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(74) Agent: **BEN-DAVID, Yirmiyahu, M.**; Jeremy M. Ben-David & Co. Ltd., P.O. Box 45087, Har Hotzvim Hi-Tech Park, 91450 Jerusalem (IL).

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(71) Applicant (for all designated States except US): **SUPER-COM LTD.** [IL/IL]; New Industrial Area, 25 Hataas Street, 44425 Kfar Saba (IL).

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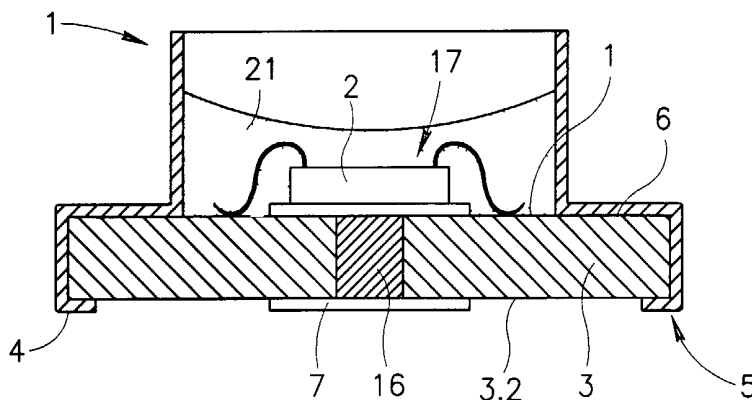
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(72) Inventors; and

(75) Inventors/Applicants (for US only): **LANDMAN, Avi** [IL/IL]; 99 Hagdud Haivri Street, Kiriat Haim 26306 (IL). **HASSAN, Jacob** [IL/IL]; 21 Shnat Hayovel Street, Hod Hasharon 45304 (IL). **ROZEN, Eli** [IL/IL]; 38 Heleni Hamalka Street, Herzlya Pituah 46768 (IL).

(54) Title: UPGRADING CONVENTIONAL DOCUMENTS TO SMART DOCUMENTS



(57) Abstract: The goal of the present invention is to provide an upgrade to existing documents that will be impossible to remove without destroying the document and/or the upgrade module. Furthermore, the upgrade reduces the cost of issuing or creating new documents/media/products. The embodiments of the upgrade module may be attached to a conventional document by drilling or punching a hole in the document/medium/product. The hole may be a blind hole or a through hole. The upgrade module may be secure by traditional methods such as glue, welding, pressure or stapling.



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## UPGRADING CONVENTIONAL DOCUMENTS TO SMART DOCUMENTS

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

This invention relates to upgrading conventional documents to smart documents, and  
5 more particularly, to a system suitable to modify existing conventional documents or media to have a smart chip that contains secured data that can be read and/or written.

#### 2. Description of the Related Technology

Smart cards are non-passive data storage devices which comprise a microprocessor,  
10 memory and I/O circuitry. Smart cards are generally used when a secure and portable means to store data is desired. There are contactless smart cards which do not require physical contact to transfer data between the card and a card reader and there are smart cards which have electrical contacts to facilitate such data transfer. Prior art U.S. Pat. No. 4,480,178 describes a contactless smart card and U.S. Pat. No. 5,120,939 describes the security which smart cards provide when  
15 used as data memory devices.

U.S. Pat. No. 5,703,395 shows an electronic miniaturized memory device that has at least one integrated memory circuit (2,20) and an interconnection interface (3), said memory device comprises a case (1) being a housing for an electronic subsystem (17), said interconnection interface (3) comprises at least one central contact (7,70) for electrically contacting at least one  
20 integrated memory circuit (2,20) and said case (1) comprises projecting portion (14) facilitating the attaching of the memory device to a support (8), allowing the memory device to document information relative to the curriculum vitae of the support (8) or to elements in its environment.

### SUMMARY OF THE INVENTION

An object of the invention is to provide a method to upgrade the existing documents/media/products in a cheap, fast and simple manner.

Another object of the invention is to add to a conventional document a smart chip that contains secured data that can be read and/or written. The chip may contain unique data that can be related, by database management, to the original conventional document and/or to the document owner.

Another object of the invention is to add an important security feature that is essential for secure data management.

Another object of the invention is to provide a contactless only smart chip upgrade module. Another object of the invention is to provide a combination contact and contactless upgrade module.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows an embodiment of the invention;

FIG. 2 shows another embodiment of the invention;

FIG. 3 shows another embodiment of the invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Smart cards are currently being used to store personal information regarding the card owner. Smart cards are well known and will not be described here in any technical detail. There are many uses for smart cards, however, the cards are pricey (ranging from five to twelve dollars per card). Therefore, there is a need to provide an inexpensive upgrade to existing cards that are not "smart". Additionally, there are smart labels capable of storing/sending information. The smart labels are extremely fragile and easy to bend, which may cause damage to the smart chip. Another disadvantage of the smart labels, with respect to fraud, is it may be possible to remove a smart label without damaging the document/media/product and reattach the label to another document/media/ product. The present invention may be constructed to be more durable than a smart label. In addition, removing the module may cause damage to the documents/media/products.

