

2007-1130
(Serial No. 08/833,892)

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

IN RE BERNARD L. BILSKI AND RAND A. WARSAW

Appellants.

APPEAL FROM THE UNITED STATES PATENT AND TRADEMARK
OFFICE, BOARD OF PATENT APPEALS AND INTERFERENCES

BRIEF FOR AMICUS CURIAE AMERICAN EXPRESS COMPANY,
IN SUPPORT OF APPELLANTS.

Maxine Y. Graham
AMERICAN EXPRESS COMPANY
General Counsel's Office
3 World Financial Center
200 Vesey Street
New York, NY 10285-4900
(212) 640-2000

Of Counsel

Kenneth C. Bass, III
Robert Greene Sterne
Michelle K. Holoubek
STERNE, KESSLER, GOLDSTEIN
& FOX P.L.L.C.
1100 New York Ave., N.W.
Washington, DC 20005
(202) 371-2600

*Attorneys for Amicus Curiae
American Express Company*

April 7, 2008

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

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2007-1130
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CERTIFICATE OF INTEREST

for AMICUS CURIAE AMERICAN EXPRESS COMPANY.

Counsel for Amicus Curiae American Express Company certifies the following:

1. The full name of every party represented by us is:
American Express Company.
2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by us is:
American Express Company.
3. There are no parent companies for American Express Company. All publicly held companies that own 10 percent or more of the stock of the party represented by us are:

Berkshire Hathaway, Inc.

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by us in the trial court or agency or are expected to appear in this Court are:

Maxine Y. Graham
AMERICAN EXPRESS COMPANY

Kenneth C. Bass, III
Robert Greene Sterne
Michelle K. Holoubek
STERNE, KESSLER, GOLDSTEIN
& FOX P.L.L.C.

Dated April 7, 2008

Kenneth C. Bass, III

*Attorney for Amicus Curiae
American Express Company*

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Statutes

- 35 U.S.C. § 101 3, 14
- America Creating Opportunities to Meaningfully Promote Excellence in
Technology, Education, and Science Act (“COMPETES Act”) of 2007. Pub. L.
No. 110-69, §§ 1001-7037, 121 Stat. 572-718 (2007).4

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STATEMENT OF INTEREST OF *AMICUS CURIAE*

American Express Company is a leading global payments and travel company. American Express began in 1850 as an express delivery service. In 1882, American Express opened a money order business, and produced the world's first traveler's cheque in 1891. Over a century later, the company continues to thrive. Today, the principal products and services of American Express are charge and credit payment card products and travel-related services offered to consumers and businesses around the world. American Express businesses are organized into two customer-focused groups, the Global Consumer Group and the Global Business-to-Business Group.

The Global Consumer Group offers a range of products and services directed to consumers, including charge and lending (i.e., credit) card products; consumer travel services; and stored value products such as Travelers Cheques and prepaid card products. The Business-to-Business Group offers business travel, corporate cards, and other expense management products and services; network services, merchant acquisition, and merchant processing for network partners and proprietary payments businesses of American Express; and point-of-sale, back-office, and marketing products and services for merchants.

American Express products and services are sold globally to diverse customer groups, including consumers, small businesses, middle-market

companies, and large corporations. These products and services are sold through various channels including direct mail, online applications, targeted sales forces, and direct response advertising.

American Express employs over 68,000 people throughout the world, and generated nearly \$30 billion in revenues in 2007. A significant portion of American Express's research and development is directed towards improved and innovative financial products and services and information management processes. American Express and its related companies have filed over 1,000 U.S. patent applications and been granted over 100 U.S. patents, many of which are directed to business and information management processes.

American Express submits this brief pursuant to this Court's Order dated February 15, 2008, inviting amicus briefs on the five questions presented to the parties. American Express submits this brief in order to address questions (4) and (5) in the Court's Order. American Express believes that a business method or process need not result in a physical transformation or be tied to a machine in order to constitute patentable subject matter. American Express further submits that there is no need to reconsider either *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), or *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999).

ARGUMENT

I. American Express Fully Supports the Brief of *Amicus Curiae* Accenture

American Express has read the *amicus* brief previously filed by Accenture. American Express agrees with and supports the arguments advanced in that brief. American Express will not repeat those arguments here.

American Express draws particular attention to the position in Accenture's brief that statutory subject matter under 35 U.S.C. § 101 is not required to be tied to a specific machine or apparatus or required to change articles or materials to a different state or thing. (Brief for Amicus Curiae Accenture in Support of Appellants at 9-17).

American Express also draws attention to the position that Congress has already recognized the patentability of business methods, as evidenced through comments provided in conjunction with the First Inventor Defense Act of 1999, and further restriction by this Court would be contrary to existing law. *Id.* at 20-22.

II. The Current Ability to Patent Business and Information Management Processes Has a Significant Positive Economic Effect.

In addition to the arguments set forth by Accenture, American Express submits that the importance of business method patents to the financial services industry, and the U.S. economy in general, should be recognized.

A. Patent Protection of Business-related Processes Is Important to the Maintenance and Growth of the U.S. Economy

Congress recognized the need for promotion of innovation and creativity through its enactment of the bi-partisan America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act (“COMPETES Act”) of 2007. Pub. L. No. 110-69, §§ 1006-1008, 121 Stat. 572-718 (2007). That statute was enacted as part of a strategy to keep America competitive by (1) increasing research investment, (2) strengthening educational opportunities in science, technology, and engineering, and (3) developing an innovation infrastructure. *Id.* §§ 1001-7037. The COMPETES Act also indicates the importance of intellectual property in supporting innovation, stating that awards under its Technology Innovation Program are available only to those entities whose proposal “may result in intellectual property vesting in a United States entity that can commercialize the technology in a timely manner.” *Id.* § 3012(b) (to be codified at 35 U.S.C. § 271 et seq.). Accordingly, Congress recognizes the important role of innovation coupled with intellectual property to maintain a strong economy.

Regarding innovation, the U.S. economy is continually moving toward a services and information economy, and away from manufacturing and tangible devices, as other countries industrialize and the level of globalization increases. This widely-recognized trend makes IP associated with services and information

processes increasingly important, especially for innovators competing globally. Consequently, IP protection of "intangible ideas" is increasingly becoming – to the extent it already is not – the most critical competitive advantage many U.S. companies have on the world stage.

