



[54] METHOD, APPARATUS, SYSTEM AND FIRMWARE FOR SECURE TRANSACTIONS

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Related U.S. Application Data

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[60] Provisional application No. 60/004,510, Sep. 29, 1995.

[51] Int. Cl.<sup>7</sup> ..... H04L 9/00; H04L 9/30

[52] U.S. Cl. .... 705/65; 235/379; 380/30; 705/75; 713/156; 713/173; 713/174

[58] Field of Search ..... 380/4, 9, 21, 23, 380/24, 25, 30, 46, 49, 50; 235/379, 380; 705/64, 65, 66, 67, 68, 69, 75; 713/155, 156, 157, 158, 168, 172, 173, 174

[56] References Cited

U.S. PATENT DOCUMENTS

4,731,842	3/1988	Smith	380/24
5,577,120	11/1996	Penzias	380/23
5,748,740	5/1998	Curry et al.	380/25

FOREIGN PATENT DOCUMENTS

0172670A2	2/1986	European Pat. Off. .
0186981A2	7/1986	European Pat. Off. .
0194839A2	9/1986	European Pat. Off. .
0294248A1	12/1988	European Pat. Off. .
0337185A2	10/1989	European Pat. Off. .
045806A2	11/1991	European Pat. Off. .
0624014A2	11/1994	European Pat. Off. .
4406602A1	9/1995	Germany .
WO93/08545	4/1993	WIPO .

OTHER PUBLICATIONS

Federal Information Processing Standards Publication, (FIPS PUB) 186, *Digital Signatur Standard (DDS)*, Issued: May 19, 1994.

Federal Information Processing Standards Publication, (FIPS PUB) 190-1, *Secure Hash Standard*, Issued: May 31, 1994.

Microsoft Corporation's Secure Transaction Technology, *STT Wire Formats and Protoc* version 0.902, Oct. 5, 1995. Matonis, Jon W., *Digital Cash and Monetary Freedom*, <http://www.info.isoc.org/HMP/PAPER/136/html/paper.html>, as of Apr. 1995.

MasterCard, *Secure Electronic Payment Protocol*, Draft Version 1.1, Sep. 29, 1995.

MasterCard, *Secure Electronic Payment Protocol, Part 2; Functional Specifications*, Draft Version 1.1, Sep. 29, 1995.

MasterCard, *Secure Electronic Payment Protocol, Part 3; Payment System Specification*, Draft Version 1.1, Sep. 29, 1995.

MasterCard, *Secure Electronic Payment Protocol, Part 4; Certificate Management Specification*, Draft Version 1.1, Sep. 29, 1995.

SGS-Thomson Microelectronics, *CMOS Crypto-Computer Family*, Advance Datasheet ST16xF74, Oct., 1993.

SGS-Thomson Microelectronics, *CMOS MCU Based Safeguarded Smartcard IC with Modular Arithmetic Processor*, Advanced Data Sheet, ST16CF54, Sep. 1994.

Micro Card, *CP8® Products Crypto Card*, Jan. 25, 1995. Wayner, Peter, *Digital Ca\$h, Commerce on the Net*, Chpt. 3 & 10 and Appendix B, Jun. 1995.

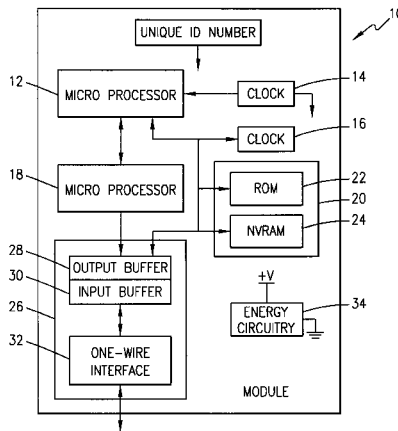
Schneier, Bruce, *Applied Cryptography*, Chpt. 19, pp. 461-482, 1996.

