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(54) **APPARATUS AND METHODS FOR IMPROVED CREDIT CARDS AND CREDIT CARD TRANSACTIONS**

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(52) **U.S. Cl.** ..... **235/381**; 235/380; 705/41
(58) **Field of Search** ..... 235/487, 382, 235/380, 395, 492, 379; 705/35, 38, 39, 1, 20, 26, 41

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(57) **ABSTRACT**

Customized credit and debit cards for issuance by a person or main cardholder, the cards being limited to use in transactions at selected vendors only. Thus, for example, a parent or corporation can issue a customized card to a person or group, wherein the card is only valid for use at restaurants, airlines, hotels, certain stores, or so forth.

**25 Claims, 1 Drawing Sheet**

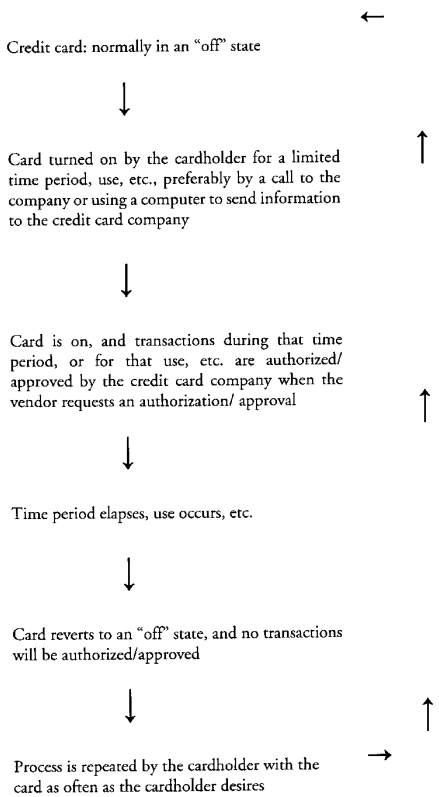
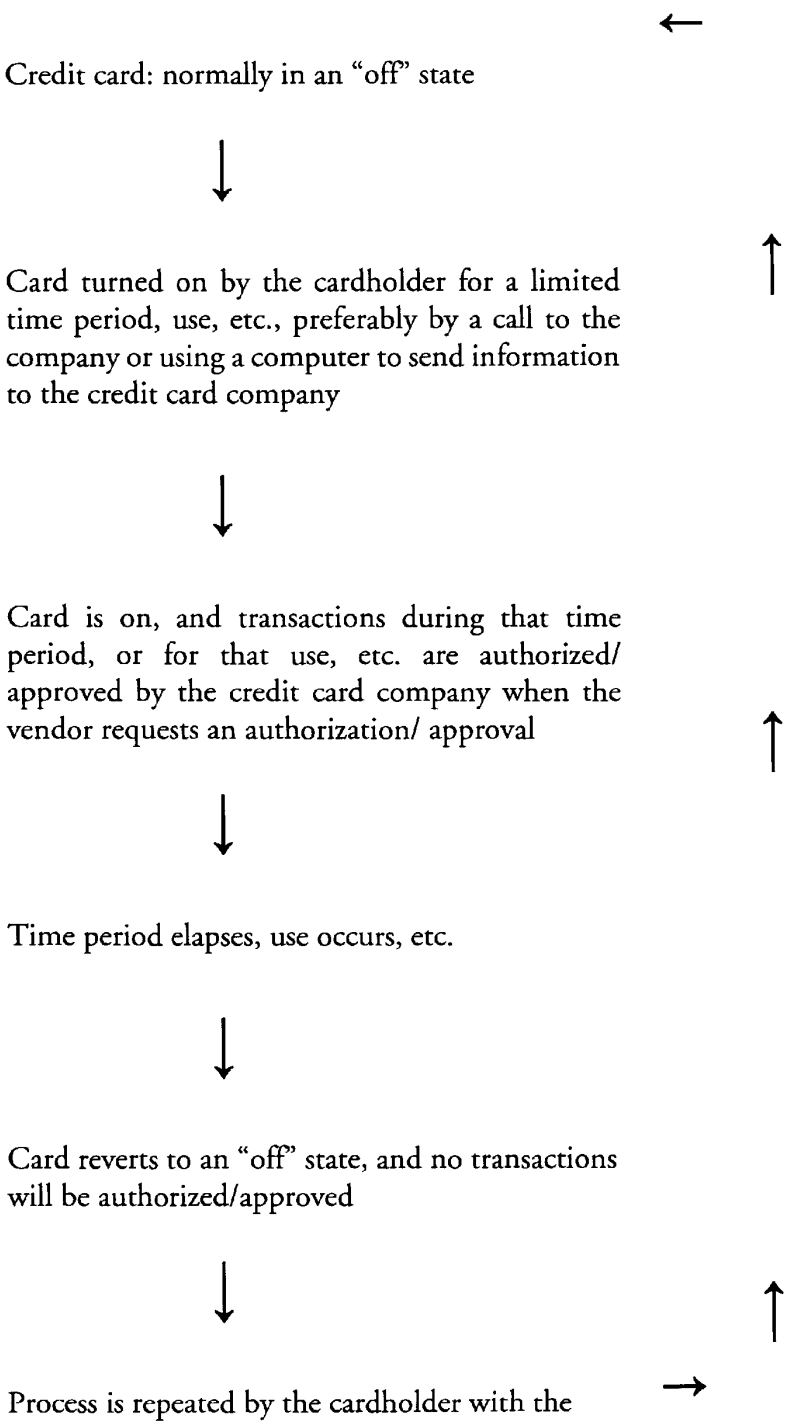


