



US 20030004891A1

(19) **United States**

(12) **Patent Application Publication**

Van Rensburg et al.

(10) **Pub. No.: US 2003/0004891 A1**

(43) **Pub. Date: Jan. 2, 2003**

(54) **SYSTEM FOR CONDUCTING COMMERCIAL TRANSACTIONS**

(52) **U.S. Cl. 705/64; 705/35**

(76) Inventors: **Johannes Janse Van Rensburg, Welgemoed (ZA); Craig Sheldon Saks, Durbanville (ZA); Cornelius Johannes Badenhorst, Durbanville (ZA); Jozef Phillipus Wolhuter Joubert, Durbanville (ZA); Anthony Ian Willis, Centurion (ZA)**

(57) **ABSTRACT**

le;2qThe invention provides a system for conducting commercial transactions in an economic environment including one or more banking institutions, a plurality of merchants (as defined), and a plurality of participating system members (as defined) associated with at least one cellular telephone network. The system employs an independent general computerized server accessible to participating system members and merchants by way of a wireless network, and capable of on-line communication with banking institutions and vendors. The server includes at least a financial data base record for each participating system member, merchant and participating vendor and enables a participating system member, by suitable activation of that member's mobile device, typically a cellular telephone, in a remote location, to conduct a financial transaction by debiting a financial data base record allocated to the instructing participating system member. At some stage prior to a transaction being completed, and this may be included with the initial message, the instructing participating system member is required to transmit an authenticating security code. Once completed, the transaction is irreversible (as defined).

Correspondence Address:

**JACOBSON HOLMAN PLLC
400 SEVENTH STREET N.W.
SUITE 600
WASHINGTON, DC 20004 (US)**

(21) Appl. No.: **10/181,929**

(22) PCT Filed: **Jan. 29, 2001**

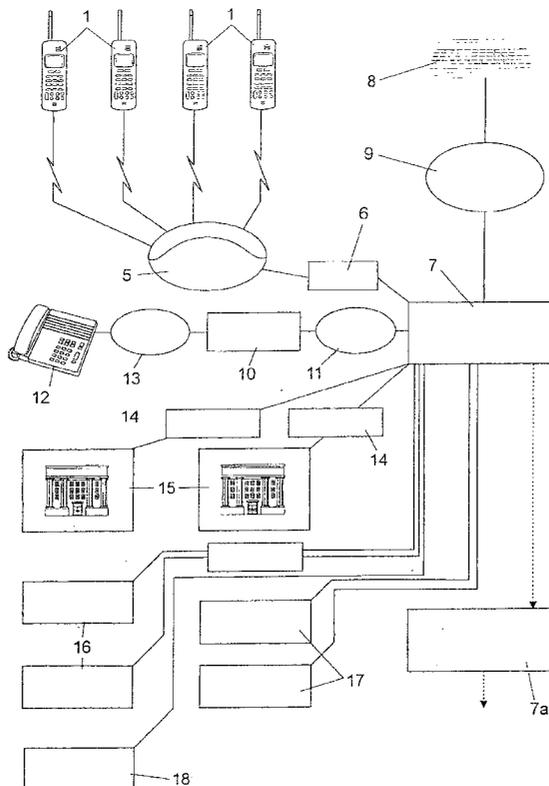
(86) PCT No.: **PCT/IB01/00093**

(30) **Foreign Application Priority Data**

Jan. 28, 2000 (ZA)..... 2000/0385
Mar. 3, 2000 (ZA)..... 2000/1095

Publication Classification

(51) **Int. Cl.⁷ G06F 17/60**



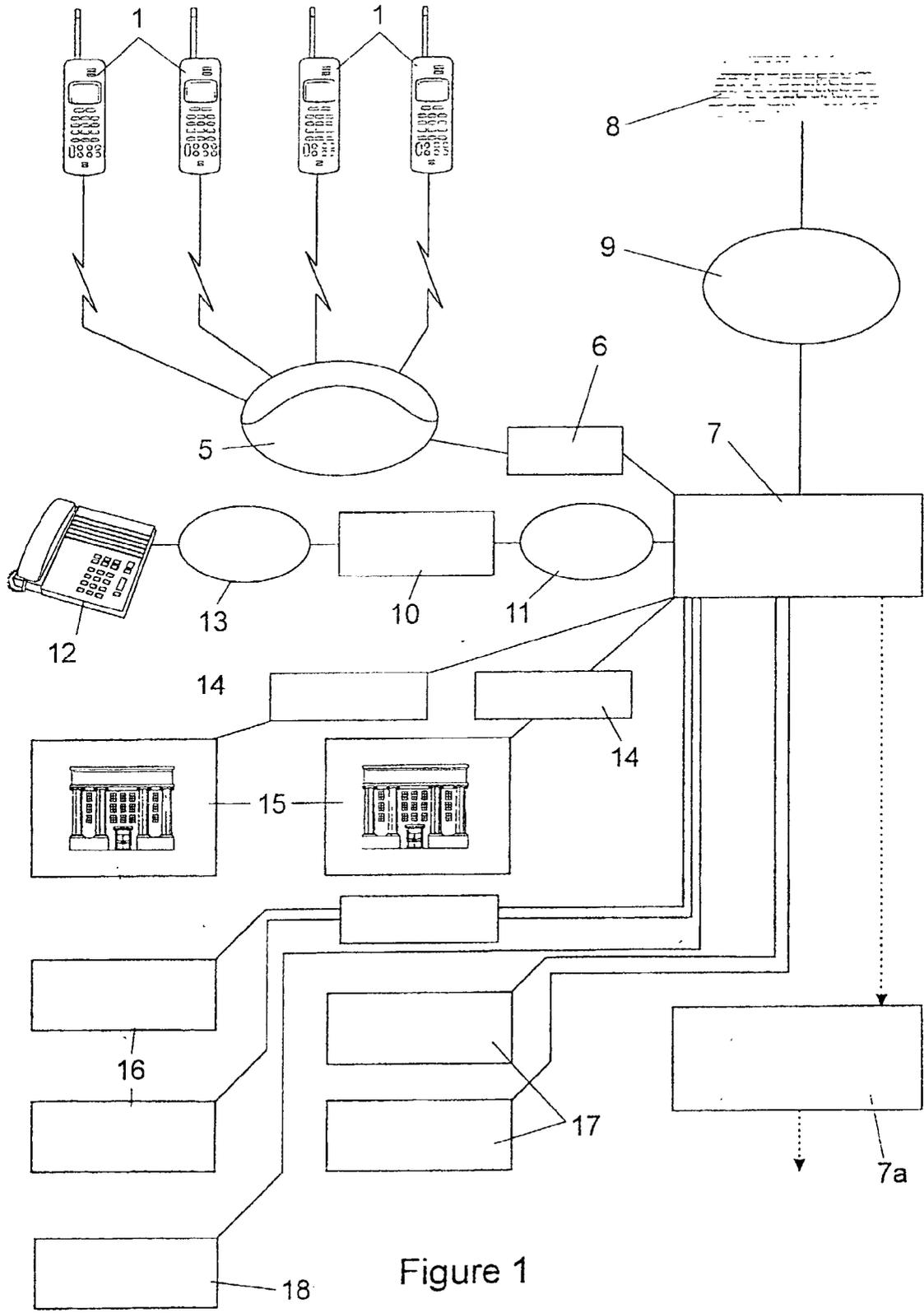


Figure 1

US 2003/0004891 A1

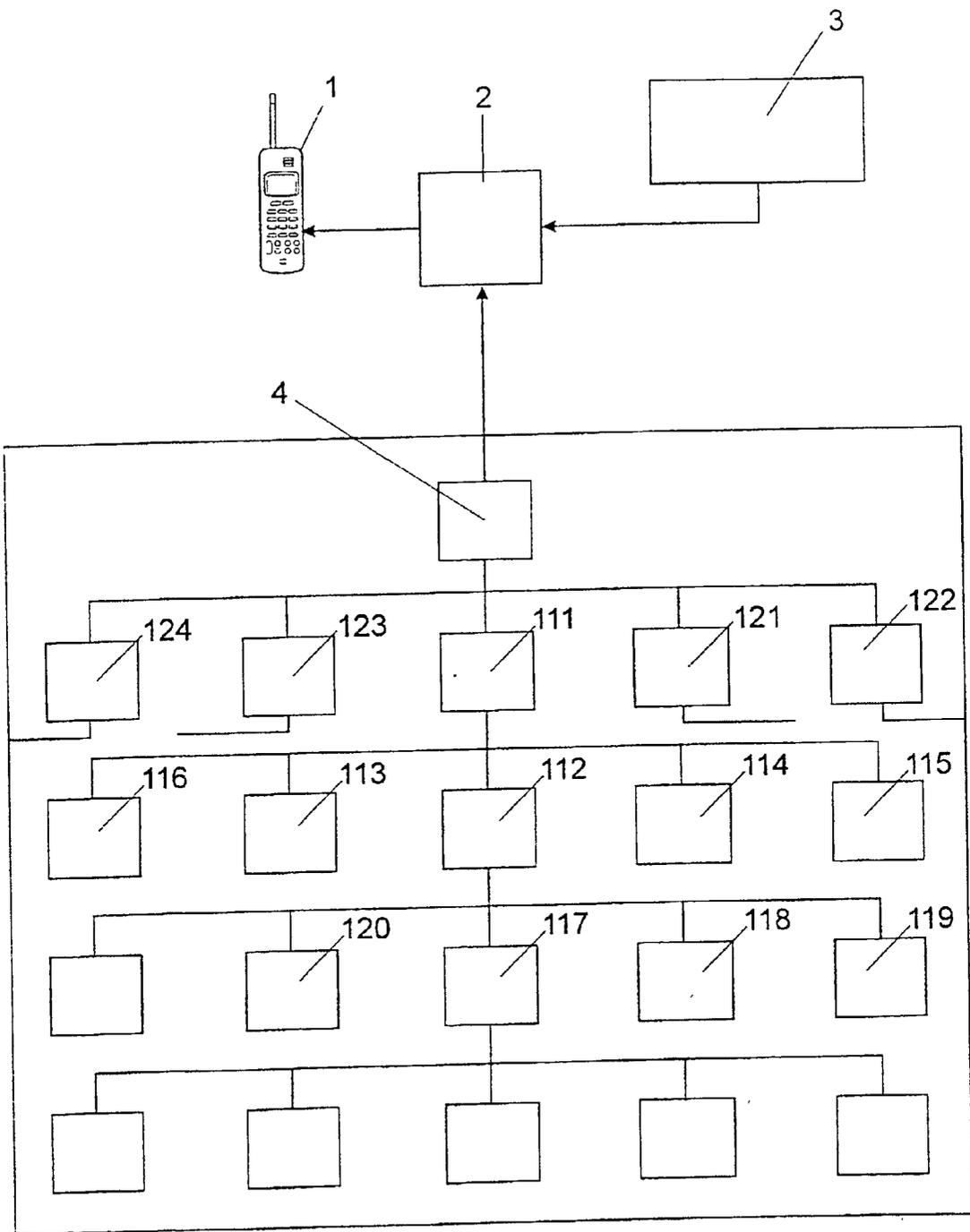


Figure 2

SYSTEM FOR CONDUCTING COMMERCIAL TRANSACTIONS

FIELD OF THE INVENTION

[0001] This invention relates to a computer based system for conducting commercial transactions and, more particularly, to a system which includes the provision for the transfer of funds or other redeemable value from an account under the control of one entity to another account with clearing being effected in real time and without the transfer of hard cash or electronic cash of the nature described below.

