

ERR\_MIAC\_NOT\_LOCKED (88H)

If the module has not been locked there is no audit trail. If one of the audit trail commands is executed this error code will be returned.

5 ERR\_GROUP\_LOCKED (89H)

Once a transaction group has been locked object creation within that group is not possible. Also the objects attributes and types are frozen. Any attempt to create objects or modify their attribute or type bytes will generate an ERR\_GROUP\_LOCKED error code.

10

ERR\_BAD\_OBJECT\_TYPE (8AH)

When the host sends a create object command to the module, one of the parameters it supplies is an object type (see command section). If the object type is not recognized by the firmware it will return an ERR\_BAD\_OBJECT\_TYPE error code.

15

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ERR\_BAD\_OBJECT\_ATTR (8BH)

When the host sends a create object command to the module, one of the parameters it supplies is an object attribute byte (see command section). If the object attribute byte is not recognized by the firmware it will  
5 return an ERR\_BAD\_OBJECT\_ATTR error code.

ERR\_BAD\_SIZE (8CH)

An ERR\_BAD\_SIZE error code is normally generated when creating or writing an object. It will only occur  
10 when the object data supplied by the host has an invalid length.

ERR\_BAD\_GROUP\_ID (8DH)

All commands that operate at the transaction group  
/level require the group ID to be supplied in the command  
15 packet. If the group ID specified does not exist in the module it will generate an ERR\_BAD\_GROUP\_ID error code.

ERR\_BAD\_OBJECT\_ID (8EH)

5 All commands that operate at the object level  
require the object ID to be supplied in the command  
packet. If the object ID specified does not exist within  
the specific transaction group (also specified in the  
command packet) the module will generate an  
ERR\_BAD\_OBJECT\_ID error code.

ERR\_INSUFFICIENT\_FUNDS (8FH)

10 If a script object that executes financial  
transactions is invoked and the value of the money  
register is less than the withdrawal amount requested an  
ERR\_INSUFFICIENT\_FUNDS error code will be returned.

ERR\_OBJECT\_LOCKED (90H)

15 Locked objects are read only. If a write object  
command is attempted and it specifies the object ID of a  
locked object the module will return an ERR\_OBJECT\_LOCKED  
error code.

ERR\_OBJECT\_PRIVATE (91H)

Private objects are not directly readable or writable. If a read object command or a write object command is attempted, and it specifies the object ID of  
5 a private object, the module will return an ERR\_OBJECT\_PRIVATE error code.

ERR\_OBJECT\_DESTROYED (92H)

If an object is destructible and the transaction group's destructor is active the object may not be used  
10 by a script. If a script is invoked which uses an object which has been destructed, an ERR\_OBJECT\_DESTROYED error code will be returned by the module.

The exemplary embodiment of the present invention is preferably placed within a durable stainless steel,  
15 token-like can. It is understood that an exemplary module can be placed in virtually any articulatable item.



Examples of articulatable items include credit cards, rings, watches, wallets, purses, necklaces, jewelry, ID badges, pens, clipboards, etc.

5 The module preferably is a single chip "trusted computer". By the word "trusted" it is meant that the computer is extremely secure from tampering by unwarranted means. The module incorporates a numeric coprocessor optimized for math intensive encryption. The BIOS is preferably immune to alteration and specifically  
10 designed for very secure transactions.

Each module can have a random "seed" generator with the ability to create a private/public key set. The private key never leaves the module and is only known by the module. Furthermore, discovery of the private key is  
15 prevented by active self-destruction upon wrongful entry into the module. The module can be bound to the user by a personal identification number (PIN).

When transactions are performed by the module certificates of authentication are created by either or



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Although a preferred embodiment of the method and apparatus of the present invention has been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it will be understood  
5 that the invention is not limited to the embodiment disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing from the spirit of the invention as set forth and defined by the following claims.

119

*Sub A1* →

WHAT IS CLAIMED IS:

- 1 1. An electronic module used for secure transactions  
2 comprising:  
3 input/output circuitry for communicating to a data  
4 processing circuit;  
5 math coprocessor circuitry electrically connected to  
6 said input/output circuitry;  
7 microprocessor circuitry electrically connected to  
8 said input/output circuitry; and  
9 memory circuitry electrically connected to said  
10 microprocessor circuitry, said electronic module being  
11 programmable to provide secure, encrypted data transfers  
12 between said electronic module and said data processing  
13 circuit.
  
- 1 2. The electronic module of claim 1, wherein said data  
2 processing circuit is another electronic module.
  
- 1 3. The electronic module of claim 1, further comprising  
2 a one-wire interface connected to said input/output  
3 circuitry.

1 4. The electronic module of claim 1, wherein said  
2 memory circuitry is adapted to store a private  
3 encryption/decryption key for use during the encrypted  
4 data transfers between said electronic module and said  
5 data processing circuit..

1 5. The electronic module of claim 1, wherein said  
2 encrypted transactions are time stamped.

1 ✓ 6. A system for communicating secure transactions,  
2 comprising:  
3 a first module comprising:  
4 input/output circuitry;  
5 random number creating means for creating a  
6 random number; and  
7 a first transaction group for requesting said  
8 random number creating means to create said random number  
9 and for providing said random number to said input/output  
10 circuitry; and  
11 a service provider equipment comprising:  
12 means for reading said random number from said  
13 input/output circuitry of said first module;

14 means for combining said random number with a  
15 first data and for encrypting the combination of said  
16 random number and said first data with a private key to  
17 produce a first certificate, whereby said input/output  
18 circuitry of said first module is adapted to receive said  
19 first certificate.

1 ~~8~~. The system of claim ~~3~~, wherein said service provider  
2 equipment comprises a second module.

1 ~~9~~. The system of claim ~~3~~, wherein said first module  
2 further comprises an identifier for identifying said  
3 first module, and wherein said first transaction group  
4 provides said identifier to said input/output circuitry.

1 ~~10~~. The system of claim ~~3~~, wherein said means for  
2 reading is further for reading said identifier from said  
3 input/output circuitry of said first module.

1 ~~11~~. The system of claim ~~3~~, wherein said first module  
2 further comprises a second transaction group.

1 <sup>12</sup> 11. The system of claim <sup>7</sup> 5, wherein said module further  
2 comprises a means for time stamping a complete  
3 transaction.

*Subas* 1 ✓ 12. A method of communicating encrypted information  
2 between a module and a service provider equipment,  
3 comprising the steps of:  
4 a) creating a first random number in said module;  
5 b) passing said random number to said service  
6 provider equipment;  
7 c) encrypting at least said random number with a  
8 private key in said service provider equipment thereby  
9 producing a certificate;  
10 d) passing at least said certificate to said module;  
11 e) decrypting said certificate with a public key in  
12 said module;  
13 f) comparing said first random number with a number  
14 found in the decrypted first certificate of step e) to  
15 determine if the two numbers match.

1 13. The method of claim 12, wherein step b) further  
2 comprises the step of passing a module identifier to said  
3 service provider equipment.

1 14. The method of claim 12, wherein said service  
2 provider equipment is another module.

1 ~~16~~<sup>17</sup>. The method of claim ~~12~~<sup>14</sup>, wherein said method  
2 incorporates a single wire bus.

1 ~~15~~<sup>18</sup>. The method of claim ~~15~~<sup>17</sup>, wherein said single wire bus  
2 is substantially a one-wire bus.

*Sub a<sup>3</sup>*

1 ✓ 17. A method of communicating encrypted information  
2 between a module and a service provider equipment,  
3 comprising the steps of:  
4 a) creating a first random number in said service  
5 provider equipment;  
6 b) passing said random number to said module;  
7 c) encrypting at least said random number with a  
8 private key in said module thereby producing a first  
9 certificate;



10 d) passing at least said first certificate to said  
11 service provider equipment;  
12 e) decrypting said first certificate with a public  
13 key in said service provider equipment;  
14 f) comparing said first random number with a number  
15 found in the decrypted first certificate of step f) to  
16 determine if the two numbers match.