Figure 1



# APPARATUS AND METHODS FOR IMPROVED CREDIT CARDS AND CREDIT CARD TRANSACTIONS

## RELATED APPLICATIONS

The present application claims all rights of priority to U.S. Provisional Application Ser. No. 60/079,884 filed Mar. 30, 1998.

## BACKGROUND OF THE INVENTION

Credit cards are currently a common financial tool. Yet, credit card fraud is a considerable concern for credit card companies. The problem occurs when an unscrupulous individual obtains a copy of a person's credit card information, and then uses that information to fraudulently charge purchases to the person's card until the theft is noticed and further use of the card is blocked. In addition to being a considerable problem for the card companies themselves, this illegal practice causes inconvenience and annoyance for the innocent user whose card has somehow been compromised.

Such fraud is a potential problem in various contexts, but recently has become of significant concern in Internet transactions in particular. Transmission of credit card information over the Internet has long been suspect due to the risk of individuals monitoring traffic over the network and then using that information for their personal gain. While secure networks and connections have been increasingly available over the past several years, many are nonetheless unwilling to transmit any credit card information over the Internet, due to the possibility that valuable credit card information could be intercepted.

In addition, monitoring, control and regulation of expenditures and finances is a frequent concern of companies and individuals. It is always desirable to provide apparatus and methods which improve the apparatus and methods for such monitoring, control and regulation. Accordingly, there are numerous improvements which have been heretofore unknown in the art, which improve the effectiveness, value, and/or the efficiency of credit cards, either in general or certain types of financial transactions.

## SUMMARY OF THE INVENTION

It is an object of the present invention to provide improved credit cards and methods for credit card transactions.

It is a further object of the present invention to provide for customized use credit cards.

It is a further object of the present invention to provide for user-defined credit cards for use in financial transactions.

It is a further object of the present invention to provide for disposable credit cards.

It is a further object of the present invention to provide for limited use credit cards.

It is a further object of the present invention to provide methods and apparatus for secure transmission of credit card information.

It is a further object of the present invention to provide methods and apparatus for minimizing credit card fraud, and the amounts of loss that could occur should card information be intercepted.



It is also an object of the invention to provide methods and apparatus for transmission of credit card information over the Internet with a minimal risk of possible fraud or loss.