[0002] Still more particularly, but not exclusively, the invention relates to a system for enabling the convenient transfer of amounts of money value including both relatively small and large amounts of money value, for example, from one person to another or to a merchant, and which can obviate other systems which enable value (sometimes referred to as electronic cash, or e-cash) to be transferred from one electronic purse or wallet, usually in the form of a smart card, to another, in transactions free of hard cash.

BACKGROUND TO THE INVENTION

[0003] There have been numerous different proposals of systems aimed at substantially diminishing the use of hard cash in every-day transactions, particularly, but by no means exclusively, transactions of small money value and also aimed at the disposal of income, with a view to improving convenience, safety and security and particularly with a view to avoiding the necessity of persons carrying appreciable amounts of hard cash on their person.

[0004] Broadly, the proposals which are currently under consideration and some of which are being implemented, involve the use of a smart card or equivalent electronic memory embodied in a dedicated physical entity (herein referred to as a smart card irrespective of actual physical form), often referred to in the industry as an electronic purse or wallet, in which a positive cash balance is retained in memory for utilization by transferring amounts from time to time to a similar smart card of another person or of a supplier of goods or services.

[0005] Whilst many of these systems might operate effectively from a conceptual point of view, applicant believes that they suffer from basic disadvantages from a practical point of view not least of which are the possibility of the smart card or other physical entity being stolen or lost and the necessity that a person needing to replenish the credit or other redeemable value in the smart card generally needs to present it physically to a machine or institution. Also, these systems mostly involve the use of special equipment with which the electronic purse can communicate at a point of sale in order to effect a transfer of electronic cash and such equipment represents an appreciable cost.

[0006] Various other proposals have therefore been put forward to avoid the use of an electronic purse or other physical entity such as a smart card. One such proposal is that set out in U.S. Pat. No. 5,991,749 to Morrill Jr. The proposal put forward in this prior patent hinges on the use of a cellular telephone provider's central processing unit (CPU) and the cellular telephone accounts structure for enabling commercial transactions to be carried out by suitable operation of a cellular telephone to credit and debit the relevant

cellular telephone accounts. It is mentioned that other accounts could be debited and credited but no meaningful disclosure of any such arrangement is provided.

[0007] Whilst this proposal does address certain of the difficulties inherent in the smart card type of proposals it too has a number of serious disadvantages, at least when particular objectives are to be achieved. In particular, other than in a pre-paid situation, ultimate retention of the funds by the recipient is still dependent on recovery thereof by the service provider from the subscriber and the transaction is reversible at the instance of the service provider.

[0008] PCT patent publication no WO9613814 describes a similar arrangement but one in which the transfer of funds is aimed at being carried out in the bank's computer system without any attempt to address the general difficulties associated with the manner in which banks control clients' accounts and more particularly the way in which they control access to newly deposited funds as indicated below.

[0009] The general difficulties which applicant perceives in both of the latter proposals as well as in systems presently in common use and which employ credit cards, debit cards, cheques and other fund transfers carried out by a financial institution such as stop orders, debit orders and the like, is that any fund transfer credited to an account of a recipient can be reversed at the instance of, in amongst others, the payer of the relevant funds with the assistance of the relevant financial institution, the service provider in the case of the system of Morrill, the payer's bank or other financial institution in cases in which a bank or other financial institution is involved, or a credit card company which may be involved. Thus there is considerable doubt on the part of the recipient for an appreciable length of time as to whether or not the transfer can be relied upon fully.

[0010] Added to this problem is the fact that financial institutions very often restrict the immediate use of deposited funds for an appreciable length of time, typically days, but sometimes even weeks pending clearance. This problem is particularly commonplace in respect of payments made by cheque.

[0011] It is in overcoming the latter general difficulties that smart cards and other electronic money can be an attractive solution in spite of their disadvantages as set out above.

OBJECT OF THE INVENTION

[0012] It is, accordingly, an object of this invention to provide a computer based system for conducting commercial transactions whereby one or more of the general difficulties outlined above may be overcome and the general disadvantages of the smart card type of arrangement may also be addressed whilst retaining, at least to a significant extent, the advantages of the smart card type of arrangement.

DEFINITIONS

[0013] In this specification it is to be understood that the following terms are to be according the meanings stated hereunder.

[0014] "Bank" means any financial institution carrying on the business of transferring funds held on behalf of, or loaned to, a customer and recorded in a computer data base record from that data base record to a computer data base

record of another customer of that, or of another, institution whether or not the institution complies with the local or national requirements for trading under the name of a bank.

[0015] “Cleared”, “clearance” or any other form of the word as applied to a transaction means that the relevant credit has become available for use by the recipient without restriction by the computerized server in which the relevant financial data base record is held.

[0016] “Electronic purse” includes “electronic wallets” and other equivalents and is intended to mean any electronic memory for retaining data which translates into a positive balance of redeemable value units, usually, but not necessarily, units of currency generally referred as electronic money or e-cash and which can generally be used as and when desired by or on behalf of the holder by a simple credit transfer off-line with respect to any bank or credit card institution.

