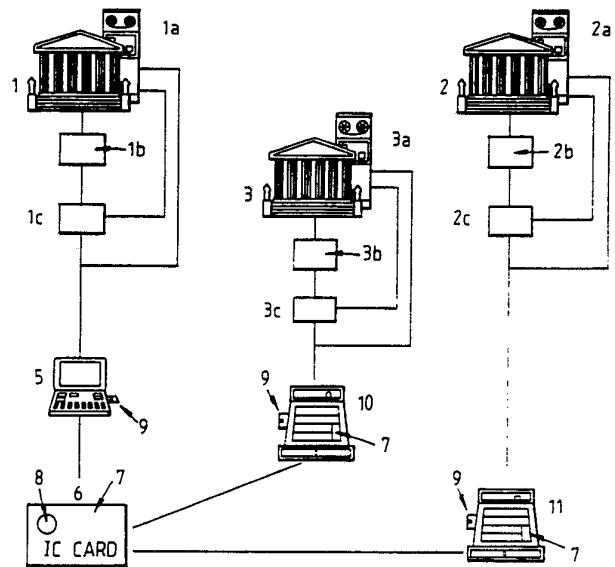


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<p>(21) International Application Number: PCT/GB91/00566 (22) International Filing Date: 10 April 1991 (10.04.91) (30) Priority data: 9008362.7 12 April 1990 (12.04.90) GB (71) Applicant (for all designated States except US): JONHIG LIMITED [GB/GB]; 20 Old Broad Street, London EC2 (GB). (72) Inventors; and (75) Inventors/Applicants (for US only) : JONES, Timothy, Lloyd [GB/GB]; 81 Wilbury Crescent, Hove, East Sussex BN3 6FH (GB). HIGGINS, Graham, Robert, Leslie [GB/GB]; Flat 3, Abbeydale House, Bathampton Lane, Bathampton, Bath, Avon BA2 6SJ (GB).</p>		<p>(74) Agent: SMITH, Martin, Stanley; Stevens, Hewlett & Perkins, 5 Quality Court, Chancery Lane, London WC2A 1HZ (GB). (81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CM (OAPI patent), DE, DE (European patent), DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, PL, RO, SD, SE, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US. Published <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></p>

(54) Title: VALUE TRANSFER SYSTEM

(57) Abstract

A value transfer system which allows value to be transferred between electronic purses which comprises computer which controls the loading of purses with value and the redemption of value from purses, a special bulk purse or purses and a value meter securely linked thereto which registers the total net value issued to the bulk purse or purses. Draw-down of value and redemption of value transactions are effected with the bulk purses.



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VALUE TRANSFER SYSTEM

5 The invention relates to a value transfer
system for cashless transactions. Several kinds of
cashless financial transaction services are available.
These include credit cards and debit cards which
customers may use with a wide range of retailers.
10 Each transaction is accompanied by the provision of
customer account details required for the actual
transfer of funds between the specific customers and
the specific retailers.

Another form of cashless card system is the pre-
15 payment card system, where a card is purchased prior
to a series of transactions and a value record
recorded on it is appropriately decremented on each
transaction. A 'phone card is an example of a pre-
payment card.

Such prior systems are inflexible and are no
20 general substitute for cash in low value high volume
transactions. Various proposals have been put forward
to allow the interchange of money values between
"electronic purses". For example, United States
Patent No 4839504 (Casio Computer Co Ltd) discloses a
25 system where a user is able to load money value on to
an integrated circuit (IC) card, otherwise known as a
smart card, by communication with his bank. At the
bank the same value is applied to a separate IC
account set up for the user. Purchases are able to be
30 made by transfer of money values from the IC card to
retailer equipment off-line from the bank. Each
transaction requires transmission to the retailer and
retention by him of details which include the
purchaser's identity. Ultimately, in claiming funds
35 from the bank the retailer presents a list of

transaction details and there is account reconciliation to allow the IC account of the appropriate purchaser to be adjusted.

5 Procedures which, as above, require ultimate account reconciliation for every transaction are attended by two disadvantages. The first is practical. The storing, transmitting and reconciling of purchaser details for every transaction places an impossible burden on equipment if all cash type
10 transactions are contemplated. Processing all such transactions efficiently in an acceptable time is not possible, even with the most modern equipment. The second objection is social. The anonymity of cash would be lost and potential would exist for details of
15 personal spending habits to be derived.

The second of the above objections has been addressed by Chaum in "Controlling your Information with a Card Computer" ("Concepts Applications Activities" published by TeleTrust March 1989). Chaum
20 proposes a system of "blind signatures" of money value items effected by an authorising entity such as a bank. This is a way of preventing ready identification of purchasers. However, a problem remains in that double payment by a purchaser must be
25 detectable and Chaum meets this difficulty by including, in the data transferred in an off-line transaction, encrypted information concerning the purchaser. This information is relayed to the bank when the retailer claims credit and is used at the
30 bank to detect double use of the same "electronic cash". Also, each signed item is recorded at the bank to make possible ultimate reconciliation of claims against these items, albeit without customer identification. The problems of storage, transmission
35 and processing of individual transaction information

remain. Additionally, Chaum introduces another difficulty. His system requires that each item of signed "electronic cash" should be treated as a unit and is incapable of division. Again this means that the system is inappropriate for small value high volume transactions.

The present invention seeks to provide a practical solution to the problem of providing a framework suitable for cashless small value high volume transactions.

According to the invention there is provided a value transfer system having a computer; a plurality of electronic purses; exchange devices whereby purses may communicate with each other to transfer value in transactions which are off-line from the computer; draw-down means for loading purses with value under control of the computer; redemption means for redeeming value from purses under control of the computer; a value meter; one or more of said purses being bulk purses which are capable of having value loaded and redeemed via the value meter, the value meter recording one or more float value records whereby the net value released to the bulk purse or purses may be derived, the net value being the difference between the total of values drawn down to the bulk purse or purses and the total of values redeemed from the bulk purse or purses, the float value record being non-specific with regard to individual draw-downs and redemptions.

The value meter may have an interface whereby the float value record may be adjusted on command so as to create or destroy value within the bulk purse or purses.

Preferably there is provided, in each purse, storage means which stores a purse value record which

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