In addition to the prevention and reduction of fraud, it is a further object of the invention to provide improved types of credit cards, and improved methods for credit card transactions.

In accordance with the invention, a variety of new forms of credit cards and credit card methods are disclosed herein. In some of the disclosed embodiments, the cards and methods provide improved credit cards and methods providing for customization, limited use, single use (disposability), or so forth. Additionally or alternatively, in some of the disclosed embodiments, the cards and methods include new forms of credit cards designed to reduce or prevent fraud. In addition to, or as an alternative to the prevention of fraud, in some of the embodiments disclosed herein, new credit cards and associated methods are provided for the improvement of credit card transactions and/or for availability of an expanded array of financial products to consumers.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic illustration of the customization of a credit card in accordance with one embodiment of the present invention.

## DESCRIPTION OF THE INVENTION

In accordance with the present invention, in one embodiment of the present invention, to address the problem of credit card fraud, a new system of disposable credit card numbers is disclosed herein. These credit cards or credit card numbers are generated for a one time, single transaction basis, after which they are disposed of, or thrown away. The numbers can be used by a user over the Internet or any other communications system, whether open or secure, to effect a single transaction. After a one time use of the credit card number, the number is deactivated by the issuing credit card company such that it is no longer available for use. In this manner, a credit card company need not wait to learn whether a given credit card number has been intercepted, and one or more fraudulent purchases made (with the attendant possible loss of time, money and manpower investigating and resolving such matters) before dealing with the results of the potential theft. Rather, all numbers used over the network, or in a certain context, are assumed insecure, and once used for the first time, are no longer available for use. By doing so, the company, so to speak, "beats the thief to the punch," having already deactivated the number after a single use of the card, even before learning of the fraud.

In other embodiments of the invention, customized or limited use credit cards are provided. These cards are customized, preferably by the user, to suit the user's desires or needs. As a result, they provide methods and apparatus which have been heretofore unknown in the art, but which provide benefits that improve the efficiency, ease and uses of payment for goods and services.

Various embodiments of the inventions are possible consistent with the inventions herein. Although reference is occasionally made to either the disposable credit card embodiment or the customized credit card embodiment

herein, the features disclosed in association with one can likewise be applied to the other, as well.

With respect to the credit card's number itself, in one preferred embodiment, for example, the credit card number is indistinguishable from permanent, ordinary credit card numbers. By making the customized credit card number indistinguishable from regular numbers both users and vendors are encouraged to use the credit card in the same manner as regular credit cards.

Similarly, by making the temporary disposable numbers (or likewise the customized credit card number) indistinguishable in appearance from regular credit card numbers, a potential thief is unable to tell in advance that a particular number is a disposable number, and already not valid. This may in turn enhance the potential of catching the thief by alerting the credit card company the first time someone attempts to illegally use the pilfered number.

With respect to either the disposable or the customized credit card, relevant information (such as the expiration date etc.) can either be printed on the card or verbally transmitted to the user. Likewise, the limited use nature of the card (either in a general sense or the specific limitations), the disposability of the card, the range of dates or validity of the card, etc. may either be printed on the card or transmitted to the user, whether verbally or in writing.

In another embodiment, the customized or the disposable number is the user's regular credit card number with a series of digits or alphanumeric characters either inserted therein, or tacked on at the end. This embodiment allows each customized or disposable card to be easily noted by the user to be a mere extension of his or her regular number.

Many of the embodiments herein could be used in conjunction with a policy by the credit card company (or by the main cardholder or the user) in which purchases from Internet transactions, for example (or purchases over unsecure networks), are only accepted if made in conjunction with a disposable or customized credit card number.

The invention can be practiced according to a wide variety of embodiments. In one embodiment, for example, a user dials into her credit card company before making a transaction, and after providing the ordinary credit card number and verification data, is provided with a disposable or customized number and/or mailed, provided with, or allowed to activate a disposable or customized card for a single or a limited range use.