It has long been recognized that the ability to protect commercial advantages inspires innovation. Conversely, innovation decreases where IP protection is not available or weak. *See*, E. Lai, "Intellectual Property Protection in a Globalizing Era," *Economic Letter – Insights from the Federal Reserve Bank of Dallas*, vol. 3, no. 3, pp. 3-5 (March 2008). A leading cause of this effect is that market leaders and capitalists are less likely to invest and take risks in unpatented new technology developments. They understand that such unprotected investment invariably (and undesirably) results in the vicarious funding of the research and development of their competitors and "fast-followers" in their respective industries and fields, and the innovators who have made the financial investment and taken the business risk are often unlikely to reap the full benefit of their investment. IP protection has served as powerful insurance to guard against this type of competitive encroachment and "free riding" and to stimulate investment in research and development. In this connection it is important to note that, under current law, business methods can often be protected only through patents. Copyright and trade secret laws are inadequate because business methods are often transparent and

often unwritten. Any restriction of the current ability to patent business methods in the United States would remove the only legal protection that maintains American competitiveness in those sectors that rely on such patents. It has also created a rational and predictable business practices regime that rewards innovators regardless of size and economic power

Former Federal Reserve Chairman Alan Greenspan, in a 2004 speech discussing the relevance of IP protection to information technology, asked, if "our objective is to maximize economic growth, are we striking the right balance in our protection of intellectual properties?" (Chairman Alan Greenspan, Remarks at the 2003 Financial Markets Conference of the Federal Reserve Bank of Atlanta (April 4, 2003) (transcript available at <http://www.federalreserve.gov/BoardDocs/speeches/2003/20030404/default.htm>)). The goal, he noted, should be to strike a balance between protections that encourage innovation while simultaneously not shutting down what he deemed "follow-on innovation." *Id.*

A prohibition on patenting business and information management processes would fully tilt the scale towards the end of the spectrum where economic power, rather than innovation and risk-taking determines success, and would not strike the balance set out by Mr. Greenspan. Maintenance of a carefully considered balance, rather than complete obliteration of business and information management process patents, is necessary to encourage IP creation and technology transfer in those

areas. The availability of protection for business and information management processes encourages investment in innovations, especially at the cutting edge where risk is greatest but where success can spawn whole new industries and business models. This encouragement of investment in innovation in turn enhances business productivity, efficiency, diversity and opportunities. What was true for the industrial age remains true for the information age — innovation and legal mechanisms to appropriately protect such innovation equals sustainable economic growth.

Patent protection historically has had to tailor statutory subject matter to reflect the modes and types of innovation. History has shown over and over that when conventional thinking makes predictions about the direction and thrust of innovation it is usually dead wrong. Notable recent examples are personal computers, the Internet, cellular telephones and other wireless devices, peer-to-peer file sharing, communities of interest, and e-commerce. All of these very recent technological developments collaborate to spawn a multitude of innovation in business and information management processes. U.S industrial competitiveness in an increasingly globalized marketplace requires a robust definition of patentable statutory subject matter so as not to cripple incentives to invest in innovation at the cutting edge, including innovation occurring in business and information management processes.

B. Patent Protection of Business-related Processes Is Important to the Financial Services Industry

The financial services and information management industry, of which American Express is a part, is subject to rapid and significant technological changes often coming from the most unforeseen quarters and forces. In order to compete and excel in this industry, companies like American Express need to invest significantly and continually in business process and technology advances across all areas of their business, including transaction processing, data management, customer interactions and communications, travel reservations systems, prepaid products, alternative payment mechanisms, risk management and compliance methods, to name a few.

For American Express, financial and information management processes are central to its business strategy and have significant bottom-line impact. These processes are protected primarily by patents and are frequently leveraged for proprietary competitive advantage. Increasingly, though, the value of such patent-protected processes is being manifested and extracted through joint ventures licensing, or other business arrangements, where IP transfer creates additional business opportunities and revenue streams. American Express relies, in part, on third parties for the development of and access to new technologies essential to remain competitive. This is the type of transparency and access to innovation that fosters the economic growth that the government desires and that experts like Mr.

Greenspan espouse. Patent protection provides exclusivity as the *quid pro quo* for public disclosure, which is essential for such transparency. In contrast, trade secret protection discourages disclosure of innovation. The U.S. courts and legislature, therefore, should seek to maintain strong patent protection, which encourages and fosters the innovation and IP transfer that fuels the U.S. economy.

As history has shown, new technologies applicable to the financial services industry will continue to emerge, and these new technologies may be superior to, or render obsolete, the technologies currently used in consumer financial products, networks, and other services. However, without appropriate legal protection provided to business and information management processes, financial services companies such as American Express, would have less incentive to innovate and take costly risks. Instead, they would be encouraged to maintain their competitive advantage in the market in less transparent ways, such as by maintaining trade secrets or the use of contractual non-disclosure regimes. As noted earlier, trade secrets are often unavailing with respect to business methods, because those methods are often transparent or can be lawfully reverse-engineered. Contrary to fostering collaboration and providing a basis for cross-licensing, such a closed-door “secret” atmosphere would inhibit the dissemination of processes that may be useful to the industry as a whole, ultimately affecting the individual consumers who would not be able to reap the benefit that collaboration provides.

Additionally, without adequate patent protection, business process IP will be less attractive as an asset class and will represent a more speculative and less valued investment. Put simply, decreased patent protection will mean less investment and innovation in the business process realm.

IP protection is the means to protect technology invention, and it is axiomatic that technology and IP have a symbiotic and indissoluble relationship. Increases in technology output necessarily result in increases in intellectual property. Accordingly, if we are to increase innovation and growth desired by Congress and economists such as Mr. Greenspan, then our policies and laws should encourage and not discourage IP creation and transfer.

C. Patent Protection of Business-related Processes Has Resulted In the Disclosure of Useful Financial Methods

Business and information management process patent protection allows companies to disclose and share their own processes without worrying about others taking unfair advantage of their research and development. Without the ability to patent certain methods relating to business and information management, financial corporations in particular would be not have the same incentive to disclose and share certain technical aspects of processes they use to, for example, reduce fraud and improve the consumer transaction experience.

For example, American Express was granted U.S. Patent No. 6,182,894 which includes claims directed to a novel method of obtaining an authorization for a card-not-present transaction.¹ A card-not-present transaction is a type of transaction conducted when the cardholder is in a location separate from the merchant, such as a transaction occurring over the telephone or over the Internet. *See id.* Improving authorization techniques in card-not-present transactions reduces the likelihood that such a transaction is fraudulent, which provides a direct benefit to the individual consumer. Claim 10, an independent method claim of the '894 patent recites:

A method for obtaining an authorization for a commercial transaction comprising:

keying an n character account code and an n character identification code into an input device, wherein said identification code is not an expiration date and wherein said account code and said identification code have a predetermined logical relationship;

communicating, from said input device to an authorization computer, said account code and said identification code; and

receiving a confirmation from said authorization computer of said predetermined relationship between said account code and said identification code.

(Addendum 10, Col. 8, lines 38-50).