1 18. The method of claim 17, wherein said service  
2 provider equipment is another module.

1 <sup>22</sup>~~19~~. The method of claim <sup>20</sup>~~18~~, wherein said method  
2 incorporates a single wire bus.

1 <sup>23</sup>~~20~~. The method of claim <sup>20</sup>~~17~~, wherein said single wire bus  
2 is substantially a one-wire bus.

1 <sup>25</sup>~~22~~. A method of decrypting encrypted data using a  
2 module, comprising the steps of:  
3 receiving a first encrypted data and a second  
4 encrypted data;

5            decrypting said first encrypted data with a private  
6            key stored in said module, whereby a first decryption key  
7            is created;  
8            providing said first decryption key to an electronic  
9            system;  
10           decrypting said second encrypted data with said  
11           first decryption key via said electronic system, whereby  
12           a useful information is created.

1           ~~26~~ The method of claim ~~27~~<sup>25</sup>, wherein said encrypted data  
2           is an electronic mail message.

*Add 24*

PATENT APPLICATION  
DOCKET NO.: 20661/457

**RULES 63 AND 67 (37 C.F.R. 1.63 and 1.67)  
DECLARATION AND POWER OF ATTORNEY**

FOR UTILITY/DESIGN/CIP/PCT NATIONAL APPLICATIONS

As a named inventor, **STEPHEN M. CURRY, DONALD W. LOOMIS, and CHRISTOPHER W. FOX**, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; and

I believe that I am the original, first and sole inventor (if only one name is listed above) or an original, first and joint inventor (if plural names are listed above) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **METHOD, APPARATUS, SYSTEM AND FIRMWARE FOR SECURE TRANSACTIONS**, the specification of which: (mark only one)

- (a) is attached hereto.
- (b) was filed on January 31, 1996 as Application Serial No. 08/594,983
- (c) was filed as PCT International Application No. PCT/\_\_\_\_ on \_\_\_\_ and was amended on \_\_\_\_ (if applicable).
- (d) was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_ and issued as Patent No. \_\_\_\_\_ on \_\_\_\_\_

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above or as allowed as indicated above.

I acknowledge the duty to disclose all information known to me to be material to the patentability of this application as defined in 37 CFR § 1.56. If this is a continuation-in-part (CIP) application, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose to the Office all information known to me to be material to patentability of the application as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this CIP application.

I hereby claim foreign priority benefits under 35 U.S.C. § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate filed by me or my assignee disclosing the subject matter claimed in this application and having a filing date (1) before that of the application

IPDAL: 77728.1 20661-00457

PATENT APPLICATION  
DOCKET NO.: 20661/457

on which my priority is claimed or, (2) if no priority is claimed, before the filing date of this application:

PRIOR FOREIGN PATENTS

Number	Country	Month/Day/Year Filed	Date first laid- open or Published	Date patented or Granted	Priority Claimed	
					Yes	No
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

I hereby claim the benefit under 35 U.S.C. § 120/365 of any United States application(s) listed below and PCT international applications listed above or below:

PRIOR U.S. OR PCT APPLICATIONS

Application No. (series code/serial no.)	Month/Day/Year Filed	Status (pending, abandoned, patented)
_____	_____	_____
_____	_____	_____

I hereby claim the benefit under 35 U.S.C. § 119(e) of U.S. Provisional Application Serial No. 06/004,510, filed September 29, 1995.

I hereby appoint:

H. MATHEWS OARLAND, Reg. No. 19,129	P. WESTON MUSSELMAN, JR., Reg. No. 31,644	STEVEN R. GREENFIELD, Reg. No. 38,166
THOMAS L. CANTRELL, Reg. No. 20,849	ROGER L. MAXWELL, Reg. No. 31,853	CRAIG A. HOERSTEN, Reg. No. 38,917
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GERALD T. WELCH, Reg. No. 30,332	J. KEVIN GRAY, Reg. No. 37,141	

all of the firm of **JENKENS & GILCHRIST, P.C.**, 3200 Fountain Place, 1445 Ross Avenue, Dallas, Texas 75202-2799, as my attorneys and/or agents, with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and to file and prosecute any international patent application filed thereon before any international authorities under the Patent Cooperation Treaty, and I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/organization who/which first sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct them in writing to the contrary.

Please address all correspondence and direct all telephone calls to:

PATENT APPLICATION  
DOCKET NO.: 20661/457

Steven R. Greenfield  
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214/855-4300 (fax)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

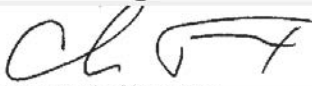
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**NAMED INVENTOR(S)**

1	STEPHEN M. CURRY	<i>Stephen M. Curry</i>	April 12, 1996
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	6646 Clearhaven Circle Dallas, TX 75248 <b>Post Office Address (include zip code)</b>		

2	DONALD W. LOOMIS	<i>Don Loomis</i>	April 12, 1996
	<b>Full Name</b>	<b>Inventor's Signature</b>	<b>Date</b>
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	<b>Residence (city, state, country)</b>	<b>Citizenship</b>	
	316 Dakota Lane Coppell, TX 75019 <b>Post Office Address (include zip code)</b>		

PATENT APPLICATION  
DOCKET NO.: 20661/457

CHRISTOPHER W. FOX		4/12/96
<b>Full Name</b>	<b>Inventor's Signature</b>	<b>Date</b>
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<b>Residence</b> (city, state, country)	<b>Citizenship</b>	
3847 Timberglen, #4222 Dallas, TX 75287		
<b>Post Office Address</b> (include zip code)		

(FOR ADDITIONAL INVENTORS, check here \_\_\_ and add additional sheet for inventor information regarding signature, name, date, citizenship, residence and address)