Many countries and civil entities utilize conventional identification cards, passport, bank notes and other type of documents. Those documents have become easier to forge and copy. The documents require protection and improvement so that the forgery process will be more complicated and difficult.

FIG. 1 shows different possible embodiments of the invention. An upgrade module (10) may be used to upgrade a traditional bank card (A), passport (B), stock certificate (C) and/or bank note to have a smart chip that contains secured data that can be read and/or written.

In an embodiment of the invention, a person may have a bank card (ATM or debit card) with Chase Manhattan Bank, which they may bring into the bank for an upgrade to a smart card. The traditional bank card may be upgrading by attaching an upgrade module to the card. A hole

may be created in the card and the upgrade module may be inserted and secured to the card. This method may be less expensive than issuing a new smart, which may range from five to twelve dollars per card, to all customers.

Another implementation of the invention, a person may bring their passport into the passport office for an upgrade. A hole may be created in the passport and the upgrade module may be inserted and secured to the passport. At borders, authorities face the problem of efficiently and accurately checking identities of millions of travelers. In this embodiment of the invention, each time a traveler arrives at a port of entry, instead of passing through immigration control with an immigration officer, the traveler passes through a special turnstile. This dedicated entry point features a booth equipped with a card reader and a biometrics capture device. To be granted entry, the traveler has to present his fingerprint or put his hand on the biometrics reading device and put his passport near the reader. The system then compares features captured from the biometrics capture device to features recorded in the chip of the upgrade module using specific matching algorithms. If there is a match between both patterns, the traveler is allowed to enter the country. This embodiment has the advantages of the previous embodiments. In addition, the photo id is maintained and a traveler may still obtain country stamps on their passport as a souvenir.

The “smart” technologies have opened the way to attractive new loyalty schemes. Multi-partner, high-technology schemes generate renewed customer interest in retail loyalty. In another embodiment, a method is provided that would allow retailers to attach upgrade modules to a person’s credit card or ID card (or any other items) to provide a tracking reward system. This embodiment eliminates the need to issue an expensive smart card and reduces the cost for

the retailer. In addition, this embodiment eliminates the need for a customer to carry a separate loyalty card.

Employers may upgrade an employee's traditional security card to manage both physical and electronic (network) access privileges. Working in conjunction with other popular public key infrastructure products, the personalization work station also manages the public and private encryption keys and requests a digital certificate to be loaded into the upgrade module.

The same implementation may be used for stock certificates and bank notes such as, car titles, home deeds or land deeds. In addition, a driver's license or identification card may be upgraded to allow benefit eligibility verification, parking meter payments, or toll payments. Furthermore, doctors may upgrade insurance cards to include medical information. Moreover, biometric and other security features may be included with the upgrade module. These implementations are intended to be exemplary and are not intended to limit the application.

In an embodiment of the invention, an upgrade module, which may include a smart chip, may be attached to a conventional document/media/product by creating (drilling, punching) a through hole in the document/product. The upgrade module may be inserted in a manner that may make it impossible to remove the module without destroying or damaging the document, media, product and/or the chip.

FIG. 2 shows one embodiment of the module: a schematic side view. A case 1, which may include an interconnection interface 3 and an integrated memory circuit 2, may be electrically and mechanically connected to the interconnection interface 3. The interconnection interface 3 and the integrated memory circuit 2 constitute an electronic subsystem 17. The integrated memory circuit 2 may be inside the case 1, which may be mounted on an upper surface

of the interconnection interface 3, and covered by a protection layer 21. The interconnection interface 3 is bordered by the case 1.

Case 1, which may be made from electroconductive material, may be used as housing for the integrated memory circuit 2. Case 1 can be made from various materials such as metal or a dielectric material with or without conductor paths. Case 1 may be any shape or dimensions. This embodiment does not require a battery.

Applicants hereby incorporate by reference the embodiments disclosed in U.S. Patent No. 5,703,395, issued December 30, 1997.

In addition, FIGS. 3 and 4 show another embodiment of the module for a contactless upgrade. In this embodiment, a radiofrequency coil may be included in the module to enable the reading/writing of said integrated memory circuit 2. The contactless upgrade module, which may include memory circuit 2 and coil antenna 9, may be mounted on the surface of the interconnection interface 3. The memory circuit may include a smart chip (not shown) and antenna 9 may be wound around the die of the smart chip. Contacts 30 connected the smart chip to antenna 9 by two contacts. Additionally, both, the integrated memory circuit 2 and the coil antenna 9 may be covered by a protection layer 21. The integrated memory circuit 2, the coil antenna 9 and the interconnection interface 3 form an electronic subsystem 17. In this embodiment, case 1 may be made from dielectric material. This embodiment does not require a battery.