This method involves the now well-known process of providing a card identification code (e.g., a 'CID' or 'CVV') in situations where the merchant cannot

¹ A full copy of that patent is included in the Addendum to this brief.

properly authenticate the cardholder, such as during online or telephone transactions. *See* Addendum 7, col. 2, line 44 to col. 3, line 26. Instead of providing a personal identification number ("PIN") which is associated with an account and provides access to an account, the card identification code, which is located on the card but does not provide automatic access to an account, is used to verify that the consumer currently possesses the transaction card at the time of purchase. *Id.*

Recognizing the value of this fraud reduction process to not only the financial services community, but also to the individual consumer, American Express donated the '894 patent to the not-for-profit corporation Consumer and Merchant Awareness Foundation ("CMAF"). According to the CMAF, "the core objective of CMAF is the cultivation and encouragement of responsible, proven practices that sustain and build consumer and merchant confidence in the financial services marketplace."² The CMAF seeks to achieve this objective by raising awareness of best practices to protect consumers and merchants. *Id.* The "CMAF views the '894 Patent as an asset that should be used to help fulfill its mission." *Id.* As owner of the '894 patent, the CMA can license the process disclosed in the '894

² *See*, CMAF, *About CMAF*, available at <http://cmafoundation.org/a-intellectual.php> (last visited April 6, 2008).

patent throughout the financial services industry. If patent protection had not been available to drive the initial innovation costs, this method may not have been developed or made available to the CMAF to advance the process industry-wide. CMAF, which is currently developing its licensing policy, states that it is committed to “refrain from actions that will result in enforcement of intellectual property against issuers, acquirers, merchants or consumers related to activity in the retail financial services and payment areas.”³ As a result of this policy and its licensing efforts, CMAF will make this important fraud-prevention technology available throughout the financial services industry.

CONCLUSION

Proper patent protection is critical for promoting innovation in industries, such as the financial services and information management industry, and at companies, such as American Express. This is not protection for protection's sake. Instead, this is real value that has a significant effect on the U.S. economy. Policy considerations require a balance between protecting rights in order to spur innovation without allowing overly broad patent protection that prevents follow-on

³ *About CMAF: Mission Statement* <http://www.cmafoundation.org/a-mission.php>
(last visited April 6, 2008)

invention. Removing the innovation incentive that patent protection offers would result in less innovation and less collaboration among industry participants. On the other hand, allowing appropriate patent protection of innovative processes, regardless of their implementations, fosters innovation and encourages joint venture. In the financial services industry, patent protection not only benefits the corporate participants but also benefits the general public in this era where full financial disclosure and transparency are paramount to a robust, innovative U.S. economy and essential national interests.

This Court should continue to treat business and information management processes as patentable under 35 U.S.C. § 101, and refrain from carving out a specific exception to patentability for these valuable, practical processes merely on the basis of their implementation. There should be no requirement that a method or process must result in a physical transformation of an article or be tied to a machine to be patent-eligible subject matter under § 101.

Respectfully submitted,

Maxine Y. Graham
AMERICAN EXPRESS COMPANY
General Counsel's Office
3 World Financial Center
200 Vesey Street
New York, NY 10285-4900

Of Counsel

April 7, 2008

Kenneth C. Bass, III
Robert Greene Sterne
Michelle K. Holoubek
*Counsel for Amicus Curiae
American Express Company*
STERNE, KESSLER, GOLDSTEIN
& FOX P.L.L.C.
1100 New York Ave., N.W.
Washington, DC 20005

**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATION,
TYPEFACE REQUIREMENTS, AND TYPE STYLE REQUIREMENTS**

1. This brief complies with the type-volume limitation of Federal Rule of Appellate Procedure 32(a)(7)(B).

The brief contains 2,931 words, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(a)(7)(B)(iii).

2. This brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type style requirements of Federal Rule of Appellate Procedure 32(a)(6).

The brief has been prepared in a proportionally spaced typeface using Microsoft® Word 2002 in 14 point Times New Roman.

Kenneth C. Bass, III
Counsel for Amicus Curiae
American Express Company

ADDENDUM



US006182894B1

(12) **United States Patent**
Hackett et al.

(10) **Patent No.:** **US 6,182,894 B1**

(45) **Date of Patent:** **Feb. 6, 2001**

(54) **SYSTEMS AND METHODS FOR
AUTHORIZING A TRANSACTION CARD**

(75) Inventors: **Ann Hackett**, Phoenix; **Lisa Arnold**,
Glendale; **Vickie Jordan**, Phoenix, all
of AZ (US)

(73) Assignee: **American Express Travel Related
Services Company, Inc.**, New York,
NY (US)

(*) Notice: Under 35 U.S.C. 154(b), the term of this
patent shall be extended for 0 days.

(21) Appl. No.: **09/181,734**

(22) Filed: **Oct. 28, 1998**

(51) **Int. Cl.**⁷ **G06K 5/00**

(52) **U.S. Cl.** **235/380; 235/382.5**

(58) **Field of Search** **235/380, 375,
235/382, 382.5, 379; 380/23**

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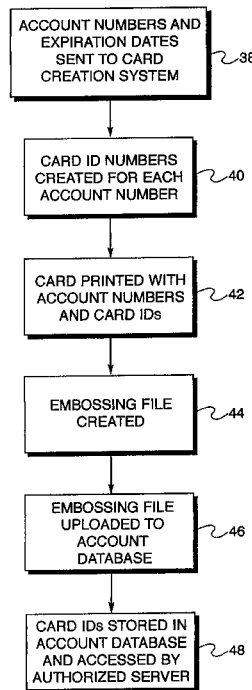
Primary Examiner—Thien M. Le

(74) *Attorney, Agent, or Firm*—Snell & Wilmer L.L.P.

(57) **ABSTRACT**

Instead of a PIN which is associated with an account and provides access to an account, a card identification code, which is located on the card but does not provide automatic access to an account, is used to verify that the consumer currently possesses the transaction card at the time of purchase and/or is the true card owner. At the time of card printing, an embossing file of account codes including associated identification codes is created and loaded into the account database. At the time of authorization, the identification code and the account code are entered into a POS device and sent to an authorization system. If the identification codes match, and other authorization parameters are satisfied, the transaction card is authorized.