[0017] “Financial data base record” is intended to mean any data base record including data as to an amount of money reflected in currency units or a record of a number of any other type of redeemable or consumable units having value.

[0018] “Irreversible” as applied to a transaction means that, absent criminal activity (including fraud) or processing error (whether hardware or software related) the transaction cannot be reversed other than at the instance of the recipient.

[0019] “Merchant” is intended to include all suppliers of goods and services of all types which may be participating system members as herein defined but irrespective of such membership have been allocated a financial data base record in a computerized server of the invention as defined below.

[0020] “Mobile device” means any device communicating by way of a wireless network operated by a service provider and including mobile telephones but which need not necessarily assume the form of a telephone.

[0021] “Participating system member” is intended to mean any subscriber of a wireless network forming a part of a system according to this invention as hereinafter defined and includes mobile telephone subscribers as well as users of prepaid cellular or mobile services who form part of such a system.

[0022] “Settled”, “settlement” or any other form of the word as applied to a transaction means the final transfer of money or other units of value as between financial institutions; between financial institutions and a central bank; between financial institutions and computerized servers according to this invention; or between different computerized servers according to this invention and which generally take place on a periodic basis (for example daily or weekly) and wherein set-off may or may not be employed to result in a single net transfer of money or units of value in respect of a plurality and often a large number of transactions.

[0023] “Vendor” is intended to include all suppliers of goods and services of all types which do not have a financial data base record as herein defined.

SUMMARY OF THE INVENTION

[0024] In accordance with this invention there is provided a computer based system for conducting commercial trans-

actions and which includes a plurality of participating system members (as herein defined) each having a mobile device adapted to communicate via an associated wireless network with a general computerized server in which a financial data base record is allocated to each participating system member, the system including also a plurality of merchants (each of which by definition has been allocated a financial data base record in the computerized server) and wherein the computerized server is programmed such that financial transactions can be conducted by remote operation of the mobile device of a participating system member, via the wireless network, to result in the debiting of a financial data base record associated with an instructing participating system member and the crediting of a different financial data base record associated with any one of self, another participating system member and a merchant, the system being characterized in that in respect of at least one or more predetermined categories of transactions in respect of which the recipient is either a participating system member or a merchant, the transaction, once completed, is irreversible.

[0025] Further features of the invention provide for each transaction to become completed only after the computerized server receives a security signal from the mobile device of the participating system member whose data base record is to be debited, the security signal being either a PIN or like code inputted by the said participating system member, or a biometrically triggered authorization signal; for the security signal to be included in a composite instructing message or to be supplied by manual activation in response to on-line interrogation from the computerized server; for the mobile device to be a mobile telephone, in particular a cellular telephone; and for the said categories of transactions to include at least transactions in respect of which the recipient is one of a predetermined list of participating system members or merchants but, more typically, said categories include all transactions in respect of which the recipient is a participating system member or merchant.

[0026] Still further features of the invention provide for the program of the computerized server to disallow a requested transaction in the event that the balance of units in an instructing participating member’s financial data base record is inadequate to fund the requested transaction; for the program of the computerized server to disallow a requested transaction in the event that the validity of the recipient as a participating system member or merchant cannot be verified; for the financial data base records, in the absence of special individually allocated credit facilities, to be programmed to operate exclusively on a credit balance basis; for the programming of both the mobile telephone and the general computerized server to ensure that at least messages concerning financial transactions are encrypted and decrypted in suitable manner; and for a participating system members’ financial data base record to be identified, at least in part, by the relevant cellular telephone number.

[0027] The invention also provides for the computerized server to be one of a series of similarly structured and programmed associated computerized servers located optionally at different geographical localities and inter-linked such that transactions can be conducted by a participating system member of one computerized server to the financial data base record of a participating system member or merchant of a different computerized server with the transaction nevertheless becoming irreversible once com-

pleted; for at least some of the general computerized servers to be located in different countries in which case any necessary currency exchange rates (selected according to prevailing exchange rates and any particular policy being applied in relation thereto) are applied to the value of the transaction as may be appropriate in real time so as to render the transaction immediately cleared; and for settlement between the various general computerized servers to be effected periodically on a bulk basis after, in appropriate cases, setting off transactions carried out during the relevant period, or in some instances by way of a centralized settlement bank, such as a national bank of a particular country or state.

[0028] Still further features of the invention provide for the general computerized server to be programmed to receive instructions to carry out a financial transaction in the alternative via a call centre which may be manned or totally electronic in nature, via an Internet browser, or by way of interactive voice response; or from a creditor, in particular from a point of sale (POS) device; and for each participating system member to be provided with either a data retaining card such as a swipe card or another device such as one capable of communicating by radio frequency, infrared or other electromagnetic radiation, in either case for facilitating either the secure and accurate transfer of the participating system member's account number and optionally also other data to a recipient communications device which could be another participating system member's mobile device or a POS device or other device of a merchant; or for transmitting transaction related data to the initiating (payer) participating system member's mobile device.

[0029] Briefly, the system outlined above has all the advantages of a smart card or other system based on electronic money but without any of the disadvantages. However, in contradistinction, the balance of units in a financial data base record of this invention is indeed real money in a bank account with the facility of transferring it irreversibly as with hard cash or electronic cash. There are thus none of the risks associated with either forms of cash as the financial data base record is located in a secure computerized server remote from the mobile device which may be used to transfer funds to and from it.

[0030] The effect is, therefore, one in which transactions falling within the relevant categories become immediately cleared whilst settlement can take place at a later time. The invention therefore provides a system operating what are effectively cash transactions without any of the usual dangers and disadvantages associated with hard cash or electronic cash.