In one embodiment of the invention, a user can indicate in advance of purchase, on the telephone call with the credit card company, what the single use or the customized credit card number is to be used for. This can be used to provide additional security and/or control the uses of the funds placed on that card.

In another embodiment, a user could be provided, each month or each year, with a set of disposable, one time only, or customized, limited use, numbers and/or cards, which are printed on the credit card statement for use during the next month or year, or which are mailed to the user. With respect to the disposable card, the user is instructed that, after use of the number once, the number may not be used again. With respect to the customized card, the cards can either be preset for certain uses, or the cards can be ready and waiting in the user's office or home for setting to the desired use when the user is ready.

The user could also be provided with a set of paper (or thin plastic) credit cards (preferably with magnetic strips), whether along with the customer's monthly statement, with a credit card encoder, with an encoding device which attaches to the computer and/or the Internet, or otherwise. Each of these credit cards could be used once, or on a limited or customized basis, after which the credit card could be ripped up and discarded. The cards could further have printing or indicia on them to remind the user that they are for one time only or customized use.

In a further variation on this approach, the paper cards and/or the provided numbers must be used in a specific required order, for additional security. These paper credit cards or provided numbers could be unusable until activated by the user, as is the practice with new credit cards that are sent out by mail.

In another embodiment, instead of ripping the credit cards up, the cards could have a portion which the user writes on to record the type of transaction, and the amount of the transaction. Alternatively, the card could have a portion which the user signs upon receipt and a portion which is later countersigned at the vendor, to provide additional security.

These credit cards could even have a portion which the user signs and provides to a vendor in a store. No vendor would ever, under one embodiment of the system, receive or have access to the user's permanent credit card number. Rather, the vendor (for example, a restaurant in which the user has just eaten) would receive a disposable credit card from the user's supply. The vendor could read the number off the disposable or customized card, could scan the number with a bar code scanner, could read a magnetic strip on the disposable card, or so forth. Upon being used once, the credit card can be marked, if desired, to show both that it has been processed to charge money to the person's account, and to show that it is no longer usable. This disposable card could be returned to the cardholder, saved as a receipt by either of the cardholder or the vendor, be returned to the credit card company, destroyed, or so forth. As noted above, signature could be provided once, or two signature lines could be provided, for the user to sign and countersign.

As yet another example, a user could be provided with a "calculator" of sorts, of credit card like thickness, which stores a predetermined number of disposable numbers therein. After using a number once, the user has to go back to the calculator to get the next number for the next transaction. This calculator could also be provided with a PIN number to prevent a party from accessing the numbers should the user's wallet be stolen or lost.

Alternatively, a card with multiple numbers stored thereon (which become activated in a predetermined sequence) can be provided, so that the actual credit card needs to be available (not just the credit card number) to determine the next available number in the sequence. In this way no single number alone is capable of compromising the user's account for more than one transaction, or of compromising the main number in the user's account. This card could have an LED or some other visually readable means to display the next available card number (either automatically or upon activation of a PIN, if desired). As mentioned above, part of the number could be the fixed, base portion (which is a number or portion common to all of the numbers)

and part of the number could be the variable portion (a number or portion which varies). Alphanumeric sequences or any other symbol or series of symbols can be employed for either or both of these portions.

In addition, since they are for use either on a one shot only or on a customized basis, the credit card or number could also be associated with a certain sublimit of the individual's or a corporation's credit limit. Thus, for example, a user with a $500 limit, for example, could call into the credit card company and obtain a disposable or a customized card which itself only has a $50 charge limit (for example, when the individual only intends to charge up to $50 in the next transaction, or to allow someone else to charge up to $50). This further limits the potential losses from a credit card fraud.

The present invention could also be used to provide a disposable card for a single transaction to users in general (or a customized card for a limited use), including users who do not have a permanent credit card. It could also be provided to users on a debit basis, based in whole or in part upon some reserve or funds provided to the issuing company in advance. Alternatively, the user could even identify the general or specific type and amount of transaction in advance, if desired.