20661-00457

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1 of 8

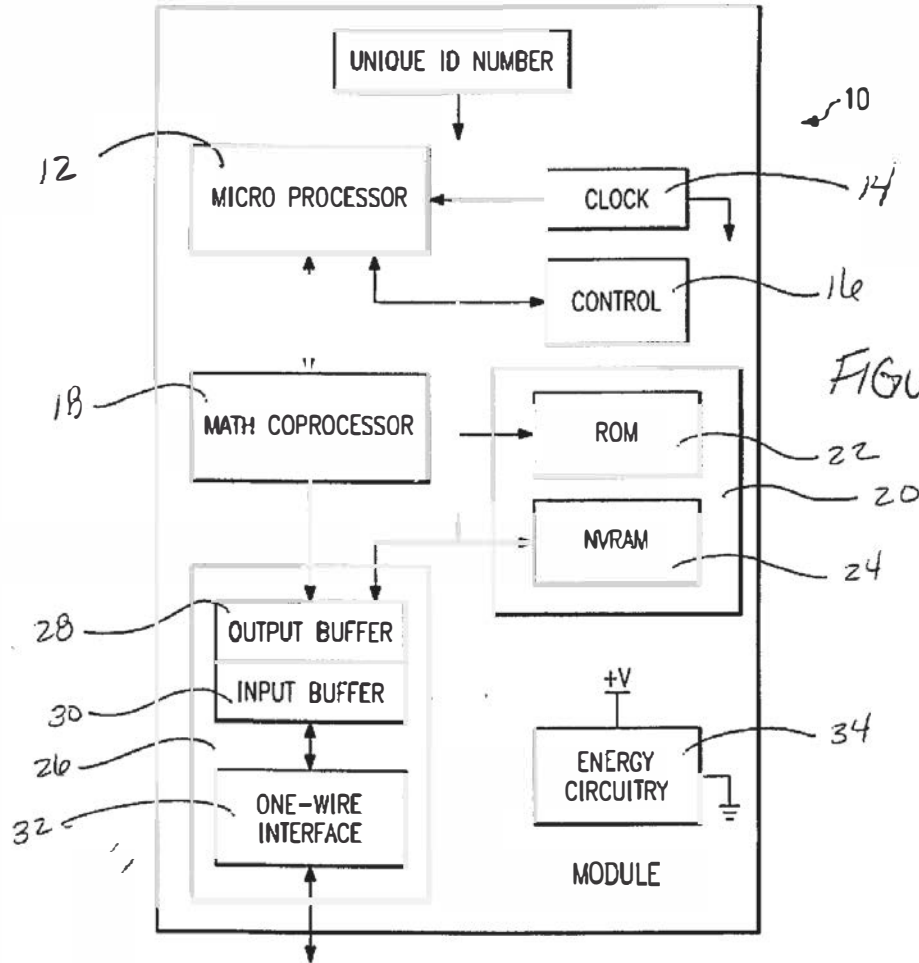


FIGURE 1

PRINT OF DRAWINGS  
AS ORIGINALLY FILED

FIG. 2

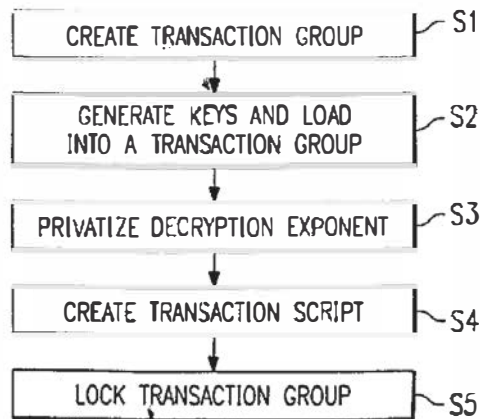


FIG. 3

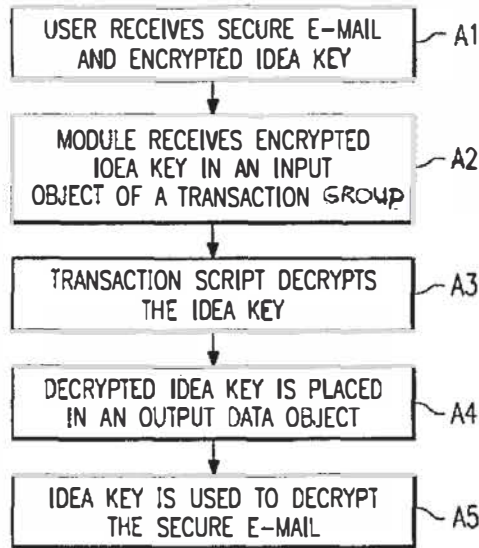
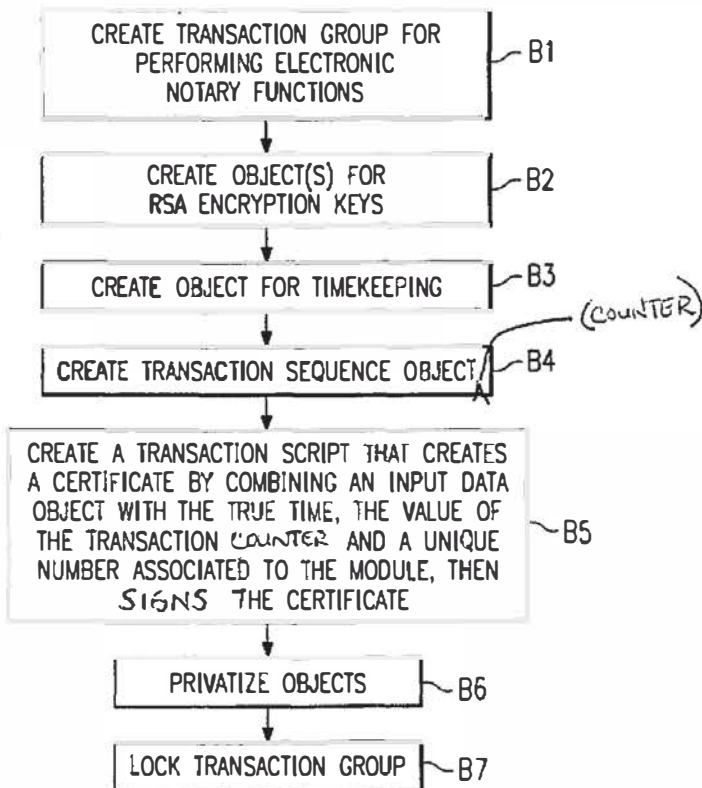


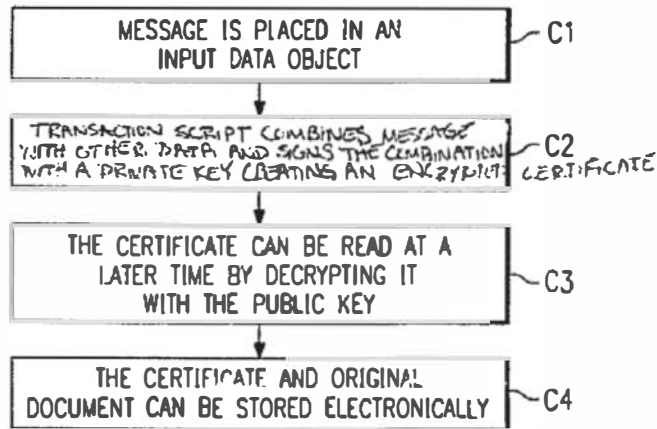
FIG. 4



PRINT OF DRAWINGS  
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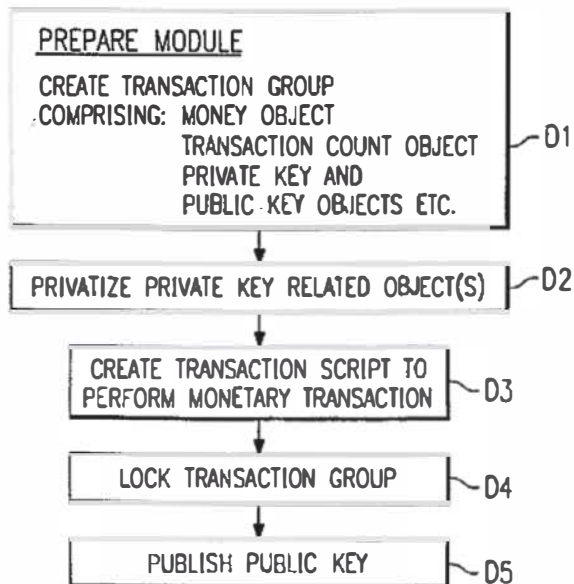