18 Claims, 5 Drawing Sheets



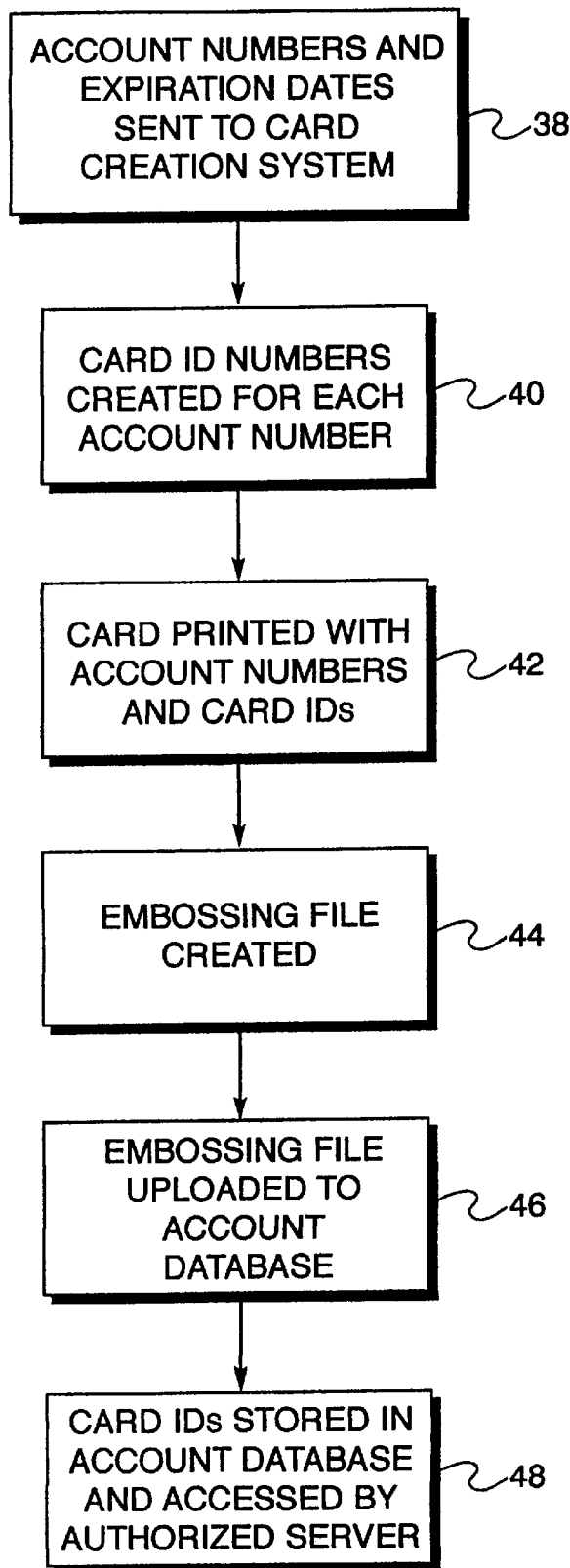


FIG. 1.

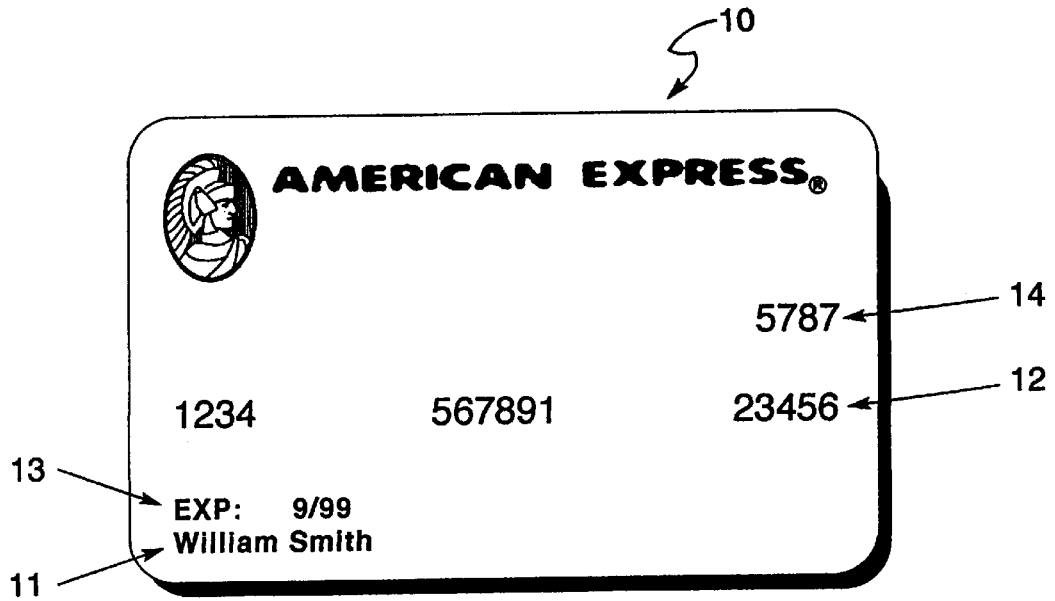


FIG. 2A.

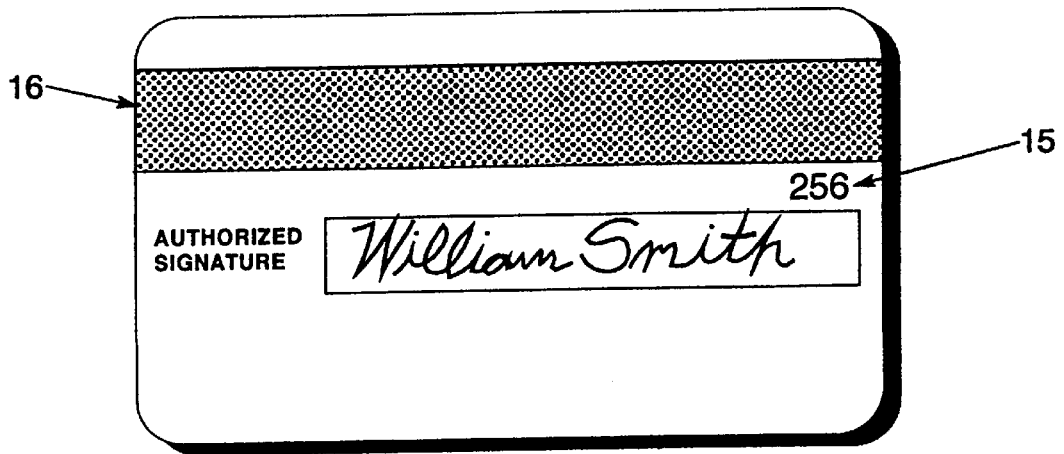


FIG. 2B.