[0031] It is an additional feature of the invention that each data base record is able to have multiple sub-records each of which has a balance redeemable only for one specific purpose or for the advantage of one or more specific merchants or vendors or with any other limitations or controls on the individual sub-records. Alternatively, or in addition, overall controls of any desired nature can be imposed on the data base records individually, such as limiting the rate of expenditure on a time basis or on the basis of particular recipients, or both.

[0032] It is a particular feature of this invention that the financial data base record may include, or be linked to, another data base record being a personal data base record

of personal information of a type which could be required in carrying out certain financial transactions such as purchasing fixed property, a motor vehicle, a television set requiring personal information for licence purposes, insurance matters etc so that the information can be made immediately available in order to complete such a transaction without any difficulty in retrieving information required. This personal information could also include details of current addresses and the programming of the computerized server could be such that when there is a change of address, this is automatically communicated to all parties which had previously been supplied with the old address. Release of personal information from such a data base record is controlled by the input of a security signal as indicated above.

[0033] A further optional facility that can be made available is for the computerized server to be programmed to issue, against a debit of a system member's financial data base record, a cryptogram adapted to unlock value of a predetermined nature or character in a system such as, for example, a vending machine of any description including the vending of cellular air time. A still further option is to provide the facility for exchanging units of one type of value for units of another type of value.

[0034] The program of the computerized server may be designed to permit, as an additional option, transactions to be conducted from the mobile device of a participating system member which have the effect of crediting directly or indirectly an account at a different participating bank such as an account nominated by an associated vendor. Such transactions will clearly not necessarily be irreversible and would be subject to the rules of the recipient bank.

[0035] It is a particular feature of this invention that the system is able to utilize the services of not only one, but also two or more wireless networks, in particular, mobile or cellular telephone networks and at least some of each network's subscribers would then make up the body of participating system members.

[0036] The general computerized server of this invention may be associated with a particular bank in a variety of different ways. It may, for example, be separate from, but in permanent or intermittent communication with, the bank whose banking system operates a bank account from which the general computerized server itself can draw and deposit funds as and when required.

[0037] In the alternative, the general computerized server of this invention may in fact be a bank's existing server re-programmed to enable transactions according to this invention to be conducted in parallel with the conventional or existing transactions usually using cheques, an ATM, and stop or debit orders. In such a case the transactions of the system of this invention may be recorded in a separate sub-ledger of the bank, for example.

[0038] As a still further alternative the server could be that of an associated mobile telephone network as proposed by Morrill but programmed to operate in accordance with this invention.

[0039] The network protocol on which a relevant mobile, in particular cellular, network, and the associated telephones operate is largely irrelevant to the functioning of the system of this invention. Thus, for example, a cellular network and cellular telephones used in the implementation of the system

may be adapted for operation on the so-called Wireless Application Protocol (WAP); on the standard American systems known as CDMA and TDMA; on any future systems such as GPRS, USSD and 3G; on a browser based system such as the Wireless Internet Gateway (WIG); or on a system based on short message service (SMS) format transmissions.

[0040] Furthermore, and irrespective of the network protocol employed, it is preferred that the mobile telephone possess sufficient memory or data storage facility to enable adequate program or application material and data to be retained on the cellular telephone to enable a composite message to be formulated within the telephone and consisting of at least two and generally a group of items of information prior to a communicating connection being made to the computerized server by way of the wireless network. In this regard it is preferred that the mobile telephone be programmed with a set of standard pre-defined messages so that the appropriate message can simply be selected from a menu and completed by supplying, for example by inputting it by way of the keypad or recovering it from memory by way of another menu, any missing data prior to the composite message being communicated to the computerized server. The missing data would typically be the identity of the recipient; the amount to be transferred; and the PIN or other security signal.

[0041] In order to become a participating system member the relevant subscriber, for example a cellular telephone subscriber, need only contract with the provider of the system including the computerized server and the relevant cellular telephone must have adequate memory facility available. There is no new or enabling contractual bond necessary between a participating system member and the network provider as the network is strictly only a vehicle for enabling the communication with the computerized server. The only necessary involvement on the part of the network provider is in the instance that its cellular telephones employ SIM cards as the microprocessor memory and data storage device. The reason for this is that the network provider generally supplies the SIM cards. In any event, in such a case it is generally the SIM card that must possess adequate memory to enable the additional program material and menu data to be added to it over and above the conventional programs and menu data.

[0042] The additional applications and data may also have a "bookmark" facility for assisting in accessing particular chosen items as and when required.

[0043] It will be understood from the foregoing that implementation of the invention can provide an extremely simple and effective system of conducting commercial transactions which can handle not only numerous transactions of relatively small value, very much in the way of existing proposals employing smart cards, but also all other transactions to which circumstances are appropriate.

[0044] In order that the above and other features of the invention may be more fully understood one embodiment as well as a variety of optional features thereof will now be described with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0045] In the drawings:—

[0046] **FIG. 1** is a schematic diagram of a system according to the invention; and,

[0047] **FIG. 2** is a block diagram of a cellular telephone forming part of the system illustrated in **FIG. 1**.

DETAILED DESCRIPTION WITH REFERENCE TO THE DRAWINGS

[0048] Simply by way of example the instant embodiment of the invention is described as being applied to a computerized server to be accessed using, in amongst other devices, cellular telephones in which a microprocessor and memory are embodied in a SIM card removably retained in each of the relevant cellular telephones. However, it will be quite apparent to those skilled in the art, that the invention can just as easily be applied to any other type of cellular or mobile telephone or other suitable wireless device and associated network and that the term cellular telephone can be replaced by such other suitable device in what follows. Also a single system may involve the use of a plurality of different wireless and other communications devices as will be apparent from a reading of this specification although for simplicity of description cellular telephones will be used as the example.