In another embodiment (not shown), an upgrade module may be provided for a contact/contactless upgrade. In this embodiment, the upgrade module may include an integrated memory circuit with both a contact smart chip circuit and a contactless smart chip circuit. Each

smart chip circuit may have two separate contacts. The contacts for the contact smart chip circuit may make contact with a reader's/writer's contacts. The contacts for the contactless smart chip circuit may be connected to a coil antenna. Alternatively, the upgrade module may include an integrated memory circuit with one smart chip circuit with four separate contacts (two contactless  
5 connections for connecting to a coil antenna and two contact connections for connecting to a reader's/writer's contacts). This embodiment does not require a battery.

The embodiments of the upgrade module discussed above may be attached to a conventional document by drilling or punching a hole in the document/medium/product. The hole may be a blind hole or a through hole. The upgrade module may be secure by traditional  
10 methods such as glue, welding, pressure or stapling. The goal is to provide an upgrade to existing documents that will be impossible to remove the upgrade without destroying the document and/or the upgrade module. Furthermore, the upgrade reduces the cost of issuing or creating new documents/media/products.

We claim:

- 1 1. A method of upgrading traditional documents/media/products comprising the steps of :  
2 attaching an upgrade module to a traditional document/medium/product.
- 1 2. A method of upgrading traditional documents/products according to claim 1 wherein the  
2 upgrade module is a contactless upgrade module.
- 1 3. A method of upgrading traditional documents/products according to claim 1 wherein the  
2 upgrade module is a combination contact/contactless upgrade module.
- 1 4. A method of upgrading traditional documents/products according to claim 1, further  
2 comprising the step of drilling or punching an area defined by the size of a punching or drilling  
3 device.
- 1 5. A method of upgrading traditional documents/products according to claim 1, further  
2 comprising the step of inserting the upgrade module into the area defined by the size of the  
3 punching or drilling device.

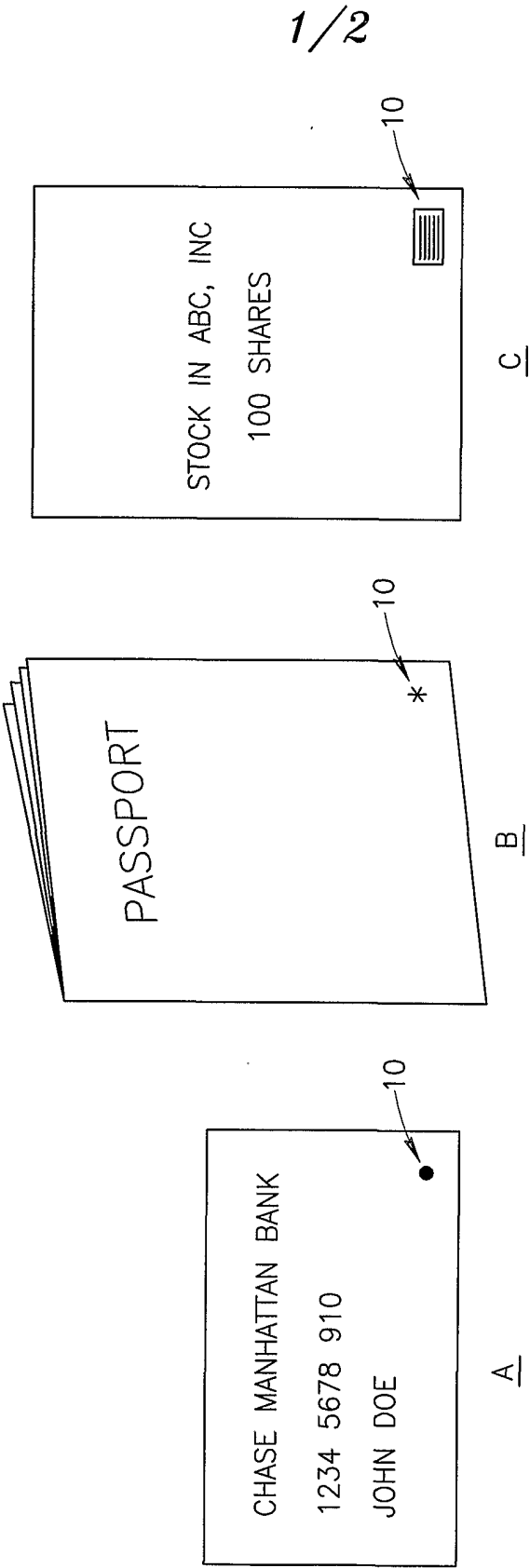


FIG.1

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