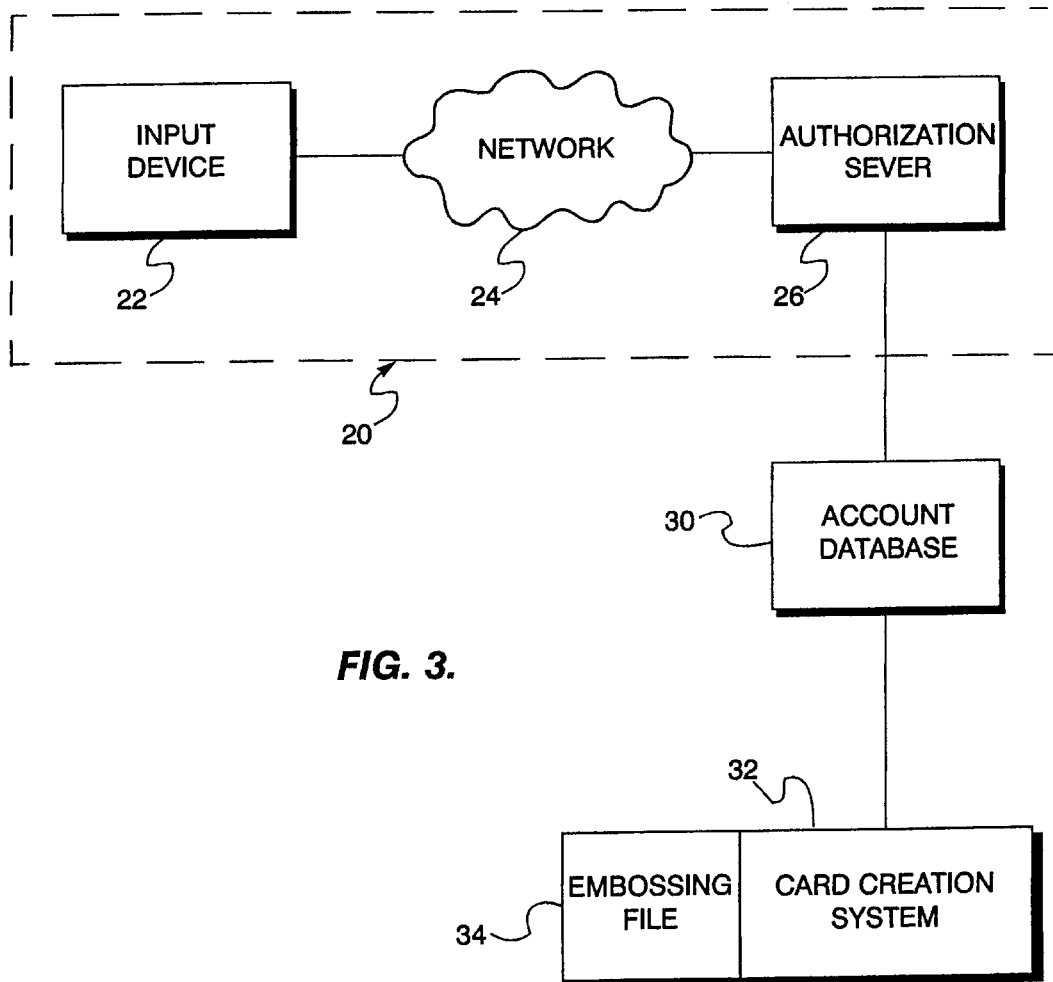


FIG. 3.

The table is a 7x5 grid. The first row is the header. The second row contains numerical data. The third and fourth rows also contain numerical data. The fifth and sixth rows contain numerical data. The seventh row contains four double quotes in the first four columns, and is empty in the fifth. Callout 12 points to the first three columns of the header. Callout 13 points to the second column of the header. Callout 14 points to the third and fourth columns of the header. Callout 15 points to the fourth and fifth columns of the header. Callout 30 points to the entire table.

ACCOUNT CODE	EXP. DATE	4-DIGIT ID CODE	3-DIGIT ID CODE	OTHER INFO
1234 567891 11121	1/99	1765	212	
3141 516178 19202	1/00	8274	314	
2122 232435 26278	5/99	5933	103	
3456 789101 12134	7/98	4116	149	
5678 910112 13145	6/99	3821	586	
1617 181920 21222	5/99	9298	567	
“	“	“	“	
“	“	“	“	
“	“	“	“	
“	“	“	“	

FIG. 4.

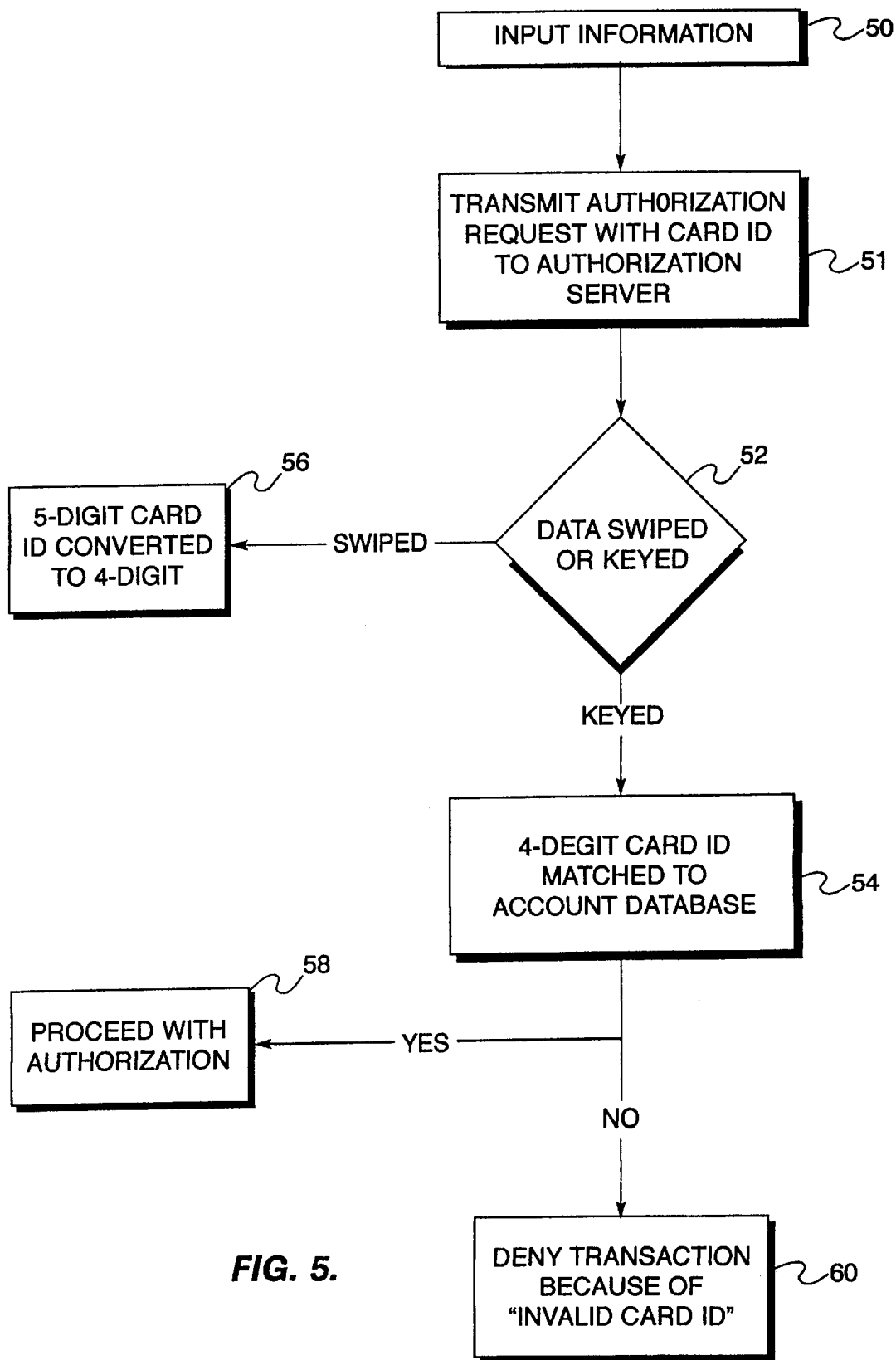


FIG. 5.

SYSTEMS AND METHODS FOR AUTHORIZING A TRANSACTION CARD

BACKGROUND OF THE INVENTION

1. Technical Field

The present invention relates, generally, to transaction card fraud reduction systems and methods and, more particularly, to verifying that a consumer is in possession of a transaction card and/or is the true card owner during a purchase transaction.

