M and Corporation B with CDN\$1,536,300.00, then it makes a profit of \$500.00 per \$million transacted. Although \$500 is a very small amount in the context of a significant \$1M transaction, the total global volume of such transactions is extremely large, so that the cumulative profits to banks are very substantial.

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In the present invention, the following occurs: By matching Corporation A with Corporation B, each of their positions is improved by \$250.00 per million, less a transaction fee to an intermediary of perhaps \$50.00. The result is that Corporation

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5 A receives US\$1M for \$1,536,575 per million; a saving of \$225.00 per million;
Corporation B Receives \$1,536,525 for US\$1M; an improvement in profit of
\$225.00. The system has in effect reduced the spread to 1/2 of 1 basis point. The
spread can theoretically be reduced to just short of zero since the present invention
operates efficiently.

Clearing transactions

10 In a preferred embodiment, there is a Central Depository; namely a single bank or
trustee which can secure all transactions. It may be structured like the Canadian
Deposit Securities (CDS) Corp.

15 An account held with this Central Depository serves nothing but a transactional
purpose through which funds are matched and distributed. The Central Depository
accepts funds on account in the currency by which they were deposited.
Correspondingly, this institution delivers funds to the customer in the transacted
currency at the prescribed rate of exchange. All currency exchange is electronic so
that no physical securities are required for clearing.

Software requirements

20 In a preferred embodiment:

1. Available funds would be "posted" for all customers via the various products
(see #5 below);
2. Matching software will automatically expose various exchange/barter
opportunities, based on current updated exchange rates. For example, if a customer
25 wishes to convert US\$1M to French francs, a drop down window provides all
available funds both directly and via multi-party transactions;

3. An e-mail facility is also provided to the Central Depository. E-mail messages will confirm that a transaction has been executed by one or other party. An e-mail message from the Central Depository will finalize the "match".
4. Posted funds and "target" exchange rates can also be included in the software: for example that Corporation ABC has US\$1M available to sell for CDN\$ at 1.5365.
5. A product for individuals such as business travellers is available; as is a corporate wholesale product for intermediary exchange requirements; and a "market" product for blue-chip multinationals. The transaction size dictates the number of basis points transactions "fee" for executing a currency match; automatically, the program slots the trade into the appropriate product with the appropriate rate scale.
6. A hedging facility for foreign exchange exposure may also be included. Assume Corporation ABC has US\$3M at spot and wishes to hedge for days/weeks/ months to protect their capital and provide a return equivalent to desired money market rates. The system is flexible enough to allow forward hedging in a covered position (i.e. Corporation ABC owns US\$1M and wishes to sell in 3 months time to Corporation DEF at \$1.5368. to Corporation DEF is collateralized (CDN \$1,536,800 is on account) to ensure the transaction will be executed. All positions are net flat, insofar as exposure is concerned. The clearing bank ensures that all positions are covered and may hold forward funds in trust in an interest-bearing note.
7. Exposure positions are available to the Central Depository to ensure that there is no speculation within this product.
8. The software must account for global time. Delivery and settlement are adjusted for time differences.

Further uses of the system

1. For the retail individual, an affiliation between the present system and a courier and traveler cheque company is possible. This enables a transaction to be completed anywhere in world with the traveler's cheque couriered directly to the individual. This is envisaged as a premium service all via the Internet.
2. For the retail customer interested in the money markets, cross border retail borrowing and lending to procure best interest rates, the system may for example offer mortgage money with direct matching from cross border sources.
3. For the corporation, the system can provide "instant" cross-border settlement of accounts, converted to the currency of choice, at exchange rates that represent the closest to fully efficient currency markets. Currently settlement is in two days, in which there is inherent credit (settlement) risk.

The present system may be further understood with reference to Figure 1, which shows a schematic of a foreign exchange matching system in accordance with the present invention. The functions of the major blocks in Figure 1 are as follows:

A - represents Buyers and Sellers, who complete registration with a Financial Institution; a Pin Number is required to transact exchange; Individual Pin Numbers are available for multiple users in one company; A can represent one or more customers in the matching software framework.

B - represents the Front End - provides IntraNet Access: Registration with Software Transactions Company.

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C. Transaction Page (and supporting information) - Indicates the funds required/available; the desired conversion if applicable. Availability of Data from FX feed.

5 D. - represents the Matching Software - Matrices matching buyers and sellers in two-way, three-way, four-way, five-way transactions for each currency. There are three Products - Retail, Corporate, and BlueChip. The transactions fees are a percentage of volume of match (small volumes as a rule pay a greater percentage to complete the match than do larger volumes). There is an Email to Clearing Corp
10 regarding each transaction; an Accept Email from Financial Institution confirming each transaction; Email to buyers and sellers to confirm transactions; Synthesis of data feed to provide current FX prices. There is an algorithm to bundle quantities & execute transactions as opportunities become available.