FIG. 5



PRINT OF DRAWINGS  
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FIG. 6



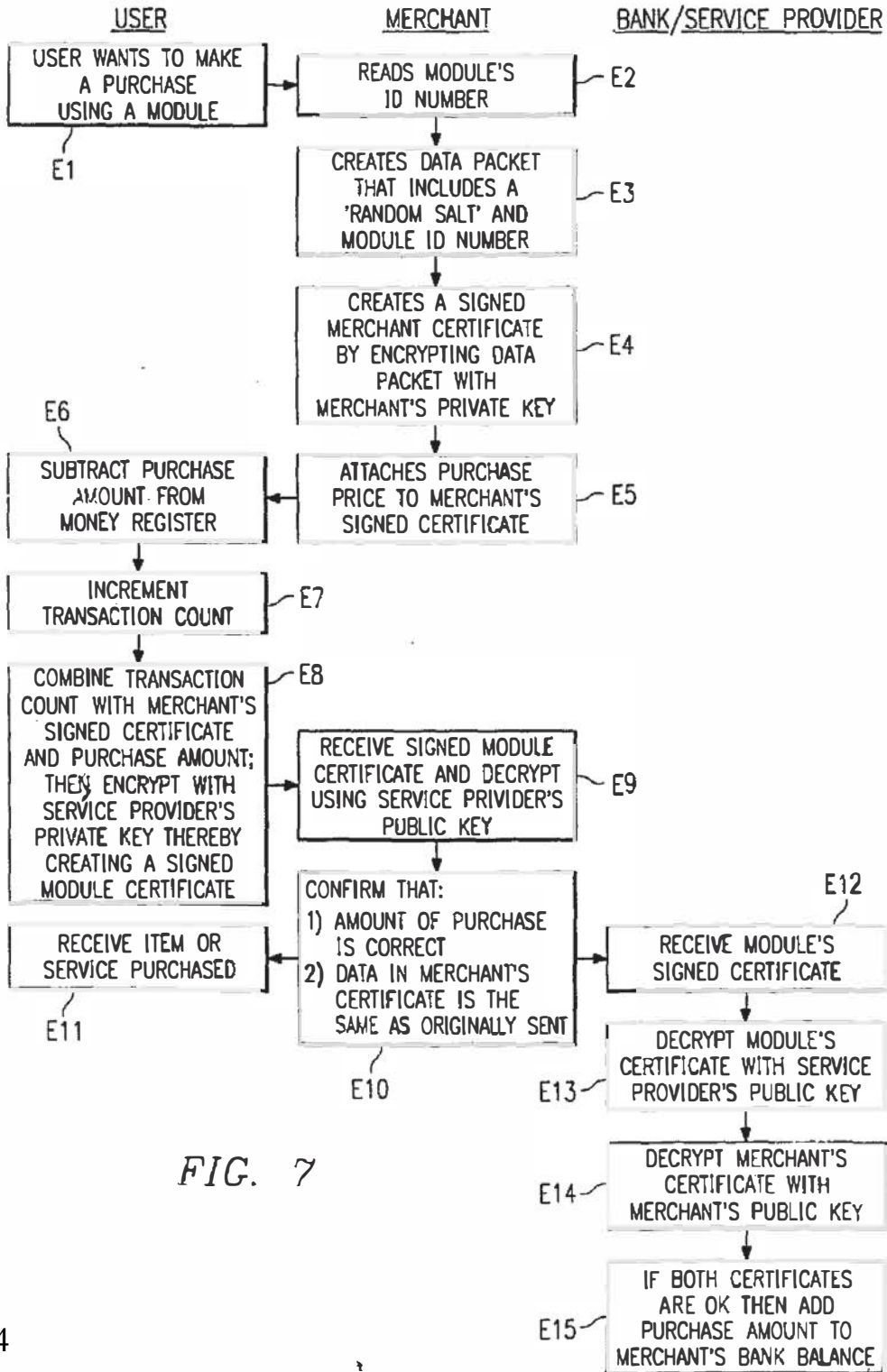


FIG. 7

PRINT OF DRAWINGS  
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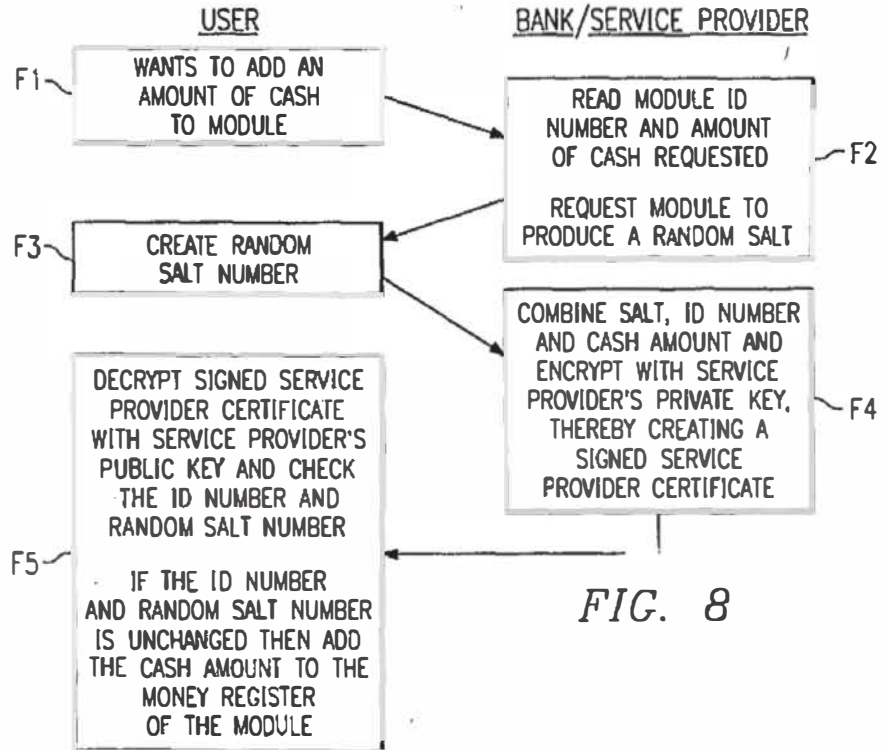


FIG. 8

PRINT OF DRAWINGS  
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EXAMPLE OF  
TRANSFER FROM USER'S MODULE TO MERCHANT'S MODULE