The present invention, and the disposable embodiments in particular, is of additional value for use over the Internet. For example, the following system could be employed. Before a user makes a potential purchase over the Internet, he or she accesses one of his or her disposable credit cards or credit card numbers. As noted above, this could be accomplished by dialing into the credit card company, by removing one of a series of disposable cards from the user's monthly statement, or so forth. To effect the transaction over the Internet, the user transmits his or her credit card information to the vendor. That vendor then verifies the transaction and obtains an authorization code from the credit card company authorizing the purchase, as is currently standard practice with credit card transactions. To insure the integrity of the system, the vendor is required to verify the code immediately upon receipt. This prevents undue time from elapsing, which is undesirable from a security standpoint. Upon receiving the request for verification, the credit card company notes the identity of the vendor, authorizes the transaction (if the credit card number is valid and the purchaser has sufficient funds available), and forwards the authorization code to the vendor. At the same time, the credit card company also deactivates the credit card number from any further future use. Thus, if a thief intercepts the credit card information en route, when the thief later attempts to take that information and to use it in an illegal transaction, the transaction will be declined since the number has already been deactivated. After the number has legitimately been used once by the lawful owner, it no longer has any continuing validity.

If desired, to remind the user the vendor can transmit a message indicating both that the credit card number has been accepted, and that it is no longer of validity, and can therefore be ripped up. However, if used, this method runs the risk of also alerting a thief who is monitoring the Internet traffic.

The credit card company can also monitor all second requests for use of that credit card number which are transmitted to the system. This monitoring can be used to attempt to catch the thief during his future attempt to illegally use the card

As additional security, each of the disposable credit cards can be given an expiration date, e.g. the end of the month or the end of the billing cycle. Thus, if the credit card is not used within the time limit, it expires. (This expiration date could be printed on disposable paper credit cards). This approach has been used in a different application by credit card companies with respect to checks that are sent with the statement to the user with a given expiration date. As far as the present inventor is aware, that system has been used by credit card companies with satisfactory results in the past.

The card company can also monitor the time of second requests. If the time of second request is extremely close to that of the first request, then the company can block both transactions on the grounds that a thief may be in the process of attempting to quickly intercept and use a credit card number en route before the user.

To further add to the security of the system, a function can be built into Internet software, such as the popular Internet browsers, in which a server assigns a universal time and date stamp (based for example on Greenwich Mean Time) to each credit card transmission transmitted by a user over the Internet. Thus the authorized user's transaction will be assigned a time and date, such that the credit card company can determine, when the same disposable number is sent twice within a short time frame, which transaction corresponds to the one in which the number was sent first. A function could also be provided in which the Internet address of the sender or some other password is encrypted and transmitted as well.

For example, a password which modifies over time and which is coded to the time/date stamp can also be integrated into the browser. The password is individual to each user, with the data summarizing the algorithm used to encode the password being provided to the user and to the individual's credit card company ahead of time (as part of the security information associated with the account). When the transaction is effected, the browser sends information to the internet provider's server, which sends back the universal time/date stamp. The browser then encodes the password and sends it back to the server with the credit card information to be transmitted to the vendor.

The present invention is not limited to use over open systems. Rather, it is intended that it can also be used over secure systems to provide an additional added level of security. Similarly, the invention can be used for those individuals who own credit cards and wish to purchase items over the telephone, but who are reluctant to give out or release their credit card information over the phone.

Likewise, although a variety of security procedures and methods are disclosed herein, any of the security procedures, protocols, encryption techniques, and so forth, used in the art, can be used in connection with the present disposable and/or customized credit cards.

If the disposable credit cards are stolen or lost, the credit card company can, of course, minimize loss by simply deactivating them upon learning of the theft or loss from the user. In addition, the placement of sublimits on each of the cards, or on the group of cards as a whole, further minimizes potential loss.

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