15 E. - represents the Clearing Corporation - Accept Email from Matching Software of potential transaction; Email to F/I - INS Funds; Receives Email from F/I confirming Funds Transfer; Records Parties, Volumes, Currencies, Accounts, Posting Instructions.

20 F. - represents the Financial Institution - Confirm accounts, INS Funds, execute transfers, lock-in deposits when counter-parties matched; Email Clearing Corp re. Transaction Details; Email Software to formally post funds transfers

25 Further Sample transaction

1. Corporation ABC has US\$1M which, on his Transaction Page, he posts is available for conversion to Deutchmarks.

2. A German corporation has a US\$ requirement. It sees that US\$1M has been posted.
3. Both corporations hold accounts with the Central Depository. And there are available funds "on account" with financial institutions.
- 5 4. Assume that the German corporation emails the Matching Software to accept the transaction with Corporation ABC (this 'acceptance' constituting the input of the potential purchase transaction as required by at least Claim 1 of the present invention).
- 10 5. The Central Depository examines the exposure position of both parties to ensure that all positions are collateralized.
6. The currency match and exchange occurs via the f/i.
7. The Central Depository emails to the Matching Software; the Matching Software emails counterparty Corporation ABC re. the acceptance of the "match" and the availability of funds.
- 15 8. The Central Depository emails the German Corporation re the availability of converted funds.
9. The transaction is complete.

Multilateral Example

20 In the present system, it will be seen that the netting step is not simply a stage subsequent to but independent from the underlying transaction, performed for accounting simplicity to reduce the numbers and sizes of cross-payments. Instead, it is an integral part of the underlying transaction between party and counterparty. This is most clearly emphasised when considering a multi-party exchange of
25 currencies. Take, for example, a situation in which there are 3 Corporations - ABC, DEF, XYZ. ABC has GBP and needs EUROS; DEF has EUROS and needs YEN; XYZ has YEN and needs GBP. The exact needs are shown in Figure 2A. ABC

cannot satisfy its requirements in whole or in part by dealing with DEF exclusively. However, if XYZ can be "linked" into the transaction, all three corporations can be satisfied to the value of the smallest available currency.

5 We make the following assumptions:

- The mid-point of Interbank B/O at a point in time is as follows: 1.53675 CAD; 1 USD; 88.7755 YEN; 1.11105 EURO (i.e. all numbers are relative to the USD).

10 The desired amounts indicated on Figure 2A reflect the mid-market value of the available currency. The post-match situation using this embodiment is shown on Figure 2B.

15 It will be noted that the limiting factor in this match example was the availability of CAD for YEN. The embodiment uses a "currency link" to match partially or fully the desired quantities of the match. A link is defined as (A to B; B to A); or (A to B; B to C; C to A); or (A to B; B to C; C to D; D to A) etc. A mathematical relationship at a point in time therefore exists between the currencies.

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The distinction from traditional netting programs is two-fold. First, netting in the present embodiment happens in real-time, not at a fixed point in time post transaction for various parties, none of which are necessarily the same from one "link" to the next, and consequently, from one "match" (whole or partial) to the next. Second, the program is designed to seek out the "currency linking" in ascending order of the number of potential counter-parties. As complete matches occur (as in ABC above), the matched party drops out of the matrix. The program seeks out the next currency links (always from the fewest to the greatest number of

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"linked" participants) to fulfill wholly or partially the next match. Through this procedure, smaller currency quantities can be applied to greater desired amounts to more effectively fill the need.

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Claims

- 5 1. A computer based system which enables a party and counterparty to be efficiently matched, comprising a first computer terminal into which the party inputs details of a potential first transaction, a second computer terminal into which the counterparty inputs details of a potential second transaction, a computer network connecting the first and second terminals; characterised in there being a
- 10 computer program arranged to determine a net payment position if both the first and second transactions occur and to complete each transaction on the basis of the net payment position.
- 15 2. The computer based system as claimed in Claim 1 wherein there are several party/counterparty pairs in a connected series of transactions.
3. A computer based system as claimed in Claim 1 or Claim 2 wherein the Internet comprises some of the network connecting the first and second terminals.
- 20 4. The computer based system of Claim 1 in which the first and second transactions relate to the sale or transfer of financial property, such as foreign exchange, treasury bills, and stocks and shares.
- 25 5. A computer terminal participating in a computer based system which enables a party and counterparty to be efficiently matched, wherein the computer terminal is a terminal into which the party inputs details of a potential first transaction, and which receives details of a potential second transaction, a computer