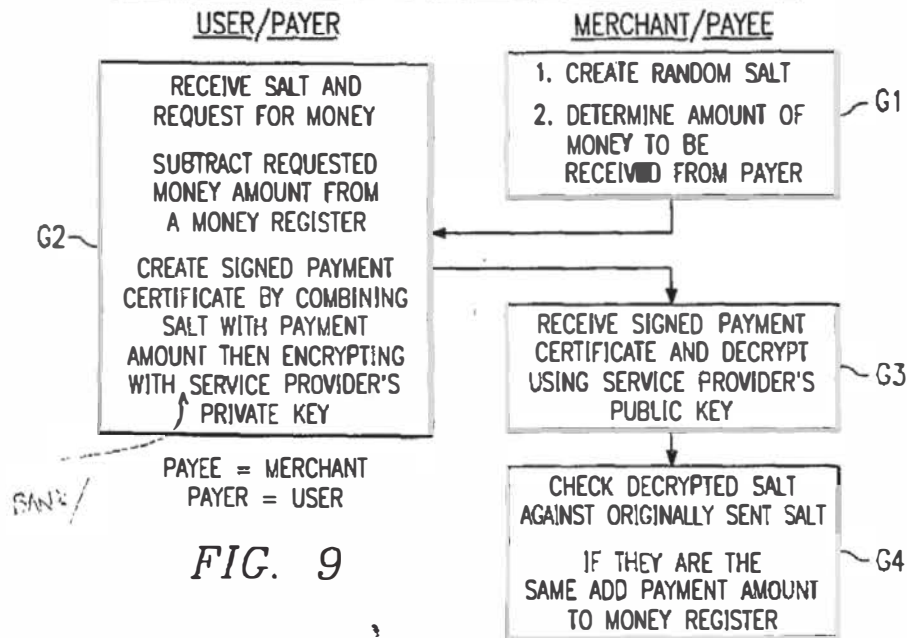


FIG. 9



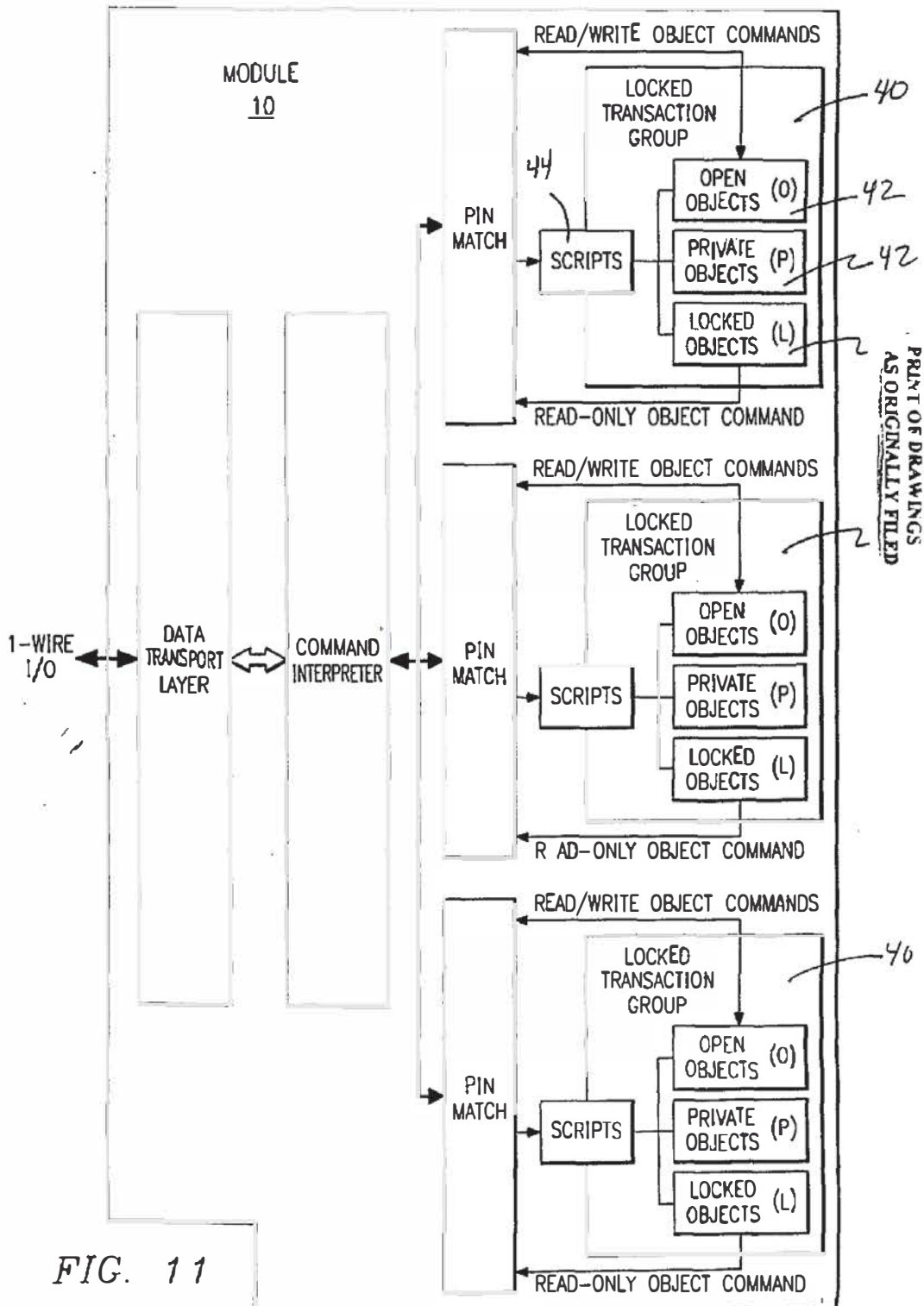
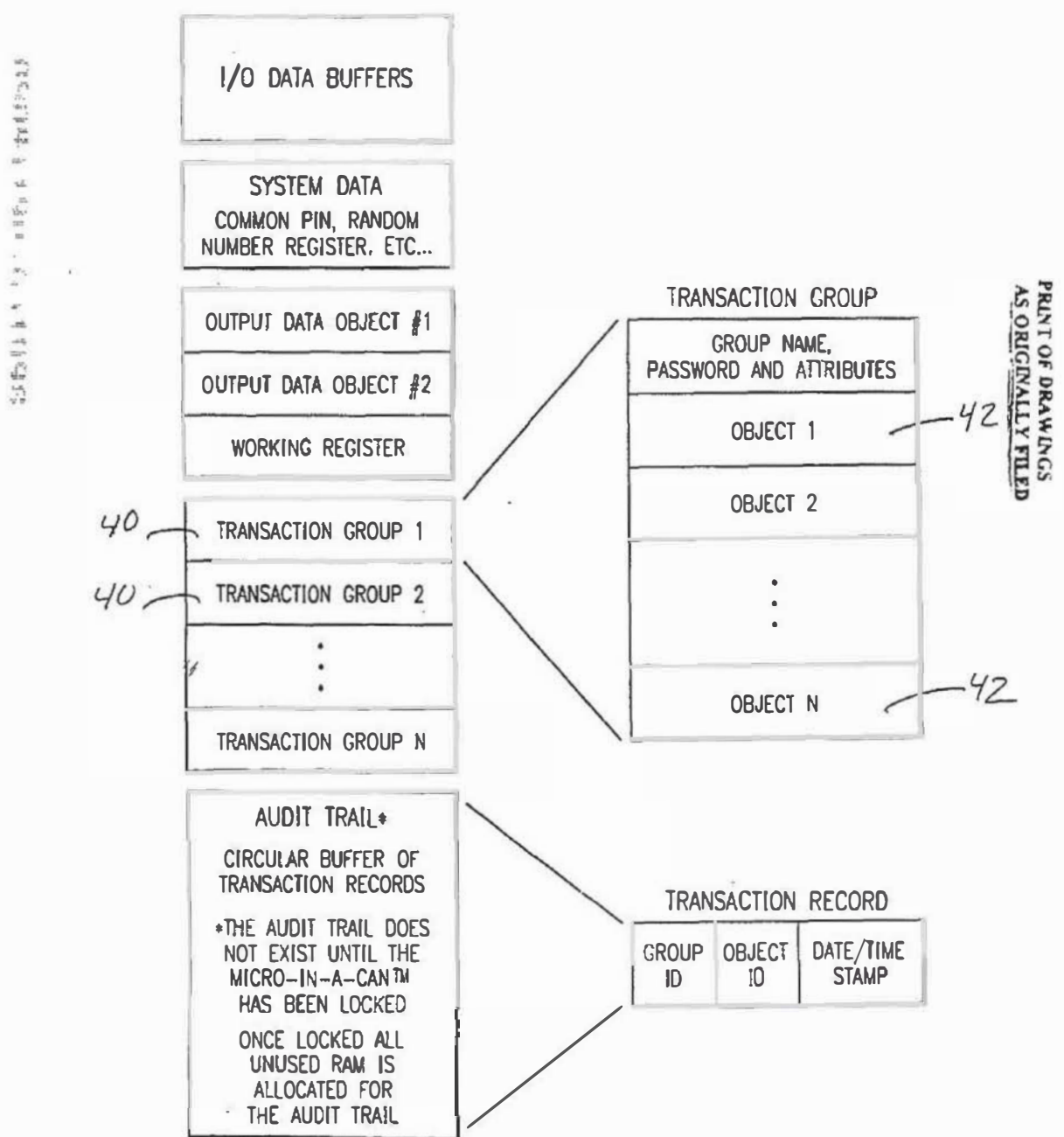


FIG. 11

FIG. 12



Express Mail Label No. EM49 6685US

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03/10/98  
584 U.S. PTO

**NEW UTILITY PATENT APPLICATION TRANSMITTAL  
(Large Entity)**

*(Only for new nonprovisional applications under 37 CFR 1.53(b))*

Docket No.  
20661-457C1

Total Pages in this Submission  
714

**TO THE ASSISTANT COMMISSIONER FOR PATENTS**

Box Patent Application  
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

**METHOD, APPARATUS, SYSTEM AND FIRMWARE FOR SECURE TRANSACTIONS**

and invented by:

**STEPHEN M. CURRY ET AL.**

If a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:

Continuation    Divisional    Continuation-in-part (CIP) of prior application No.: 08/594,983

Enclosed are:

**Application Elements**

1.  Filing fee as calculated and transmitted as described below
2.  Specification having 127 pages and including the following:
  - a.  Descriptive Title of the Invention.
  - b.  Cross References to Related Applications *(if applicable)*
  - c.  Statement Regarding Federally-sponsored Research/Development *(if applicable)*
  - d.  Reference to Microfiche Appendix *(if applicable)*
  - e.  Background of the Invention
  - f.  Brief Summary of the Invention
  - g.  Brief Description of the Drawings *(if drawings filed)*
  - h.  Detailed Description
  - i.  Claim(s) as Classified Below
  - j.  Abstract of the Disclosure
3.  Drawing(s) *(when necessary as prescribed by 35 USC 113)*
  - a.  Formal
  - b.  Informal

Number of Sheets 8



**NEW UTILITY PATENT APPLICATION TRANSMITTAL  
(Large Entity)**

*(Only for new nonprovisional applications under 37 CFR 1.53(b))*

Docket No.  
20661-457C1

Total Pages in this Submission  
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**Application Elements (Continued)**