[0049] Also, in the embodiment of the invention described below, whilst the format of transmitting messages is that of the well known short message service (SMS), it will be appreciated that any other appropriate format or protocol can be employed, the format being irrelevant insofar as the principles of operation of the invention are concerned.

[0050] In this embodiment of the invention a system for conducting commercial transactions includes a large number of participating system members (as herein defined) each of which has, in this case, a cellular telephone (1) embodying a SIM card (2) (see **FIG. 2**) or having alternative memory specially selected to be adequate for the purposes of implementing the invention as described below. The SIM cards are each pre-programmed with conventional applications and data as indicated by numeral (3) (see **FIG. 2**) as well as with additional applications and additional data necessary for the implementation of a system according to the invention as indicated by numeral (4) in **FIG. 2**. The additional applications and data are arranged in a standard type of menu structure as illustrated in **FIG. 2** and each menu item has associated with it a preset standard message which is a substantially complete instruction only requiring a small amount of data to be added in order to complete it, for example, the identity of the recipient and the amount to be transferred. The identity of the recipient may even be selected from a sub-menu in which there is a custom list of potential recipients.

[0051] It is to be noted that in this particular embodiment of the invention the participating system members need not all belong to the same network and that a plurality of networks can be involved without in any way adversely affecting the operation of the system of this embodiment of the invention.

[0052] The conventional programs and data include data embodying the cellular telephone number; the conventional

access PIN number; any other security number or other personal identifier such as a biometric characteristic; and also conventional menu and data relating to stored telephone numbers, addresses, short messages etc.

[0053] The additional program applications and menu structures include a program and associated menu items for enabling the activities described hereinafter to be conducted; for providing the ability to execute financial transactions employing an additional PIN number or personal identifier, such as a biometric identifier, if required; and for accessing additional menu items each of which may be divided into sub-items. The additional applications may also include a program providing the ability to update menu items remotely by way of distributed messages originating from the computerized server (see below) and containing updated menu data and also to change the settings in a particular cellular telephone.

[0054] The additional data accessible by way of the additional menu structure may include account details relating to institutions of a banking, retail, or service nature; selected merchants; selected vendors; associated broadcast or information services; and other remote similar computerized servers in other geographic areas or countries. An example of the general type of arrangement of such an additional menu structure is shown in FIG. 2.

[0055] The basic and most important additional menu item (111), namely financial transactions, may be divided, in the first place, into local (112); international (113); query (114) and authorization request (115) activities. Provision for additional items (116) may also be made. At the next level down, for example, local transactions (112) can be divided into transactions between participating system members (117); transactions with merchants (118) (who do not necessarily have a cellular telephone as such but by definition have a financial data base record); and transactions between a participating system member and a participating banking institution (119). Also it may be convenient to provide as a separate menu item transactions between own accounts (120).

[0056] A second additional menu item (121) may provide a selection of communications with one of a number of participating broadcast information services which can be identified individually as menu sub-items.

[0057] A third additional menu item (122) may be that of third party applications and such a sub-menu may hold the identity of each of a plurality of selected vendors which includes reservations services and other institutions with whom it may be desirable to communicate interactively.

[0058] A fourth additional menu item (123) may be that of settings which includes basic information pertaining to the particular cellular telephone and associated participating system member such as personal information, accounts information etc.

[0059] A fifth additional menu item (124) may be that of "help".

[0060] The extent to which the additional menu items and data are carried by the cellular telephone itself will depend largely on the capacity of the memory (in the instant case the SIM card) in the mobile device and the associated micro-processor. Thus, in its most comprehensive form, as far as

the cellular telephone is concerned, all of the applications and data occasioned by the additional menu structures will be resident in the memory of the cellular telephone. In other cases a lesser portion of those applications and data may be present but in any event whatever is necessary to achieve the objectives set out below. The smallest amount will inevitably be cases in which the cellular telephone has a browser for accessing the necessary applications and data which may then be maintained on the server, for example.

[0061] Irrespective of this, all of the applications and data associated with the additional menu items will be resident on the computerized server described in more detail below.

[0062] The cellular telephone memory, in this case the SIM cards, used in the system, are programmed to communicate interactively by way of suitable interpretive software (6) with a general computerized server (7) with the communication being by way of the associated cellular network (5), the applicable one of which in this particular instance is of the type generally known as GSM in which SMS (short message system) format of transmission is used.

[0063] The computerized server (7) is programmed to accept instructions also from a computer, for example a laptop computer (8); via the Internet as indicated by numeral (9) as well as from call centres indicated by numeral (10); or even by way of intra-net as indicated by numeral (11). Participating system members can thus, as an alternative, carry out transactions from a remote telephone (12) and land line (13), by calling in to the call centre or by way of a computer via the Internet.

[0064] The computerized server (7) may also be connected through suitable communications software (14) with participating banking institutions (15); with vendors (16); with merchants (17) not having cellular telephones as well as information services (18). Finally, the computerized server is also linked to similar computerized servers (7a) which may be located in different geographic areas or in different countries and each of which has its own set of participating system members, merchants, vendors etc.

[0065] Reverting now to the basis of the invention, the computerized server in this embodiment of the invention provides a data base record for each participating system member and merchant wherein each data base record may be identified at least in part by a cellular telephone number where applicable. Each data base record also includes data embodying the additional PIN number, and any additional security number or data which may be desirable.