2. Background Information

Transaction cards such as, for example, credit cards, debit cards, bank cards, charge cards, smart cards and the like, have become increasingly popular for purchasing goods and services and for conducting other transactions. A transaction card typically includes information related to the issuer's name and logo, an account number, an expiration date and the cardholder's name. The cards may also have other information, serial number and/or the like printed on the card to represent other information about the transaction card or about the card member such as, for example, a group number, a promotion number, a card type number, a plastic issuance number and/or the like. Certain information is often embossed on the card with raised print, thereby allowing the information to be imprinted on a charge slip; however, the information that is unembossed (flat) would not be imprinted onto the charge slip. For many transaction cards, the information printed on the card is also contained within a magnetic stripe, a bar code and/or an integrated circuit (microchip) for automatic downloading/reading by a card reader.

Many card transactions are commenced by inserting, or sliding a card through, a card reader which automatically downloads the card information, thereby allowing the information to be used during the authorization process without the need for manual input or review of the card information. However, because of the substantial increase in fraudulent use and theft of transaction cards, the use of the card information is often supplemented by various fraud prevention techniques, such as requiring a signature to verify the consumer's agreement to the transaction or the entry of a PIN number to verify the consumer's authority to use the transaction card.

Additionally, certain card issuers, such as banks, incorporate the consumer's picture onto the face of the transaction card to give the merchant an additional verification procedure.

While the use of a signature, PIN or picture is effective for fraud reduction when the cardholder presents a card to a merchant, these options are not as effective, and may not be available, for other transactions. Particularly, transactions which do not require face-to-face contact between a consumer and merchant, such as the use of a transaction card to purchase items through the Internet or over the telephone (e.g., mail order). Moreover, many transactions may be alternatively completed without using the physical transaction card. For example, a consumer or merchant may simply key in the transaction card number into the keypad of a POS device or the keypad on an ATM.

When conducting Internet, telephone or keypad transactions, a cardholder may only need to provide a card account number and expiration date to allow the merchant to charge a particular account and verify that the transaction card is valid. Other verification information, such as a PIN number, is usually not disclosed because the PIN is typically

memorized by the cardholder and never disclosed to anyone. Because merchants often only request limited information to conduct a transaction over the Internet or the telephone, an increased potential for fraud exists due to the increased availability of this general information. In other words, regardless of a consumer's possession of the physical transaction card, a consumer can still fraudulently obtain and provide this general information.

Particularly, cardholders often provide a transaction card number to telemarketers, merchants, bank tellers and Internet sites, thereby allowing a merchant or clerk to retain the credit card number and associated information for later fraudulent use. Moreover, a person may overhear a transaction card number being disclosed over the telephone or, with the increase of mailbox thefts, a person may obtain a credit card number from a billing statement or promotional literature. Furthermore, advanced computer operators are able to intercept transaction card numbers which are transmitted over modems and/or the Internet. Accordingly, when a merchant simply requests a credit card number from a consumer, it is difficult for the merchant to ensure that the consumer placing the order has the transaction card in his or her possession and/or is the true cardmember, rather than using a stolen account number.

As stated above, the use of PIN numbers are typically limited to face-to-face or ATM transactions wherein the consumer personally enters a PIN into a keypad and the merchant does not need to have knowledge of the PIN. In non face-to-face transactions, the PIN would need to be disclosed to the merchant. However, due to security concerns, consumers prefer to not disclose their private PIN number to merchants and especially prefer to not disclose the PIN number over a telephone or through the Internet. Particularly, a PIN number is directly associated with the account number, and as such, may provide increased access to a transaction card account during a fraudulent transaction. Accordingly, a system is needed which allows the consumer to disclose a security number which is associated with the account number, but does not allow automatic access to the account.

BRIEF SUMMARY OF THE INVENTION

Due to security concerns during non face-to-face commercial transactions, consumers prefer to not disclose their private PIN number to merchants and especially prefer to not disclose the PIN numbers over a telephone or through the internet. Instead of a PIN which is associated with an account and provides access to an account, a card identification code, which is located on the card but does not provide automatic access to an account, is used to verify that the consumer currently possesses the transaction card at the time of purchase and/or is the true card owner.

Along with the account number, a transaction card includes a non-embossed four-digit or three-digit number, called a card identification code. During creation of a transaction card, a five-digit identification code is calculated from the account number, four-digit or three-digit identification code and the expiration date based upon a predetermined algorithm. A four-digit identification code is printed on the front of the card, an associated five-digit identification code is entered into the magnetic stripe and an associated three-digit identification code is printed in the signature panel. An embossing file of account numbers including associated identification codes is created and loaded into the account database. At the time of authorization, the four-digit number on the front of the card and the account number are

manually keyed into a POS device and sent to an authorization system. The four-digit number is matched to the four-digit number on file for that transaction card. If the four-digit numbers match, and other authorization parameters are satisfied, the transaction card is authorized.

Alternatively, when the card is swiped through a POS device, the five-digit number previously entered into the magnetic stripe, along with other information, is automatically transmitted to the authorization system. The five-digit number is decomposed using a mathematical algorithm, and the resulting three-digit and/or four-digit numbers are matched against the database record (which includes the originally assigned three or four-digit identification codes for the account number). If the respective three or four-digit numbers match, and other authorization parameters are satisfied, the transaction card is authorized.

Thus, the entry of an additional identification code helps verify that the consumer currently possesses the transaction card at the time of purchase or is the true card owner, rather than simply using a stolen account number. Accordingly, requiring entry of an identification code along with the account number provides an effective deterrent to fraudulent use of the account number. For example, systems and methods in accordance with the present invention at certain tested locations have provided fraud reduction of approximately 78%.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWINGS

The subject invention will hereinafter be described in conjunction with the appended drawing figures, wherein like numerals denote like elements, and:

FIG. 1 is an exemplary flow diagram of the card creation and identification code creation process;

FIG. 2a is a front view of an exemplary transaction card showing an account number and card identification code;

FIG. 2b is a rear view of an exemplary transaction card showing magnetic strip and card identification code;

FIG. 3 is an exemplary schematic diagram of a simplified transaction card authorization system;

FIG. 4 is an exemplary schematic diagram of an authorization database with associated identification codes in accordance with an embodiment of the present invention; and,

FIG. 5 is an exemplary flow diagram of the authorization process.

DETAILED DESCRIPTION OF THE INVENTION

To reduce fraud when conducting commercial transactions (i.e., the purchase of goods and services) using a transaction card 10, the present system requests entry of an additional number to help verify that the consumer has possession of the transaction card at the time of purchase or is the true card owner, rather than simply using a stolen account code. Wherein a PIN number is typically memorized and not written down, the present number, called a card identification code 14, 15 and 16, is preferably printed on or encoded in transaction card 10. Due to security concerns during non face-to-face transactions, consumers prefer to not disclose their private PIN number to merchants and especially prefer to not disclose the PIN number over a telephone or through the Internet. Instead of a PIN which is associated with an account and provides access to an account, a card identification code 14, 15 and 16, which does

not provide automatic access to an account, is used to help verify that the consumer currently possesses the transaction card at the time of purchase and/or is the true card owner.