4.  Oath or Declaration
- a.  Newly executed (*original or copy*)       Unexecuted
- b.  Copy from a prior application (37 CFR 1.63(d)) (*for continuation/divisional application only*)
- c.  With Power of Attorney       Without Power of Attorney
5.  Incorporation By Reference (*usable if Box 4b is checked*)  
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6.  Computer Program in Microfiche (*Appendix*)
7.  Nucleotide and/or Amino Acid Sequence Submission (*if applicable, all must be included*)
- a.  Paper Copy
- b.  Computer Readable Copy (*identical to computer copy*)
- c.  Statement Verifying Identical Paper and Computer Readable Copy

**Accompanying Application Parts**

8.  Assignment Papers (*cover sheet & document(s)*)
9.  37 CFR 3.73(B) Statement (*when there is an assignee*)
10.  English Translation Document (*if applicable*)
11.  Information Disclosure Statement/PTO-1448       Copies of IDS Citations
12.  Preliminary Amendment
13.  Acknowledgment postcard
14.  Certificate of Mailing
- First Class       Express Mail (*Specify Label No.:* EM492666685US)
15.  Certified Copy of Priority Document(s) (*if foreign priority is claimed*)



**NEW UTILITY PATENT APPLICATION TRANSMITTAL  
(Large Entity)**

*(Only for new nonprovisional applications under 37 CFR 1.53(b))*

Docket No.  
20661-457C1

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**Accompanying Application Parts (Continued)**

16.  Additional Enclosures *(please identify below):*

**Fee Calculation and Transmittal**

**CLAIMS AS FILED**

For	#Filed	#Allowed	#Extra	Rate	Fee
<b>Total Claims</b>	9	- 20 =	0	x \$22.00	\$0.00
<b>Indep. Claims</b>	1	- 3 =	0	x \$82.00	\$0.00
<b>Multiple Dependent Claims (check if applicable)</b> <input type="checkbox"/>					\$0.00
<b>BASIC FEE</b>					\$790.00
<b>OTHER FEE (specify purpose)</b>					\$0.00
<b>TOTAL FILING FEE</b>					\$790.00

- A check in the amount of \_\_\_\_\_ to cover the filing fee is enclosed.
- The Commissioner is hereby authorized to charge and credit Deposit Account No. 04-0031 as described below. A duplicate copy of this sheet is enclosed.
  - Charge the amount of \$790.00 as filing fee.
  - Credit any overpayment.
  - Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
  - Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: March 10, 1998

  
Signature

**STEVEN R. GREENFIELD  
REGISTRATION NO. 38,166**

cc:

#2/ruA  
t.w. 49-98

Patent Application  
Docket No. 20661-00457C1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:

CURRY ET AL.	§	
	§	
Prior Serial No.: 08/594,983	§	Examiner: GREGORY, B.
	§	
Prior Filing Date: January 31, 1996	§	Group Art Unit: 2202

For: METHOD, APPARATUS, SYSTEM AND FIRMWARE FOR SECURE TRANSACTIONS

To the Assistant Commissioner for  
Patents  
Washington, DC 20231

<p>CERTIFICATE OF MAILING BY EXPRESS MAIL</p> <p>"EXPRESS MAIL" Mailing Label: E9266685US  Date of Deposit: 3/10/98  I hereby certify that this paper or fee is  being deposited with the U.S. Postal Service  "Express Mail Post Office to Addressee"  service under 37 C.F.R. 1.10 on the date  indicated above and is addressed to the  Assistant Commissioner for Patents, Box Patent  Application, Washington, D.C. 20231</p> <p>Type or Print Name: CAROL MARSTALLER  <i>Carol Marstaller</i>  Signature</p>
--

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Dear Sir:

**PRELIMINARY AMENDMENT**

Prior to examination of the above-identified Continuation  
Application filed herewith, please enter the following amendments:

Please amend the above-referenced application as follows.

**In the Specification:**

Line 2, please delete "This application" and insert therefor

~~This application is a continuation of application No. 08/594,983  
NOW U.S. PATENT 5,748,740,  
filed January 31, 1996, and~~

A1  
1308

In the Claims:

Please delete claims 1-22.

Please add the following new claims:

1        23.    An electronic data carrier used for secure data  
2 transactions comprising:  
3        input/output circuitry for communicating with an external  
4 electronic device;  
5        numeric coprocessor circuitry electrically connected to said  
6 input/output circuitry where said numeric coprocessor performs  
7 encryption calculations;  
8        microprocessor circuitry electrically connected to said  
9 input/output circuitry; and  
10       memory circuitry electrically connected to said microprocessor  
11 circuitry, said electronic data carrier being programmable to  
12 provide secure, encrypted data transfers between said electronic  
13 data carrier and said data processing circuit.

1        24.    The electronic data carrier of claim 23, wherein said  
2 electronic data carrier is programmable in a script programming  
3 language.

1        25.    The electronic data carrier of claim 23, wherein said  
2 electronic data carrier is contained in an articulatable item.

1           26. The electronic data carrier of claim 25, wherein said  
2 articulatable item is selected from a group comprising a ring, a  
3 watch, a wallet, a credit card, a smart card, a necklace, an ID  
4 badge, a key fob, and a token shaped object.

1           27. The electronic data carrier of claim 23, wherein said  
2 encrypted data transfers include a transfer of a certificate of  
3 authenticity.

A2  
Comp  
SECRET JAN 11 2006

1           28. The electronic data carrier of claim 23, wherein said  
2 encrypted data transfers include a transfer of units of a monetary  
3 equivalent.

1           29. The electronic data carrier of claim 23, further  
2 comprising a random number generator within said microprocessor  
3 circuitry for generating random numbers used in said encrypted data  
4 transfers.

1           30. The electronic data carrier of claim 23, further  
2 comprising a clock circuit for maintaining real time, said clock  
3 circuit providing time information used to time stamp said  
4 encrypted data transfers.

2, 1  
3  
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31. The electronic data carrier of claim 23, wherein said input/output circuitry comprises a single-wire data bus and a ground connection for communicating with said external processing device. ~~40~~

**REMARKS**

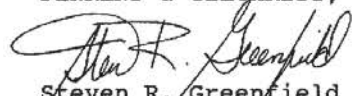
Reconsideration and allowance are respectfully requested in view of the foregoing amendments and the following remarks.

This amendment is a Preliminary Amendment for a continuation application. The new claims are believed to claim a new and novel invention worthy of patentability.

In view of the above amendments and remarks reconsideration and allowance of this application is believed warranted.

Respectfully submitted,

JENKENS & GILCHRIST, P.C.

  
Steven R. Greenfield  
Reg. No. 38,166

Date: March 10, 1998

Jenkins & Gilchrist,  
A Professional Corporation  
1445 Ross Avenue, Suite 3200  
Dallas, Texas 75202-2799  
214/855-4789  
214/855-4300 (fax)

#3/105-  
W/ATT  
T.W.  
4-9-98  
Patent  
U.S. PTO  
09/041190  
93/10/98

Docket No. 20661-00457C1

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Stephen M. Curry et al. ) Group Art Unit: 2202  
Prior Serial No.: ~~08/594,983~~ ) Examiner: Gregory, B.  
Prior File Date: January 31, 1997 )

For: **METHOD, APPARATUS, SYSTEM AND FIRMWARE FOR SECURE TRANSACTIONS**

To the Assistant Commissioner for Patents  
Washington, DC 20231

CERTIFICATE OF MAILING BY EXPRESS MAIL "EXPRESS MAIL" Mailing Label: EM92466685US Date of Deposit: March 10, 1998 I hereby certify that this paper or fee is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Box Patent Application, Washington, D.C. 20231 Type of Print Name: CAROL MARSTALLER <i>Carol Marstaller</i> Signature
--

Dear Sir:

**INFORMATION DISCLOSURE STATEMENT**

In accordance with Applicant's duty under 37 C.F.R. § 1.56 and 1.97, Applicant hereby submits the attached form PTO-1449 (modified) which lists art cited. The art listed therein, while of some relevance, is not necessarily considered to teach or suggest any aspect of the invention described and claimed in the above-identified patent application. This statement is also not to be construed as a representation that a search has, or has not, been conducted or that no better art exists. Rather, this statement discloses only the best art of which the Applicant is aware.