[0066] The programming of the computerized server enables the functions of receiving and sending out of data in the form of messages; a facility for encrypting and decrypting data at least with regard to financial transactions; and the ability to link up with participating banks; vendors: broadcast services; other third party services and other similar computerized servers.

[0067] Most importantly the program enables financial transactions to be carried out between a participating system member as the instructing participating system member and any one of another instructing participating system member or merchant in the manner indicated above by the debiting and crediting a value balance in each data base record or sub-record affected by a particular transaction.

[0068] Implementation of an application and menu structure of the type described above with pre-set standard messages, enables data pertaining to a transaction to be captured rapidly and a composite message, including the additional PIN (almost invariably encrypted) if it be required by the server, to be formulated prior to connection with the server where the size of memory is adequate to permit this. This results from the fact that a substantial part, if not an entire duplicate, of the necessary parts of the program or application as well as the menu data are resident in the memory of the cellular telephone itself so that certain activities can be carried out independently of the server. This facility will be limited if inadequate memory is available in the cellular telephone.

[0069] It must, therefore, be noted that the latter facility is not essential to the invention and another implementation of the invention may be to have a browser programmed into the cellular telephone for use in accessing the necessary facilities to conduct transactions, for example by way of the Internet. WAP phones could be used to particular advantage in this instance.

[0070] In any event, if the recipient is a merchant which has its own application and computer system a transaction may be selected interactively with the recipient's application with the communication being by way of the computerized server. Of course, the computerized server can also be used as a conduit to any vendor and to their computer systems.

[0071] The program of the computerized server may be formulated to operate in accordance with any required set of rules which may be varied according to circumstances and from time to time as may be required.

[0072] As a general rule the computerized server is programmed to enable the debiting from a relevant data base record which has an adequate positive balance (or specially arranged credit facilities) to another data base record in the general manner which will be quite apparent from the above. Thus, a participating system member will operate the cellular telephone to select a desired transaction with a selected recipient and in respect of an inputted amount and will then communicate with the computerized server. The computerized server will check that the PIN or other security signal is in order; will check that the necessary funds or credit facility is available; will check the validity of the identity of the selected recipient; and the program will then cause the server to transfer the relevant funds from the data base record of the instructing participating system member to the data base record of a recipient who will usually be a different participating system member or a merchant.

[0073] The most important aspect of this invention then comes into play in that, once the transaction becomes completed, at least as between an instructing participating system member and a recipient who has a data base record in the computer server, the transaction becomes irreversible. The transaction is therefore as good as having taken place in cash of any type as the only person who can reverse the transaction (other than in instances addressed in the definition of "irreversible" above), either in whole, or partly by way of a refund, is the recipient. Dispute resolution is therefore up to the payer and recipient.

[0074] Once the transaction has been completed the server may be programmed to send a confirmatory message to both parties advising them of the completion of the transaction.

[0075] In effect, the invention provides a facility operating with all the advantages of a smart card facility but without the disadvantages in that the security and convenience of the system of this invention is very much enhanced by using real money kept in a real bank account remote from the activating unit (generally a cellular telephone). Furthermore, the cost of providing the infrastructure of a server operating in the manner of this invention is substantially less than that of providing each participant with a smart card and merchants and vendors with special transfer devices for effecting a transfer of funds from one smart card to another as well as the other facilities required. This results from the fact that many persons who operate bank accounts already operate cellular telephones.

[0076] The system of this invention also has the advantage that the loss of a cellular telephone for whatever reason does not seriously prejudice a participating system member in the same way as loss of a smart card in the prior art system. In the system of this invention a participating system member who loses his cellular telephone can still conduct transactions by way of the Internet or by way of a call centre set up for the purpose. The call centre also enables persons to use the system who do not have a cellular telephone and similarly computer owners who have access to the Internet can use the system without possessing a cellular telephone.

[0077] The above exemplifies the basis of the invention which may be refined and enhanced in any of the ways indicated above.

[0078] In particular, it is considered to be particularly advantageous to provide each participating system member with additional data storage facility for the storage of personal data in the data base so that required personal information is available whenever required and it can also be released with authorization, as and when required to third parties.

[0079] Also, in instances in which there are other similarly configured and programmed servers inter-linked with the server described above the recipient could be a participating system member of a different server from that of which the payer is a participating system member. In order to ensure that transactions are nevertheless irreversible and can be carried out with clearance taking place in real time the computerized servers must all be connected, or be capable of immediate connection, at all times via fixed connections. Each server will, of course, have its own unique identification number.

[0080] In order to uniquely identify each participating system member's data base record it is preferably allocated a communication (account) number structured on an international level. The communication (account) number could thus be structured as a two digit international dialing code followed by a two, three, or four digit national area code or national mobile operator code and thereafter the subscriber mobile telephone number. This may be followed by a two or three digit bank or server identifying number which in turn is followed by a final check digit. The only new part which really needs to be remembered by a client is the bank or server identifying number and the check digit.

[0081] As an example, a communication number could be

[0082] +27823918711015.

[0083] This is composed of the following component strings:

[0084] +is a sign to introduce the communication number;

[0085] 27 is the international country dialing code;

[0086] 82 is the mobile operator code;

[0087] 3918711 is the subscriber identifier (telephone number which should be well known to the subscriber/client);

[0088] 01 is the institution identifying number (within the mobile operator's subscriber list within the particular country and therefore with two digits allowing for up to 100 different participating institutions); and,

[0089] 5 is the check digit.

