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(71) Applicant and
(72) Inventor: **DAROGA, Behruz, Nader** [CA/CA]; 29 Crocker Drive, Brampton, Ontario L6P 1M7 (CA).

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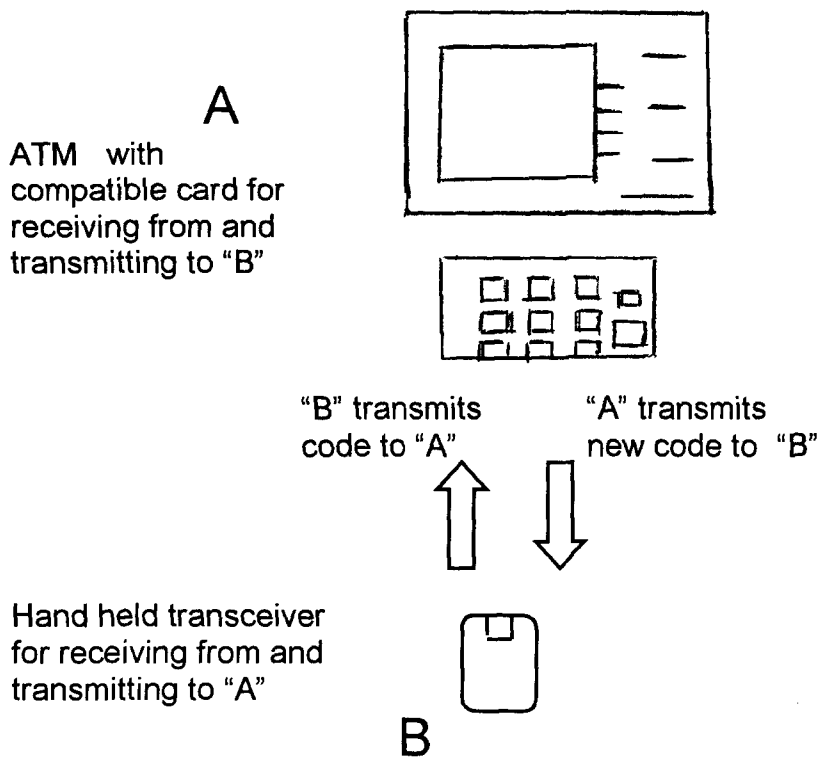
(54) **Title:** DIGITAL TRANSMISSION SYSTEM (DTS) FOR BANK AUTOMATED TELLER MACHINES (ATM) SECURITY



(57) **Abstract:** This invention describes a hand held digital transceiver to transmit a signal as light (visible and invisible) or sound (audible and inaudible) or other digitized code for alphanumeric in any language, special characters or symbols or graphic or pictures or any combination thereof, to the ATM that is equipped with a compatible digital transceiver card. This card can transmit and receive the said signals and codes using a driver and/or firmware for the operation, management and maintenance of this security system. Upon verification, of the transmitted code, by the ATM, access is granted. The ATM then transmits a randomly selected new code of any combination of the codes or signals stated above to the transceiver for storage in the said transceiver and recording on the client card. The said transmission from the ATM cannot be stored in any other hand held transceiver located within range of the transmission.

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DIGITAL TRANSMISSION SYSTEM (DTS) FOR BANK AUTOMATED TELLER MACHINES (ATM) SECURITY

ABSTRACT:

This invention describes a hand held digital transceiver to transmit a signal as light (visible and invisible) or sound (audible and inaudible) or other digitized code for alphanumeric in any language, special characters or symbols or graphic or pictures or any combination thereof, to the ATM that is equipped with a compatible digital transceiver card. This card can transmit and receive the said signals and codes using a driver and/or firmware for the operation, management and maintenance of this security system. Upon verification, of the transmitted code, by the ATM, access is granted. The ATM then transmits a randomly selected new code of any combination of the codes or signals stated above to the transceiver for storage in the said transceiver and recording on the client card. The said transmission from the ATM cannot be stored in any other hand held transceiver located within range of the transmission.

SPECIFICATION:

This invention relates to an ATM security system utilizing a digital transmission that is changed after each use of the system.