With momentary reference to FIG. 2a, in accordance with the present invention, a transaction card 10 includes any device suitably configured to display an account code 12 and a card identification code 14. In a preferred embodiment, the transaction card is a credit card, charge card, debit card, smart card, bank card and/or the like. Transaction card 10 preferably includes information for conducting a transaction. In a preferred embodiment, the front face of transaction card 10 includes an account code 12 and a card identification code 14 located above account code 12. Account code 12 includes any number of characters (n characters) comprising any combination of numbers, letters, symbols or other indicia which are suitably configured to identify a transaction account. In a preferred embodiment, account code 12 is a 15-digit number which identifies an account code, including a routing number or other similar transaction numbers, corresponding to the card owner. One of ordinary skill in the art will appreciate that account code 12 may be associated with an individual account, a corporate account, an organization account, or any other entity and the account may represent a charge account, a credit account, a debit account, an electronic purse account, or any other financial account.

Card identification codes 14, 15 and 16 include any number of characters (n characters) comprising any combination of numbers, symbols, letters, or other indicia suitably configured to provide verification that the consumer has an actual card in possession at the time of purchase and/or is the true card owner, rather than simply using a stolen account code. In a preferred embodiment, card identification code 14 is printed on or encoded in transaction card 10. Card identification code 14 may be located on either side of the card, encoded into a medium on the card and may be embossed (raised lettering) or unembossed (flat) into the plane of the card. In a particularly preferred embodiment, card identification code 14 is located on the front face of transaction card 10 on the same side as, and above, account code 12. Moreover, card identification code 14 is preferably a four-digit, unembossed (flat) number printed within the plane of the card. One skilled in the art will appreciate that, along with other card member information, card identification codes 14, 15 or 16 may be initially printed on many transaction cards 10 before, during or after account code 12 is printed on transaction card 10. In a preferred embodiment, card identification codes 14 or 15 are logically related to card identification code 16.

After a consumer is approved for a transaction card, an account code 12, a four-digit identification code 14 and/or a three digit code 15, an expiration date 13 and other information are associated with the consumer's name in an account database 30 (see FIGS. 2a and 3). With reference to FIGS. 1 and 3, account code 12, a four-digit identification code 14 (or a three-digit identification code 15), an expiration date 13 and other information from account database 30 are preferably transmitted to a card creation system 32 (step 38). In a preferred embodiment, at the time of creating transaction card 10 for the consumer in accordance with the present invention, a five-digit identification code 16 is suitably calculated from account code 12, four-digit identification code 14 or three-digit identification code 15 and expiration date 13 based upon a predetermined algorithm (step 40). Five-digit identification code 16 is preferably calculated and encoded into the magnetic stripe because five-digit identification code 16 provides additional security by not being disclosed on the face of the card (only four-digit code 14 or three-digit code 15 are visible).

After determining identification codes **14**, **15** and **16**, transaction card **10** is preferably created with an embossed account code **12**, embossed expiration date **13**, embossed consumer's name **11** and non-embossed card identification codes **14**, **15** and **16** (step **42**). Particularly, in a preferred embodiment, a four-digit identification code **14** is printed (non-embossed) on the front of card **10** above account code **12**, an associated five-digit identification code **16** is encoded into the magnetic stripe and an associated three-digit identification code **15** is printed in the signature panel. One skilled in the art will appreciate that any one of the aforementioned card identification codes **14**, **15** and **16** may exist throughout this process alone or in any combination with the other card identification codes. For example, only identification code **14** may appear on the front of the card without any codes on the back of the card or in the magnetic stripe. Moreover, identification codes **14**, **15** and **16** may comprise any number of digits, symbols, characters, letters and/or the like and may be located in any location and in any medium on card **10**. For example, an identification code may be encoded into an integrated circuit in a smart card embodiment.

Upon printing of transaction cards **10**, an embossing file **34** including card identification codes **14**, **15** and **16** is created (step **44**). Embossing file **34** with associated identification codes **14**, **15** and **16** is next uploaded into account database **30** (step **46**). In a preferred embodiment, authorization server **26** communicates with, and analyzes the data within, account database **30** (step **48**). Alternatively, the use of a Hardware Security Module allows embossing file **34** to provide a simplified, more direct transmission of embossing information to account database **30** without the need for maintenance uploads. In a particularly preferred embodiment, as shown in FIG. **4**, identification codes are stored in a look-up table within account database **30**.

Referring to FIG. **3**, an exemplary authorization system **20**, account database **30** and card creation system **32** is shown. Authorization system **20** is any authorization system suitably configured to authorize a transaction card and notify an input device **22** of the authorization status. One skilled in the art will appreciate that authorization system **20** can be an existing authorization system, such as the Central Authorization System used by American Express, which is re-programmed or re-configured to preform the functions of the present invention or is a system specially configured to preform the functions of the present invention. In a preferred embodiment, authorization system **20** includes input device **22**, network **24** and authorization server **26**. Input device **22** is any device suitably configured to accept transaction information and transmit the information for approval. In a preferred embodiment, input device **22** is a telephone, computer, point-of-sale terminal, ATM and/or the like. Input device **22** preferably communicates with network **24**, wherein network **24** is any device or software suitably configured to transmit information. In a preferred embodiment, network **24** is a modem, a PSTN, an Internet, an Intranet, a direct link, or any combination thereof.

With continued reference to FIG. **3**, network **24** provides a communication link between input device **22** and authorization server **26**. Authorization server **26** is any device suitably configured to authorize a transaction and/or transaction card and notify input device **22** of the authorization status. In a preferred embodiment, authorization server **26** is a centralized authorization system including transaction account codes. One skilled in the art will appreciate that authorization server **26** can be a centralized database providing authorization information to various input devices **22**.

Moreover, one skilled in the art will appreciate that authorization server **26** may include any combination of components, software, servers and computers suitably configured to not only authorize transactions and/or transaction cards, but also to provide additional transaction support such as report generation and promotional programs. Authorization server **26** is preferably in communication with, and interrogates, account database **30**. One skilled in the art will appreciate that account database **30** can be a separate component, integrated into authorization server **26** or simply software within authorization server **26** or within input device **22**. In a preferred embodiment, account database **30** includes a look-up table (see FIG. **4**), thereby allowing verification of the association between account codes **12** and identification codes **14**, **15** and **16**.

Referring to FIG. **5**, when a consumer uses transaction card **10**, a clerk, sales representative, merchant, consumer or other authorized person inputs account code **12** and card identification code **14**, **15** or **16**, along with any other transaction information such as purchase amount, etc., into input device **22** (step **50**). In one embodiment, card identification code **14** or **15** is manually keyed into input device **22**. The keyed information is sent via network **24** to authorization server **26** (step **51**). Authorization server **26** suitably determines if the data was keyed in or swiped through input device **22** (step **52**). In a preferred embodiment, to help determine if the data was keyed or swiped, the keyed data includes different formatting, uses different communication lines, different number of digits in the identification code and/or different header information than information read from the magnetic stripe.