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Attorney, Agent, or Firm—Jenkins & Gilchrist

[57] ABSTRACT

The present invention relates to an electronic module used for secure transactions. More specifically, the electronic module is capable of passing information back and forth between a service provider's equipment via a secure, encrypted technique so that money and other valuable data can be securely passed electronically. The module is capable of being programmed, keeping track of real time, recording transactions for later review, and creating encryption key pairs.

16 Claims, 8 Drawing Sheets



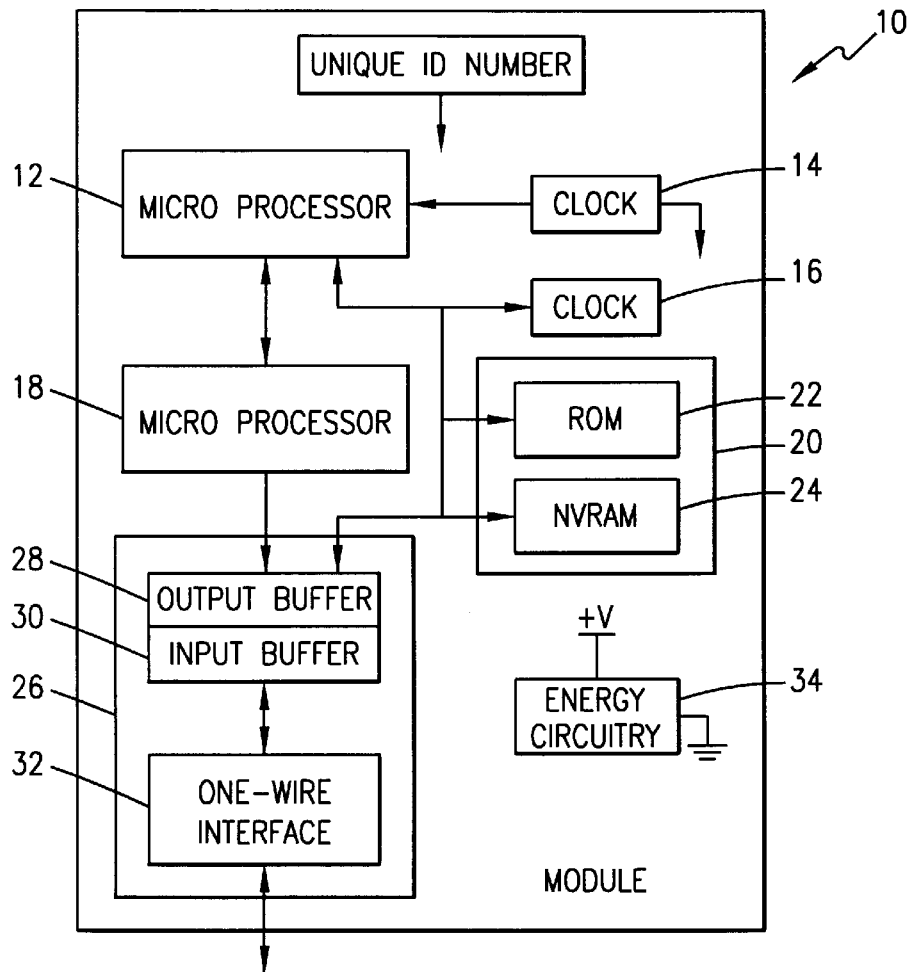


FIG. 1

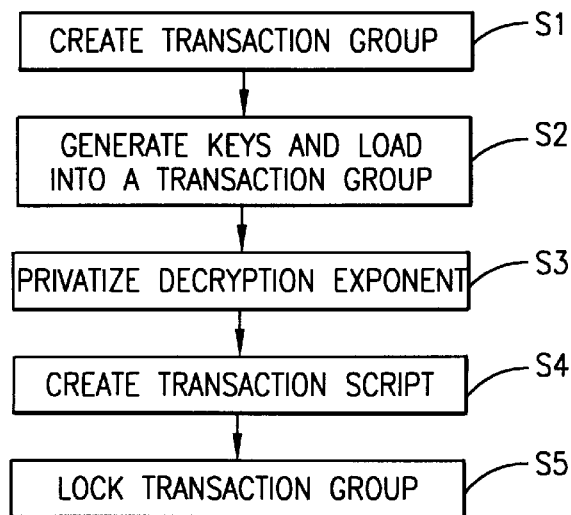


FIG. 2

FIG. 3

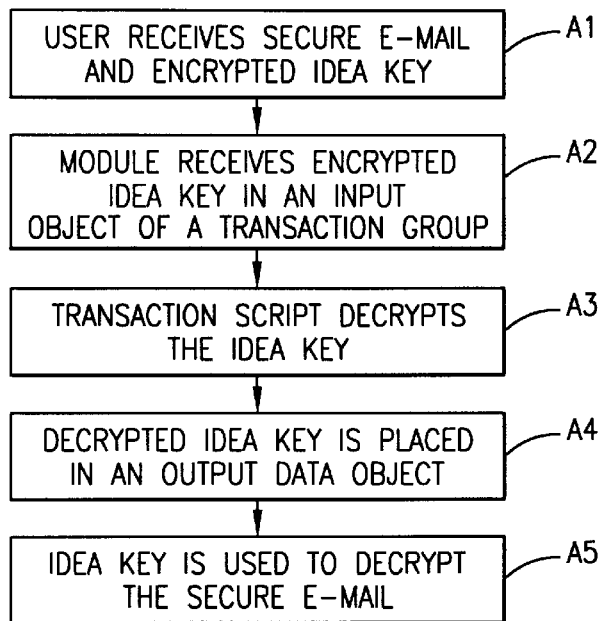
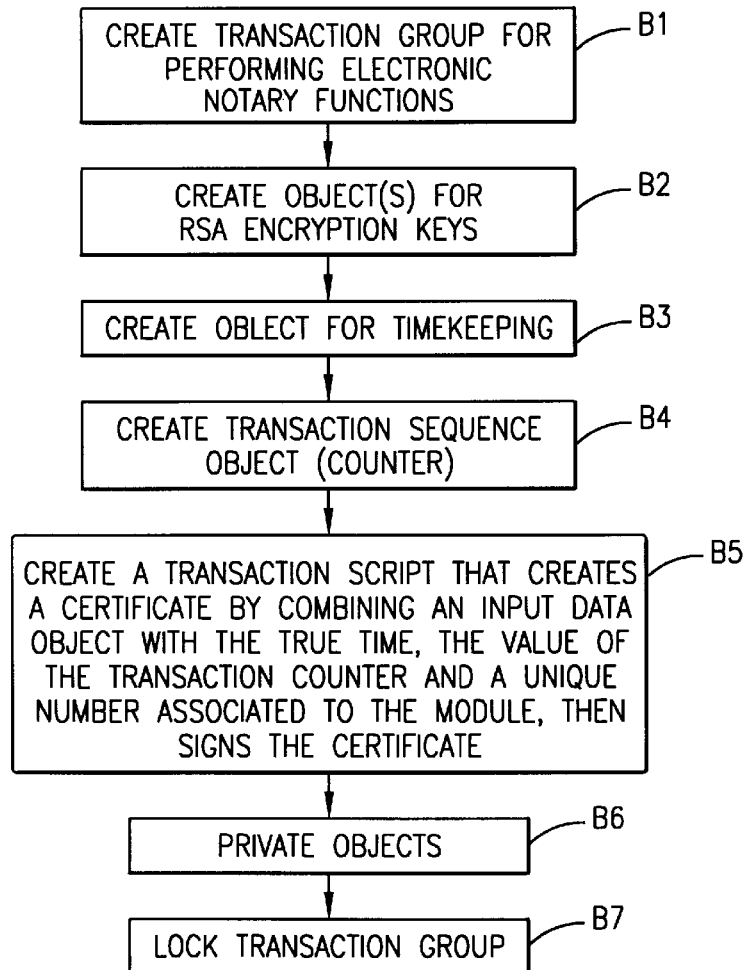