Conventional security systems for ATMs utilize the provision of a client card and an access code or Personal Identification Number (PIN). The user inserts the client card in the designated place in the ATM enabling it to read the client information including the PIN. The user is prompted for the PIN. Upon entering the correct PIN, access is granted. However, such systems have been compromised, notably by the use of a hidden device attached to the ATM to record the information on the card. A hidden camera records the PIN entered. A new card is then produced to gain unauthorized access to accounts at banks, and other financial institutions, with considerable loss of monetary funds. Client cards can also be stolen once the PIN is captured by a hidden camera. Clearly a need is identified for a "hacker proof" security system for use in ATMs at banks and other financial institutions.

The drawbacks of the present security system when accessing bank accounts from ATMs are eliminated with the use of a hand held digital transceiver and a compatible 'card' inserted in the ATM. Any existing ATM can be equipped to use the DTS for security with the use of a compatible card. The hand held transceiver used for accessing ATMs is capable of transmitting (and receiving and storing) a signal or code which can be light (visible and invisible) or sound (audible and inaudible) or other digitized code for alphanumeric in any language, special characters or symbols or graphic or pictures or any combination thereof. The source of sound can be ATM generated by the said "card" or pre-recorded from a vast array of sources. These sources are listed in, but not limited to, the list in appendix 1. The list of pictures can be similarly taken from, but not limited to the said appendix. Variables for alphanumeric in any language, special characters, symbols, light, or graphics are equally vast.

When a client is first issued with a client card, at a bank branch, the person is also issued with the hand held transceiver. This is preset with a default code. The client inserts the card in a computer system equipped with the DTS security system with the same default code. The computer system then generates a random code of the signals stated above. This is recorded on the client card and the bank's security servers as well as the hand held transceiver. Existing clients are invited to visit their local branch for the new client card. However, the old client cards can still be used in the ATMs as before.

Figure 1 illustrates the use of the system. The client inserts the client card in the ATM ("A") as always. When prompted for a PIN, the client presses a button on the hand held transceiver ("B") which transmits the code recorded at the bank branch when the card was first issued. On verification by the ATM of the code, access to the ATM is granted and a new randomly selected code is transmitted from "A" to "B". This new code is stored in "B" as well as recorded on the client card and the bank's security servers. The new code is randomly selected by the transceiver card in the ATM and can be any one of the light

(visible or invisible), sound (audible or inaudible) alphanumeric in any language, symbols, special characters, graphics or pictures. These variables are pre-recorded and saved on the ATM transceiver card. On exiting the ATM, and re-use of the ATM, the new code is transmitted by "B" to "A" and verified by the ATM, which generates and transmits a new randomly selected code (for storage in "B") and grants access.

This process continues for each use of the system. Therefore "PINs" are changed on each use and do not need to be remembered. The codes would be impossible to hack. Recording the transmitted signal would serve no purpose as this signal is changed on each use. Recording the information on the card would serve no purpose as the "PIN" is changed on each use. The new code transmitted by "A" cannot be received and stored in any other hand held transceiver located within range of the signal, since the system will only respond to a specified transceiver. Gaining unauthorized possession of the card would serve no purpose without the hand held transceiver. Needless to say, the transceiver has to be located in a secure place and separate from the client card.

In the event, the hand held transceiver and/or client card is lost or stolen, the user phones the bank to invalidate them. The user no doubt will need to answer a few security questions before the client card is invalidated. The user then visits the bank branch for a new transceiver and/or client card.

APPENDIX 1

Sources and agents of sound and pictures include but not limited to:

1. Human beings and animals, birds, insects. fish, whales, dolphins.
2. In any language, music, songs, videos, themes music from films. Musical instruments and tuning forks.
3. Running water, rain water, waterfalls, and tributaries, rivers lakes, melting snow and ice, piped water, treated and untreated water, icebergs, glaciers.
4. Volcanoes, hurricanes, tornadoes, gales, ordinary wind, solar wind, earthquakes, tsunami, lightning and thunder or any other sounds from nature.
5. Operating machines of any size, anywhere in any industry including ultrasound.
6. Transport vehicles of any size, powered or manual, used anywhere.
7. Objects falling to earth from sky.
8. Explosions, avalanches.
9. Elevators.
10. Sporting events and stadiums, race courses.
11. Church or religious services conducted anywhere in any religion.
12. Clock tower bells, church bells in any religion anywhere, door bells and chimes.
13. Public meetings and demonstrations.
14. Theme park, funfair and circus sounds.
15. Farms and markets.