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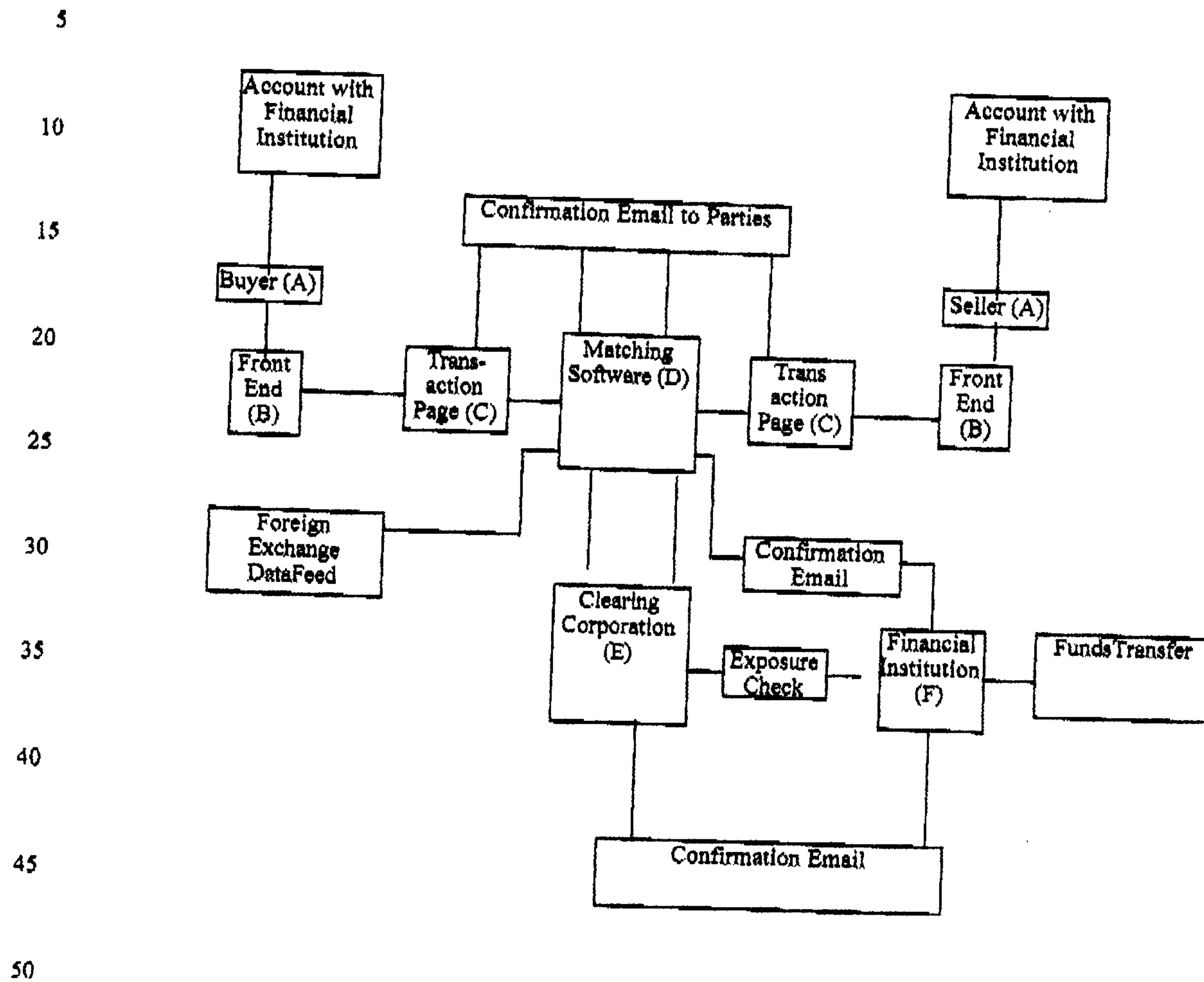
network connecting the first and second terminals; characterised in there being a computer program arranged to determine a net payment position if both the first and second transactions occur and to complete each transaction on the basis of the net payment position.

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6. The computer based system as claimed in Claim 1 wherein the program is designed to identify and complete transactions in ascending order of the number of potential parties and counter-parties.

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Figure 1



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FIGURE 2A: PRE-MATCH

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	ABC		DEF		XYZ	
Available	10	CAD				
Desired	577.6834	YEN				
Available			4438.77	YEN		
Desired			50	USD		
Available					25	USD
Desired					38.418	CAD
					75	

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FIGURE 2B: POST MATCH

	ABC		DEF		XYZ	
Available	0	CAD				
Desired	0	YEN				
Matched	577.6834	YEN				
Available			3861.09	YEN		
Desired			43.4927	USD		
Matched			6.5073	USD		
Available					18.4927	USD
Desired					28.4187	CAD
Matched					10	CAD

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