[0090] The length of each of these strings can obviously be altered according to requirements. In particular, the institution identifying number may be say three digits long to allow for a greater number thereof.

[0091] Thus, in this case all that a client has to remember afresh is the two digit bank identifying number and the check digit.

[0092] Clearly, the number of digits allocated to each function described above can be varied according to particular circumstances.

[0093] It is also preferred that the programming of both the server and the SIM cards is such that the additional menu data can be changed remotely by way of the server as and when required and the additional PIN, if resident on the SIM, can also be change as required.

[0094] In it is also preferred that the program of the computerized server include the facility for specifying additional conditions under which debiting of a data base record may or may not take place and the conditions could, for example, be that certain funds can only be used for certain purposes or can only be transferred to certain merchants, vendors or types of merchants or vendors or that funds can only be used at a preset maximum rate. For this purpose a data base record can have a plurality of sub-records although this is not necessarily so.

[0095] It will be understood that numerous alternative and additional rules and requirements can be imposed on a system as described without departing from the scope hereof. Also, the basic system can be changed widely, the basic feature being only that the data base records be maintained separately from an associated cellular telephone in a general remote computerized server.

1. A computer based system for conducting commercial transactions and which includes a plurality of participating system members (as herein defined) each having a mobile device adapted to communicate via an associated wireless network with a general computerized server in which a financial data base record is allocated to each participating system member, the system including also a plurality of merchants (each of which by definition has been allocated a financial data base record in the computerized server) and

wherein the computerized server is programmed such that financial transactions can be conducted by remote operation of the mobile device of a participating system member, via the wireless network, to result in the debiting of a financial data base record associated with an instructing participating system member and the crediting of a different financial data base record associated with any one of self, another participating system member and a merchant, the system being characterized in that in respect of at least one or more predetermined categories of transactions in respect of which the recipient is either a participating system member or a merchant, the transaction, once completed, is irreversible.

2. A system as claimed in claim 1 in which each transaction becomes completed only after the computerized server receives a security signal from the mobile device of the participating system member whose data base record is to be debited, the security signal being either a PIN or like code inputted by the said participating system member, or a biometrically triggered authorization signal.

3. A system as claimed in claim 2 in which the security signal requires manual activation in response to on-line interrogation from the computerized server.

4. A system as claimed in any one of the preceding claims in which the mobile device is a mobile telephone.

5. A system as claimed in any one of the preceding claims in which the said categories of transactions include at least transactions in respect of which the recipient is one of a predetermined list of participating system members or merchants.

6. A system as claimed in any one of the preceding claims in which the said categories include all transactions in respect of which the recipient is a participating system member or merchant.

7. A system as claimed in any one of the preceding claims in which the computerized server is programmed to disallow a requested transaction in the event that the balance of units in an instructing participating member's financial data base record is inadequate to fund the requested transaction.

8. A system as claimed in any one of the preceding claims in which the financial data base records, in the absence of special individually allocated credit facilities, are programmed to operate exclusively on a credit balance basis.

9. A system as claimed in any one of the preceding claims in which the computerized server is one of a series of similarly structured and programmed associated computerized servers located optionally at different geographical localities and inter-linked such that transactions can be conducted by a participating system member of one computerized server to the financial data base record of a participating system member or merchant of a different computerized server with the transaction nevertheless becoming irreversible once completed.

10. A system as claimed in claim 9 in which at least some of the general computerized servers are located in different countries in which case any necessary currency exchange rates (selected according to prevailing exchange rates and any particular policy being applied in relation thereto) are applied to the value of the transaction as may be appropriate in real time so as to render the transaction immediately cleared.

11. A system as claimed in any one of the preceding claims in which the general computerized server is programmed to receive instructions to carry out a financial transaction in the alternative via a call centre which may be

manned or totally electronic in nature, via an Internet browser, or by way of interactive voice response; or from a creditor, in particular from a point of sale (POS) device.

12. A system as claimed in any one of the preceding claims in which each participating system member is provided with a swipe card or a device capable of communicating by radio frequency, infrared or other electromagnetic radiation for facilitating the secure and accurate transfer of the participating system member's account number and optionally also other data to a recipient communications of a merchant or vendor.

13. A system as claimed in any one of the preceding claims in which at least selected data base records have multiple sub-records each of which has a balance redeemable only for one specific purpose or for the advantage of one or more specific merchants or vendors or with other limitations or controls on the individual sub-records.

14. A system as claimed in claim 13 in which overall controls are imposed on the data base records individually to limit the rate of expenditure on a time basis or on the basis of particular recipients, or both.

15. A system as claimed in any one of the preceding claims in which the financial data base record includes, or has access to another data base record being a personal data base record of personal information of a type typically required for use in carrying out certain financial transactions.

16. A system as claimed in claim 15 in which the personal includes details of one or more current addresses and the

programming of the computerized server is such that a change of address is automatically communicated to all parties which had previously been supplied with a corresponding old address.

17. A system as claimed in any one of the preceding claims in which the computerized server is programmed to issue, against a debit of a system member's financial data base record, a cryptogram adapted to unlock value of a predetermined nature or character in a vendor's system.

18. A system as claimed in any one of the preceding claims in which the system utilizes the services of not only one, but two or more wireless networks so that at least some of each network's subscribers make up the plurality of participating system members.

19. A system as claimed in any one of the preceding claims in which the general computerized server of this invention is associated with a particular bank whose banking system operates a bank account from which the general computerized server itself can draw and deposit funds as and when required.

20. A system as claimed in any one of claims 1 to 18 in the general computerized server is that of an associated mobile telephone network.

* * * * *