After authorization server **26** determines that the information is manually keyed information, authorization server **26** suitably interrogates account database **30** to determine if the keyed identification code **14** or **15** matches the respective identification number on file for that transaction card (step **54**). If the respective identification codes **14** or **15** match, the authorization process proceeds to determine if other authorization parameters are satisfied (step **58**). If the respective identification codes **14** or **15** do not match, the transaction is denied and an "invalid Card ID" message is transmitted to the input device **22** (step **60**). In an alternative embodiment, if the identification numbers do not correspond, authorization server **26** preferably prompts input device **22** to re-enter the card identification code and the process is repeated. If the numbers do not correspond again, transaction card **10** is denied.

When the card is swiped through a POS device **22**, the five-digit number previously entered into the magnetic stripe, along with other information, is automatically transmitted to authorization server **26**. Authorization server **26** suitably determines that the data originated from a magnetic stripe (step **52**) by various methods such as, for example, data format, communication lines from which the data was sent, header information and/or the number of digits in the identification code. Authorization server **26** preferably decomposes the five-digit identification code **16** into a four-digit number using a predetermined mathematical algorithm (step **56**). In a preferred embodiment, this algorithm is the inverse of the algorithm set forth above used to create the five-digit identification code **16**. Alternatively, account database **30** includes five-digit identification codes **16** for each account code **12**, thereby eliminating the need to transform the five-digit code **16** to a four-digit code **14**. The algorithm is optimally a robust and secure algorithm which conforms to the Data Encryption Standard. Similar to above, authorization server **26** then suitably interrogates account data-

base **30** to determine if the derived four-digit number **14** matches the four-digit number on file for that transaction card (step **54**). If the four-digit numbers match, the authorization process proceeds to determine if other authorization parameters are satisfied (step **58**). If the four-digit numbers do not match, the transaction is denied and an "invalid Card ID" message is transmitted to the input device **22** (step **60**). In an alternative embodiment, if the numbers do not correspond, authorization server **26** preferably prompts input device **22** to re-swipe the card identification code **16** and the process is repeated. If the numbers do not correspond again, transaction card **10** is denied.

In a further alternative embodiment, the incorporation of card identification code **14** into a particular authorization process is optional depending on the type of transaction card **10** or account code **12** used for the financial transaction. In other words, when authorizing a transaction, the same authorization system **20** may not require a card identification code **14** for particular account codes **12**. For example, certain consumers may be enrolled in a promotional program which includes a cardless account without a card identification code **14**. As such, while other verification means typically exist, authorization server **26** may not require entry of an identification code or account database **30** may include any suitable automatic authorization for certain ranges of account codes **12**, regardless of entry of a card identification code **14**.

In a preferred embodiment, account codes **12** are subject to periodic update as new card promotions or new accounts are opened. For security reasons, card identification codes **14**, **15** or **16** are preferably only retained in authorization server **26** until authorization or rejection is received by input device **22**. Moreover, in a preferred embodiment, card identification codes **14**, **15** or **16** are not permanently stored in the input device **22** or the authorization server **26** and are not printed on documents (i.e., receipts, tickets, itineraries, etc.).

Although the invention has been described herein in conjunction with the appended drawings, those skilled in the art will appreciate that the scope of the invention is not so limited. Modifications in the selection, design and arrangement of various components and steps discussed herein may be made without departing from the scope of the invention as set forth in the claims. Moreover, the present invention may be described herein in terms of functional block components and various processing steps. It should be appreciated that such functional blocks may be realized by any number of hardware components configured to perform the specified function. For example, the present invention may employ various integrated circuit components, e.g., memory elements, digital signal processing elements, look-up tables, and the like, which may carry out a variety of functions under the control of one or more micro-processors or other control devices.

In addition, those skilled in the art will appreciate that the present invention may be practiced in any number of data communication contacts and that the authorization system described herein is merely one exemplary application for the invention. Further, it should be noted that the present invention may employ any number of conventional techniques for data transmission, training, signal processing and conditioning, and the like. Such general techniques that may be known to those skilled in the art are not described in detail herein.

We claim:

1. A system for authorizing commercial transactions comprising:

a transaction card having an n character account code and an n character identification code, wherein said identification code is not an expiration date and wherein said account code and said identification code have a predetermined logical relationship;

an input device for receiving said account code and said identification code; and,

an authorization computer in communication with said input device, said authorization computer configured to confirm said predetermined relationship between said account code and said identification code.

2. The system of claim **1**, wherein said transaction card is at least one of a credit card, debit card, bank card, charge card and smart card.

3. The system of claim **1**, where in said identification code is unembossed.

4. The system of claim **1**, wherein said account code and said identification code are on the same side of said transaction card.

5. The system of claim **1**, wherein said input device is at least one of a keypad, POS terminal, ATM terminal, computer and telephone.

6. The system of claim **1**, wherein said identification code is at least one of a three-digit number, four-digit number and five-digit number.

7. The system of claim **1**, wherein said account code and said identification code are on the same side of said transaction card and said identification code is an unembossed four-digit number located above said account code.

8. The system of claim **1**, wherein said authorization computer is configured to transform said identification code to a second identification code.

9. The system of claim **1**, wherein said authorization computer communicates with an account database and said authorization computer is configured to confirm said predetermined relationship between said account code and said identification code by interrogation of said account database.

10. A method for obtaining an authorization for a commercial transaction comprising:

keying an n character account code and an n character identification code into an input device, wherein said identification code is not an expiration date and wherein said account code and said identification code have a predetermined logical relationship;

communicating, from said input device to an authorization computer, said account code and said identification code; and,

receiving a confirmation from said authorization computer of said predetermined relationship between said account code and said identification code.

11. The method of claim **10**, wherein said keying step includes keying said n character account code and said n character identification code into said input device, wherein said input device is at least one of a keypad, POS terminal, ATM terminal, computer and telephone.

12. The method of claim **10**, wherein said keying step includes keying said account code and said identification code which are located on a transaction card, further wherein said account code and said identification code are printed on the same side of said transaction card and said identification code is an unembossed four-digit number located above said account code.

13. The method of claim **10**, further comprising transforming, via said authorization computer, said identification code to a second identification code.

14. The method of claim **10**, further comprising communicating between said authorization computer and an

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account database and confirming, via said authorization computer, said predetermined relationship between said account code and said identification code by interrogating said account database.

15. A transaction card for authorizing commercial transactions comprising:

an n character account code in a first field;

an n character identification code in a second field, wherein said identification code is not an expiration date;

wherein said account code and said identification code have a predetermined logical relationship;

said transaction card configured to provide, via an input device, said account code and said identification code to an authorization computer, wherein said authorization computer is configured to confirm said predetermined relationship between said account code and said identification code.

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16. The system of claim 15, wherein said transaction card is at least one of a credit card, debit card, bank card, charge card and smart card.

17. The system of claim 15, wherein said account code and said identification code are on the same side of said transaction card and said identification code is an unembossed four-digit number located above said account code.

18. At an authority responsible for authorizing a transaction, a computer-implemented method for handling an authorization request, comprising the following steps:

receiving an n character account code and an n character identification code from an input device, wherein said account code and said identification code have a predetermined logical relationship;

confirming said predetermined relationship between said account code and said identification code; and, processing the authorization request.

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