In considering the art set forth below, it may be noted by the Examiner that certain of the

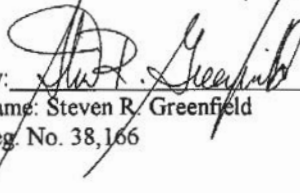
PDAL:120898.1 20661-00457

references may contain markings, underlinings or other notations. These markings or notations are not to be construed as drawing the Examiner's attention either to selected parts or away from other parts of the references. Any such markings were either present on the copies of the references obtained by Applicant, or were made thereon during the study of the references by the Applicant and/or his attorneys.

The Examiner is respectfully requested to consider each of the cited references, indicate such consideration by initialling each reference on the enclosed Form PTO-1449 (modified) and return a copy of the same with the next communication to the Applicant. For the convenience of the Examiner in considering the references, copies of the cited references are enclosed with this communication.

Respectfully submitted,

JENKENS & GILCHRIST, P.C.

By:   
Name: Steven R. Greenfield  
Reg. No. 38,166

Date: March 10, 1998

1445 Ross Avenue, Suite 3200  
Dallas, Texas 75202  
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(214) 855-4300 (fax)

IPDAL:120898.1 20661-00157

# 3

Sheet 1 of 2

<b>Form PTO-1449 Modified</b>  <b>List of Patents and Publications Cited by Applicant</b> (Use several sheets if necessary)  <b>U.S. Patent Department of Commerce</b> <b>Patent and Trademark Office</b>	<b>Docket No.:</b> 20661-00457	<b>Serial No.:</b> 09/041190 <del>08/594,983</del>
	<b>Applicants:</b> Steven M. Curry et al.	
	<b>Filing Date:</b> January 31, 1997	<b>Group:</b> A.U. 2788 2202

**U.S. PATENT DOCUMENTS**

Examiner Initial		Document No.	Date	Name	Class	Subclass
BCA	AA	4,731,842	15/03/88	Smith	380	24
BCA	AB	5,577,120	19/11/96	Penzias	380	23

**FOREIGN PATENT DOCUMENTS**

Examiner Initial		Document No.	Date	Country	Translation	
					Yes	No
BCA	AC	EP0458306A2	27.11.91	EPO	*	
BCA	AD	EP0186981A2	09.07.86	EPO	*	
BCA	AE	EP0194839A2	17.09.86	EPO	*	
BCA	AF	DE4406602A1	07.09.95	Germany		x
BCA	AG	EP0294248A1	07.12.88	EPO		x
BCA	AH	EP0624014A2	09.11.94	EPO	*	
BCA	AI	EP0337185A2	18.10.89	EPO		x
BCA	AJ	WO93/08545	29.04.93	<del>PCT</del> WIPO	*	
BCA	AK	EP0172670A2	26.02.86	EPO	*	

**EXAMINER:** GREGORY

**DATE CONSIDERED:** 7/29/98



<p><b>Form PTO-1449 Modified</b></p> <p><b>List of Patents and Publications Cited by Applicant</b> (Use several sheets if necessary)</p> <p><b>U.S. Patent Department of Commerce</b> <b>Patent and Trademark Office</b></p>	<p><b>Docket No.:</b> 20661-00457</p>	<p><b>Serial No.:</b> 09/041190 <del>08/594,785</del></p>
	<p><b>Applicant:</b> STEPHEN M. CURRY et al.</p>	
	<p><b>Filing Date:</b> January 31, 1996</p>	<p><b>Group:</b> A.4.2766 <del>Unknown</del></p>

**OTHER DOCUMENTS**

Examiner Initial		Author, Title, Date, Pertinent Pages, Etc.
BCA	AL	Federal Information Processing Standards Publication, (FIPS PUB) 186, <u>Digital Signature Standard (DDS)</u> , Issued: May 19, 1994
BCA	AM	Federal Information Processing Standards Publication, (FIPS PUB) 190-1, <u>Secure Hash Standard</u> , Issued: May 31, 1994
BCA	AN	Microsoft Corporation's Secure Transaction Technology, <u>STT Wire Formats and Protocol</u> version 0.902, October 5, 1995
BCA	AO	Matonis, Jon W., <u>Digital Cash and Monetary Freedom</u> , <a href="http://www.info.isoc.org/HMP/PAPER/136/html/paper.html">http://www.info.isoc.org/HMP/PAPER/136/html/paper.html</a> , as of April, 1995
BCA	AP	MasterCard, <u>Secure Electronic Payment Protocol</u> , Draft Version 1.1, September 29, 1995
BCA	AQ	MasterCard, <u>Secure Electronic Payment Protocol, Part 2: Functional Specifications</u> , Draft Version 1.1, September 29, 1995
BCA	AR	MasterCard, <u>Secure Electronic Payment Protocol, Part 3: Payment System Specification</u> , Draft Version 1.1, September 29, 1995
BCA	AS	MasterCard, <u>Secure Electronic Payment Protocol, Part 4: Certificate Management Specification</u> , Draft Version 1.1, September 29, 1995
BCA	AT	SGS-Thomson Microelectronics, <u>CMOS Crypto-Computer Family</u> , Advance Datasheet ST16xF74, October, 1993
BCA	AU	SGS-Thomson Microelectronics, <u>CMOS MCU Based Safeguarded Smartcard IC with Modular Arithmetic Processor</u> , Advanced Data Sheet, ST16CF54, September, 1994
BCA	AV	Micro Card, <u>CP8® Products Crypto Card</u> , January 25, 1995

**EXAMINER:** GREGORY | **DATE CONSIDERED:** 7/29/98

<b>Form PTO-1449 Modified</b>  <b>List of Patents and Publications Cited by Applicant</b> (Use several sheets if necessary)  <b>U.S. Patent Department of Commerce</b> <b>Patent and Trademark Office</b>	<b>Docket No.:</b> 20661-00457	<b>Serial No.:</b> C-9/04119C <del>08/504,983</del>
	<b>Applicant:</b> STEPHEN M. CURRY et al.	
	<b>Filing Date:</b> January 31, 1996	<b>Group:</b> A-4, 2888 2202

**OTHER DOCUMENTS**

Examiner Initial		Author, Title, Date, Pertinent Pages, Etc.
AW		Wayner, Peter, <u>Digital Cash, Commerce on the Net</u> , Chpt. 3 & 10 and Appendix B, June, 1995
AX		Schneier, Bruce, <u>Applied Cryptography</u> , Chpt. 19, pgs. 461-482, 1996
<b>EXAMINER:</b> GREGORY		<b>DATE CONSIDERED:</b> 7/29/98



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

PS

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/041,190	03/10/98	CURRY	20661-457C1

STEVEN R GREENFIELD  
JENKENS & GILCHRIST  
3200 FOUNTAIN PLACE  
1445 ROSS AVENUE  
DALLAS TX 75202-2799

LM01/0803

EXAMINER

GREGORY, B

ART UNIT      PAPER NUMBER

2766

4


DATE MAILED: 08/03/98

**Please find below and/or attached an Office communication concerning this application or proceeding.**

Commissioner of Patents and Trademarks

**Office Action Summary**

Application No. <b>09/041,190</b>	Applicant(s) <b>Stephen M. Curry et al.</b>
Examiner <b>Bernarr Earl Gregory</b>	Group Art Unit <b>2766</b>



- Responsive to communication(s) filed on \_\_\_\_\_
- This action is FINAL.
- Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11: 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three (3) month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

- Claim(s) 23-31 is/are pending in the application.  
Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- Claim(s) \_\_\_\_\_ is/are allowed.
- Claim(s) 23-31 is/are rejected.
- Claim(s) \_\_\_\_\_ is/are objected to.
- Claims \_\_\_\_\_ are subject to restriction or election requirement.