FIG. 4



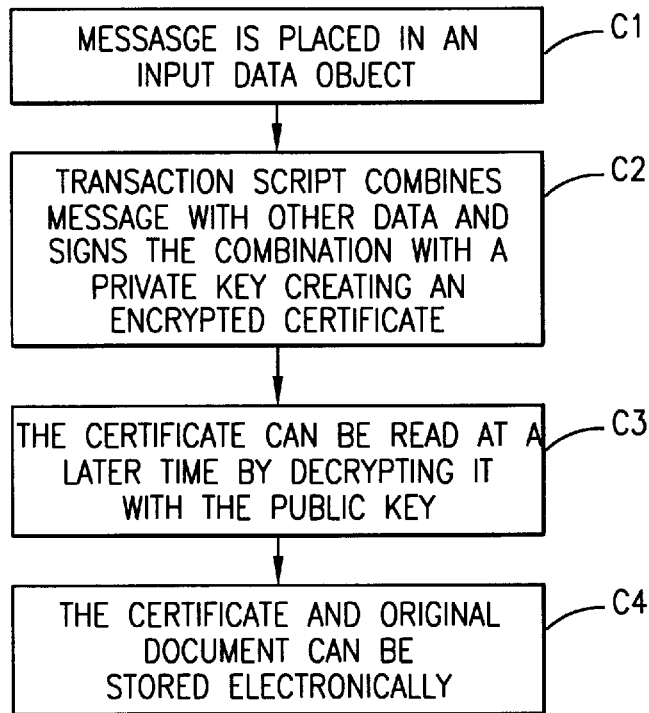


FIG. 5

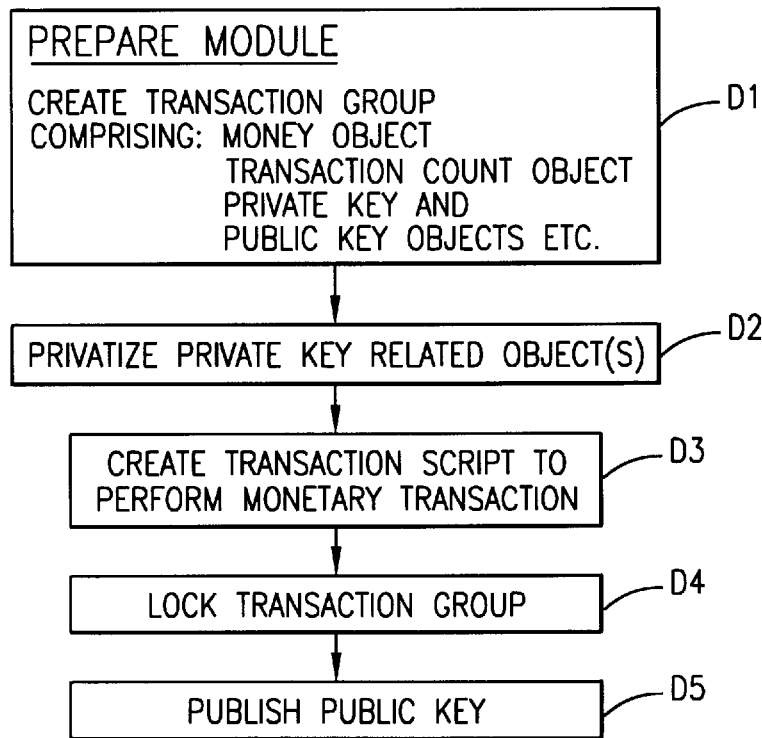


