INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)
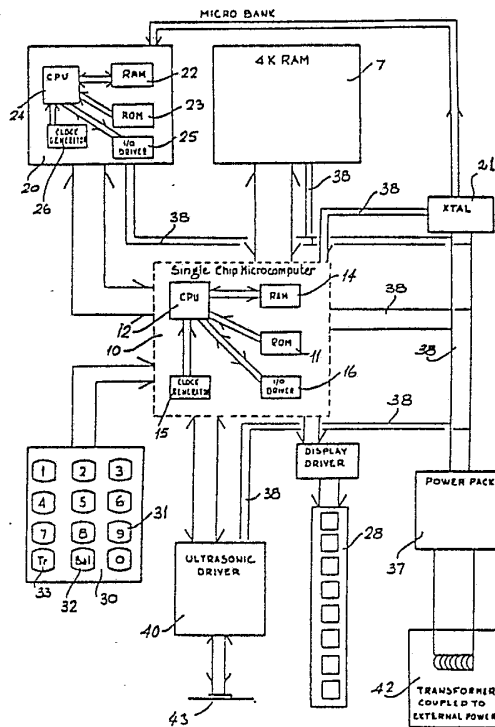
(51) International Patent Classification ³ :		(11) International Publication Number: WO 83/ 03018
G07F 7/10	A1	(43) International Publication Date: 1 September 1983 (01.09.83)

(21) International Application Number: PCT/SE83/00062

(22) International Filing Date: 24 February 1983 (24.02.83)

(31) Priority Application Number: 411/82

(32) Priority Date: 25 February 1982 (25.02.82)

(33) Priority Country: IE

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(81) Designated States: AT (European patent), AU, BE (European patent), CH (European patent), DE (European patent), DK, FI, FR (European patent), GB (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent).

Published
With international search report.

(54) Title: A PORTABLE DEVICE FOR STORING AND TRANSFERRING DATA

(57) Abstract

A portable device for storing and transferring funds for use in a funds transfer system. Each portable device (1) is card-like and comprises a memory means (7) for storing a monetary balance, and a plurality of identifying characteristics of the user. Micro-computer means (10) in the card (1) update the balance after funds transfer, and randomly select some of the identifying characteristics to query the user. The users response is compared with the stored characteristics. Ultra-sonic coupling means (40) in the card permits coupling to another card (1) through a coupling terminal (2). A keyboard (30) and a digital display (28) permit inspection of the balance. The micro-computer (10) date and time stamps each transaction.

A PORTABLE DEVICE FOR STORING AND TRANSFERRING DATA

The present invention relates to a portable device for storing and transferring data, the device being of the type comprising memory means for storing the data and an identifying characteristic to prevent unauthorised use of the device, coupling means for coupling the device to an external terminal or other

5   device for transferring data, micro-computer means to update the data in the device after data transfer, means to compare an identifying characteristic entered by the user with the identifying characteristic stored in the memory means, and clock means to drive the micro-computer.

Such devices are well known, and generally are in the form of a substantially

10   flat pocket sized card. A monetary balance or any other data may be stored in the device, and transferred to another device. A coupling terminal is normally provided for routing the data being transferred and the two portable devices between which a transaction is to be made are connected into the coupling terminal. U.S. Patent Specifications Nos. 4,211,919, 4,102,493, 4,092,524,

15   4,007,355, 4,001,550 and 3,971,916 describe such devices and terminals.

Unfortunately, these known devices suffer from various disadvantages, particularly, in the field of security, both of the device and the information stored therein, and during transfer of the data. Furthermore, due to the fact that most devices need to be connected on line or into a computer, they lack versatility.

20   In particular, where security is concerned, none of the known devices are secure against unauthorised use. Most rely on the use of a personal identification number stored in the memory of the card, and once the correct personal identification number is proveded by the user, the card is enabled to carry out a transaction. Unfortunately, with the use of personal identification numbers,

25   there is a limit to the security that can be provided. For example, in four digit personal identification number, which is the more common length of number, there are only 9,999 combinations available. Accordingly, with modern high powered computers, it is relatively easy to discover the correct personal identification number stored in any particular card.

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Secondly, where data is transferred from a card, it is relatively easy to tap into the line transferring the data and record the transaction. Accordingly, the transaction may be replayed an unlimited number of times, and thus in the case of funds transfer, an amount of money may be fraudulently transferred an

5   unlimited number of times.

Additionally, it is difficult to encode data being transferred in such a way that the code cannot be relatively easily broken by unauthorised people tapping into the transfer line. Attempts have been made to overcome these problems. However, so far, none of these attempts have been totally satisfactory.

10 Accordingly, it is an object of the invention to provide a portable data storage and transfer device and associated terminal which ensures that the portable device is relatively secure against unauthorised use. It is also an object of the invention to provide a device which will prevent the fraudulent transfer of data by replaying a transaction an unlimited number of times. Furthermore, it is an

15 object of the invention to provide a portable device which permits the data being transferred to be encoded, so that it is virtually impossible for an unauthorised person to decode the data. It is a further object of the invention to provide a portable device which can store and transfer data without being connected on-line to a computer, and which is particularly suitable for storing

20 and transferring monetary amounts.

The invention achieves these objects and overcomes the problems of prior art devices by virtue of the fact that the memory means in the portable device stores a plurality of identifying characteristics and the micro-computer means selects at least one of the identifying characteristics and queries the user on

25 the selected characteristics prior to data transfer.

The advantage of the invention is that it provides a device which is relatively secure against fraudulent use. This is because the invention permits a user of the device to be queried on one or more of a number of identifying charac-teristics, and this has the further advantage that the number of characteristics

30 on which the user is queried, may be increased or decreased, depending on, for example, the type of data being transferred. If the data being transferred is of relatively limited value and/or importance, only one or a few characteristics may be selected. However, if the data is important, or of a high value,

then many more characteristics may be selected. For example, in the case of a user making a small purchase, he may be queried on only one characteristic, thereby having the advantage of saving time, for example, at a checkout in a store. While on the other hand, if he is making a large purchase, many more
5   characteristics may be selected.

Preferably, the micro-computer means randomly selects one or more of the identifying characteristics. The advantage of this feature of the invention is that it makes it more difficult for fraudulent use of the card.

In one embodiment of the invention, the number of identifying characteristics
10 selected by the micro-computer means is dependent on the data to be transferred.

The advantage of this feature of the invention is that it permits relatively small and unimportant transactions to be carried out quicker than larger or more important transactions, thereby adding to the speed at which transactions may
15 be carried out.

Advantageously, at least one of the identifying characteristics is variable with time.

The advantage of this feature of the invention is that it makes it more difficult for the card to be used fraudulently.

20 Preferably, at least some of the identifying characteristics are characteristics of the user, and at least one of the variable identifying characteristics is the users age.

The advantage of this feature of the invention is that because the characteristics relate to the user, they are relatively easily remembered.

25 In another embodiment of the invention, the micro-computer means comprises means to date stamp each data transfer to make it a unique transaction. The advantage of this feature of the invention is that it ensures that each transaction is a unique transaction and therefore, if repeated will be rejected because the date or time will be incorrect.

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