**Application Papers**

- See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948, (*SUBSTITUTE*)
- The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- The proposed drawing correction, filed on \_\_\_\_\_ is  approved  disapproved.
- The specification is objected to by the Examiner.
- The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
  - All  Some\*  None of the CERTIFIED copies of the priority documents have been received.
  - received in Application No. (Series Code/Serial Number) \_\_\_\_\_
  - received in this national stage application from the International Bureau IPCT Rule 17.2(a).
- \*Certified copies not received: \_\_\_\_\_
- Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- Notice of References Cited, PTO-892
- Information Disclosure Statement(s), PTO-1449, Paper No(s). 3
- Interview Summary, PTO-413
- Notice of Draftsperson's Patent Drawing Review, PTO-948 (*SUBSTITUTE*)
- Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2766

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 23-31 are rejected under the judicially created doctrine of double patenting over claims 1-6 of U. S. Patent No. 5,748,740 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: both claim an electronic data carrier used for secure data transaction with the independent claims being word-for-word identical except that the "math coprocessor" on the patent is called a "numeric coprocessor" and that the "data processing circuit" in the patent is called an "external electronic device."

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application

Art Unit: 2766

which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968).

See also MPEP § 804.

3. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

4. Claim 23 is rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 1 of prior U.S. Patent No. 5,748,740. This is a double patenting rejection.

Both the application and U.S. Patent 5,748,740 claim an electronic data carrier used for secure data transaction with the independent claims being word-for-word identical except that the "math coprocessor" on the patent is called a "numeric coprocessor" and that the "data processing circuit" in the patent is called an "external electronic device." Plainly, a "numeric coprocessor" and a "math coprocessor" are two names for the same thing. As for the "external electronic device," plainly this would refer to a "data processing circuit" of some sort since there could be no communication between the claimed "electronic data carrier" and anything other than a "data processing circuit."

Serial Number: 09/041,190

Page 4

Art Unit: 2766

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Bernarr Gregory** whose telephone number is (703) 306-4153.

**Bernarr E. Gregory**  
**Primary Examiner**  
**Art Unit 2766**

beg  
July 29, 1998



**Notice of References Cited**

Application No. 09/041,190	Applicant Stephen M. Curry et al.
Examiner Bernarr Earl Gregory	Group Art Unit 2700
Page 1 of 1	

**U.S. PATENT DOCUMENTS**

	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS
A	5,748,740	5/98	CURRY ET AL.	380	25
B					
C					
D					
E					
F					
G					
H					
I					
J					
K					
L					
M					

**FOREIGN PATENT DOCUMENTS**

	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS
N						
O						
P						
Q						
R						
S						
T						

**NON-PATENT DOCUMENTS**

	DOCUMENT (Including Author, Title, Source, and Pertinent Pages)	DATE
U		
V		
W		
X		



**Attachment** \_\_\_\_\_

**The drawings submitted with this application were declared informal by the applicant. Accordingly they have not been reviewed by a draftsman at this time. When formal drawings are submitted, the draftsman will perform a review.**

**Direct any inquiries concerning drawing review to the Drawing Review Branch (703) 305-8404.**

**SUBSTITUTE PTO-348**



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#5  
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Amot B  
y.v.  
11.16.98

Patent Application  
Docket No. 20661-00457C1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:

STEPHEN M. CURRY ET AL. §  
Serial No.: 09/041,190 §  
Filed: March 10, 1998 §  
Examiner: GREGORY, B. §  
Group Art Unit: 2766 §

For: METHOD, APPARATUS, SYSTEM AND FIRMWARE FOR SECURE TRANSACTIONS

Assistant Commissioner  
for Patents  
Washington, D.C. 20231

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:  
Assistant Commissioner for Patents,  
Washington, D.C. 20231  
on 11/16/98  
C. W. H. H. H. H.  
Signature

5060712 49 7 34

Dear Sir:

**AMENDMENT TRANSMITTAL LETTER**

This is an amendment in the above-identified application and includes the transmitted herewith attachments of the same date and subject which are incorporated hereunto by reference. The signature below is to be treated as the signature to the attachments in absence of a signature thereto.

Transmitted herewith in the above-identified application are:

- 1) Amendment in response to the Office Action dated 8/3/98
- 2) Check in the amount of \$110.00 for payment of a one-month extension
- 3) Acknowledgment Postcard.

IPDAL:187162.1 20661-00457

11/16/1998 RTSEGRAVE 000006107 09041190 10.00  
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- \_\_\_\_\_ Small entity status of this application under 37 CFR 1.9 and 1.27 has been established by a verified statement previously submitted.
- \_\_\_\_\_ A verified statement claiming small entity status under 37 CFR 1.9 and 1.27 is enclosed.
- X  No additional fee is required.

**FEE REQUIREMENTS FOR CLAIMS AS AMENDED**

	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST # PREVIOUSLY PAID FOR	PRESENT EXTRA	SMALL ENTITY RATE	LARGE ENTITY RATE
1. TOTAL CLAIMS	<u> 9 </u>	<u> 22 </u> (at least 20)	<u> 0 </u> (at least 0)	x11 = <u> OR </u>	x22 = <u> \$ 0 </u>
2. INDEP. CLAIMS	<u> 2 </u>	<u> 3 </u> (at least 3)	<u> 0 </u> (at least 0)	x41 = <u> OR </u>	x82 = <u> \$ 0 </u>
3. FIRST PRESENTATION OF PROPER MULTIPLE DEPENDENT CLAIMS (leave blank if this is a <u>reissue</u> appln)			+130 = <u> OR </u>	+260 = <u> \$ 0 </u>	
4. TOTAL FEE FOR ADDED CLAIMS					<u> \$ 0 </u>
5. _____ IDS ATTACHED REQUIRES OFFICIAL FEE - ADD \$230 (RULE 1.97(c)) OR \$130 (RULE 1.97(d)) PETITION)					<u> \$ _____ </u>
6. _____ IF <u>TERMINAL DISCLAIMER</u> attached add Rule 20(d) Official Fee				\$55 (Small Entity)	\$110 (Large Entity)
7. <u> X </u> Petition is hereby made under 37 CFR 1.136(a) to extend the <u>original</u> due date to cover the date this response is filed for which the requisite fee is attached:					

	Small Entity	Large Entity
One Month	<u> \$ 55 </u>	<u> X </u> \$ 110
Two Months	<u> \$ 200 </u>	<u> \$ 400 </u>
Three Months	<u> \$ 475 </u>	<u> \$ 950 </u>

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Patent Application  
Docket No. 20661-00457C1

**This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal form is filed.**

Respectfully submitted,

JENKENS & GILCHRIST, P.C.

By: 

Steven R. Greenfield  
Reg. No. 38,166

Date: Nov 6, 1998

Jenkins & Gilchrist, P.C.  
3200 Fountain Place  
1445 Ross Avenue  
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1PGAL:197162.1 20661-00457



Patent Application  
Docket No. 20661-00457C1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:

Stephen Curry et al.

Serial No.: 09/041,190

Filed: March 10, 1998

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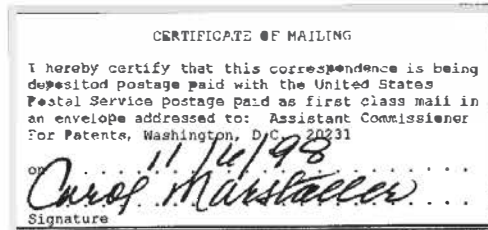
Examiner: Gregory, B.

Group Art Unit: 2766

#15

For: Method, Apparatus, System and Firmware for Secure Transactions

Assistant Commissioner For  
Patents  
Washington, D.C. 20231



Dear Sir:

**AMENDMENT**

Responsive to the official Action mailed on August 3, 1998, reconsideration and allowance of the present application are respectfully requested and believed to be appropriate in view of the following amendments and remarks:

In the Claims:

Please cancel claims 23-31 without prejudice.

Please add the following new claims:

Sub B1  
3  
B1  
--32.1 A microcontroller based secure transaction  
integrated circuit comprising:  
a microcontroller core;

IPDAL:187156.1 20661-00457