FIG. 6

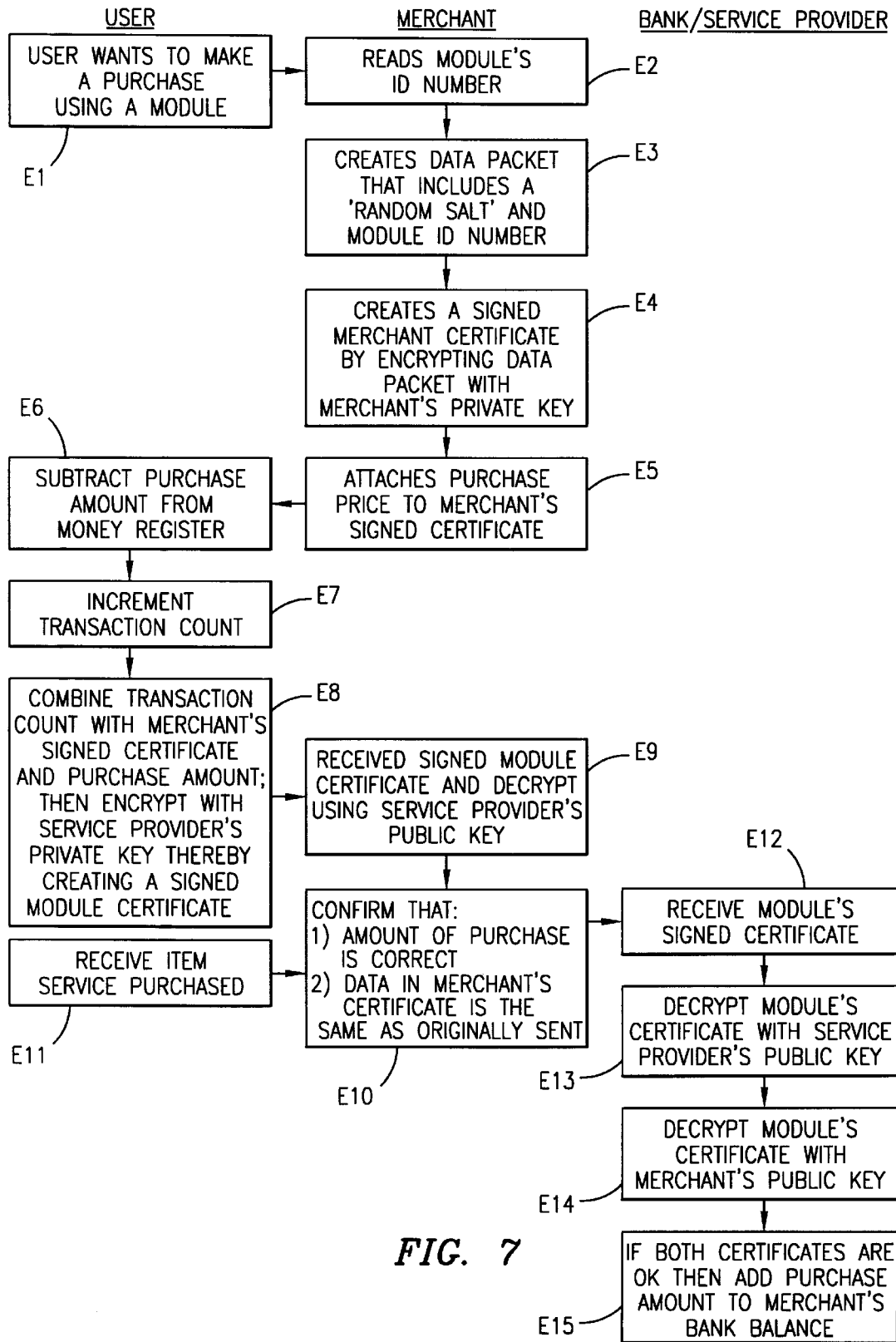


FIG. 7

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