CLAIMS:

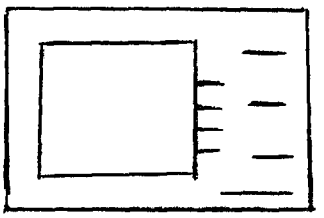
1. A Digital Transmission System (DTS) for accessing ATMs comprising:
   - A hand held transceiver "B" capable or receiving, and storing and transmitting signals as light (visible and invisible) or sound (audible and inaudible) or digitized signals for alphanumeric in any language, or special characters or symbols, or graphic or pictures or any combination thereof.
   - A client card for use in ATMs on which can be recorded the said codes or signals using magnetic tape or microchip embedded in the card.
   - A compatible transceiver card in the ATM "A" for receiving and transmitting signals or codes stated above.
   - Firmware and/or software for the control, management and maintenance of the DTS.
   - A computer system, equipped with the DTS transceiver card, located at bank branches.
2. A system as defined in claim 1 in which:
   - On first issue of a client card and the hand held transceiver at a bank branch, the user inserts the card in a computer system equipped with the DTS system. The user presses a button on the transceiver to transmit a default code to the computer which transmits a new randomly selected code for the signals stated above. This new code is stored in the hand held transceiver and recorded on the client card and on the bank's security server. The new code is not stored in the computer generating the code.
   - When used at an ATM "A" equipped with the transceiver card, the stored code in "B" is transmitted to the said ATM 'A' when prompted for a PIN.
   - The said card in "A" receiving and verifying the transmitted code and upon verification granting access to the user and transmitting a new randomly selected code to "B" for storing and using the next time the client uses the ATM.

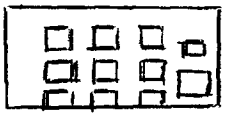
- The transmitted code can be light signals (visible and invisible) or sound signals (audible and inaudible) or alphanumeric in any language, special characters or symbols, or graphic or pictures or any combination of said signals and codes.
- The said light signals or alphanumeric codes are ATM "A" generated. The said sound signals are either ATM generated or pre-recorded by the bank. Graphics or pictures are pre-recorded by the bank. The sources for sound are listed in, but not limited to, the list in appendix 1.
- The hand held transceiver and client card must be held in secure but separate locations.

3. In the event, the hand held digital transceiver and/or the client card is lost or stolen, the user phones the bank to invalidate the client card. In this event, the user visits the bank branch for the issue of a new transceiver and/or client card.

A

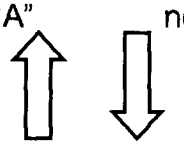
ATM with compatible card for receiving from and transmitting to "B"





"B" transmits code to "A"

"A" transmits new code to "B"



Hand held transceiver for receiving from and transmitting to "A"

B

FIGURE 1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2006/001722

A. CLASSIFICATION OF SUBJECT MATTER

IPC: ***G07F 19/00*** (2006.01) , ***G07F 7/10*** (2006.01) , ***H04L 9/32*** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G07F, H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Databases: Delphion and US West Patent Database

Keywords: ATM, transceiver, client card, bank card, random, code

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/0100961 A1 (PATERNO et al.) 11 May 2006 (11-05-2006) page 1, paragraphs 0007-0008 page 2, paragraphs 0023 and 0028 figures 3, 4	1, 3
Y		2
Y	EP 1 096 450 A2 (ONAWA et al.) 02 May 2001 (02-05-2001) pages 6-7, paragraphs 0034-0039	2
A	US 2004/0122771 A1 (CELI, JR. et al.) 24 June 2004 (24-06-2004) see entire document	1-3
A	US 2006/0068817 A1 (BLACK et al.) 30 March 2006 (30-03-2006) see entire document	1-3
A	US 5,841,118 (EAST et al.) 24 November 1998 (24-11-1998) see entire document	1-3

[ ] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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Canadian Intellectual Property Office
Place du Portage I, C114 - 1st Floor, Box PCT
50 Victoria Street
Gatineau, Quebec K1A 0C9
Facsimile No.: 001-819-953-2476

Authorized officer

Dennis Atkinson 819- 953-0816

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2006/001722

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US2006100961	11-05-2006	NONE	
EP1096450	02-05-2001	JP2001126098 A US6253997 B1	11-05-2001 03-07-2001
US2004122771	24-06-2004	NONE	
US2006068817	30-03-2006	EP1643468 A1 GB0421743D D0	05-04-2006 03-11-2004
US5841118	24-11-1998	NONE	