



SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
INVENTARIO

CSA963564

Organizacion CSA Ltda

Industria y Comercio
SUPERINTENDENCIA

R/PCT

SOLICITUD

PATENTE DE INVENCION

03-22576

EXPEDIENTE N°

54. TÍTULO Tarjeta de Datos Miniatura

51. CLASIFICACIÓN INTERNACIONAL G06K 19/00

71. SOLICITANTE Bank of America Corporation

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74. APODERADO Dilia Maria Rodriguez D'Alaman

22. BOGOTÁ, D. C. 14 Marzo 2003

202038
2070107

041



FORMULARIO ÚNICO DE SOLICITUD DE PATENTE
PCT
ENTRADA EN FASE NACIONAL

1) SOLICITUD DE:
☒ Patente de invención ☐ Patente de Modelo de Utilidad

☐ Capitulo I. ☒ Capitulo II.

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5) PCT (86)
Solicitud Internacional No. PCT/US02/01284 Fecha: Enero 18, 2002
Publicación Internacional No. WO 02/067190 A2 Fecha: Agosto 29, 2002

6) Título (54) TARJETA DE DATOS MINIATURA

7) Clasificación Internacional (51) G06K 19/00

8) PRIORIDAD	33) Pais de Origen	(32) Fecha	(31) Número de Solicitud
SI ☒ NO ☐	ESTADOS UNIDOS	ENE. 25, 2001	60/263,756
	ESTADOS UNIDOS	NOV. 19, 2001	09/988,151

9) Comprobante de pago N° _____ Fecha _____

NIT : 800176089-2

2

RECIBO OFICIAL DE CAJA : 03 - 10,285
FECHA : FEBRERO 11 DE 2003

***** CONSIGNACION *****

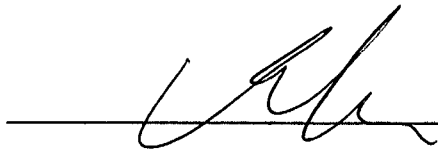
DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	Nº. PAGO	FECHA PGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	9932982	11/02/2003	2,692,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01	SOLICITUDES	
1		TRAMITES DE SOL. DE PATENTE DE IN	400,000.00
		TOTAL :	\$ 400,000.00

SON: CUATROCIENTOS MIL PESOS

RESPONSABLE :



SUPERINDUSTRIA Y COMERCIO
Radicacion : 03022576 00000000 Folios: 177
Fecha (AMD): 2003-03-18 12:55:18
Tramite : 011 PCT-PATENT 379 FASE NACI 411 PRESENTAC
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

10)

ANEXOS

- ☒ Comprobante de pago de la tasa de presentación de la solicitud
 - ☐ Comprobante de pago por reivindicación de prioridad
 - ☐ Documento que acredita la existencia y representación legal cuando el solicitante sea persona Jurídica
 - ☐ Poderes, si fuera el caso
 - ☐ Documento de cesión del inventor al solicitante o a su causante
 - ☐ Declaraciones
 - ☐ Copia de la solicitud Internacional. (Resumen, descripción, reivindicación, Dibujos).
 - ☒ Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicación, Dibujos)
 - ☒ Copia del examen preliminar efectuado por la IPEA
 - ☐ De ser el caso, copia del contrato de acceso
 - ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas
 - ☐ De ser el caso, certificado de depósito del material biológico
 - ☒ Arte final 12 x 12 y 6 x 6 cm
 - ☒ De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionados parcial o totalmente con la invención de esta solicitud.
 - ☐ Otros
1. Patente Nr. US6,471,127 B2
 2. Oficinas designadas
 3. Solicitud PCT
 4. Búsqueda internacional WO 02/067190 A2
 5. Demanda PCT Capítulo II
 6. Copia documento de cesión de los inventores

11) FIGURA CARACTERÍSTICA:

12) Solicitud concesión de la patente,

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Instrucciones para el diligenciamiento del presente formulario. Ver reverso de esta pagina

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TARJETA DE DATOS MINIATURA

ANTECEDENTES DE LA INVENCION

Esta invención se relaciona de manera general con tarjetas de datos, tales como las tarjetas de crédito, que contienen una tira magnética u otros medios para almacenamiento de información. Más particularmente, esta invención se relaciona con tales tarjetas que son de tamaño pequeño.

Las tarjetas de varias clases se han vuelto ubicuas en la sociedad moderna. Las personas a menudo llevan un número de tarjetas en su billetera o su maletín, incluyendo tarjetas de crédito, tarjetas ATM o de banco, tarjetas debitos, "tarjetas inteligentes", tarjetas de seguros, licencias de conductor, tarjetas de identificación, tarjetas para llamadas telefónicas, tarjetas de transito, tarjetas de bibliotecas, y llaves de hotel para entrada tipo tarjeta. Un número creciente de transacciones de los consumidores requiere el uso de estas tarjetas, por ejemplo, como la forma de pago, o como identificación necesaria para otra forma de pago o admisión. El acceso rápido y preciso a ciertas tarjetas

individuales es útil y deseable tanto para el consumidor como para el vendedor de bienes o servicios.

Técnicamente, los consumidores guardan sus tarjetas de crédito y otros tipos de tarjetas en su billetera o maletín. Estas billeteras y maletines están frecuentemente equipadas con manguitos o ranuras para mantener una o más tarjetas en una disposición seleccionada por el usuario. En razón de la proliferación de los tipos y números de tarjetas llevados por los consumidores, las tarjetas son a menudo mantenidas de manera muy apretada dentro de estos manguitos o ranuras, haciendo el retiro de una tarjeta particular difícil. La dificultad de remover una tarjeta seleccionada simple incrementa el tiempo necesario para la transacción, originando que las tarjetas almacenadas sean frecuentemente rebarajadas y potencialmente desorganizadas, incrementando la probabilidad de que la tarjeta se caiga o se pierda.

Mientras que el número de tarjetas típicamente llevado por los consumidores se incrementa, la mayoría de los consumidores usan ciertos tipos de tarjeta mucho más frecuentemente que otras. Por ejemplo, algunos

consumidores pueden usar una tarjeta de crédito para casi cada transacción, pero solo raramente, si es que alguna vez, utilizan las tarjetas de llamadas, las tarjetas de bibliotecas, o las tarjetas de seguro. En razón a que un subconjunto del número total de tarjetas llevado por los consumidores se debe accesar repetidamente, es particularmente deseable mejorar la accesibilidad de estos tipos de tarjetas.

Una forma de mejorar la accesibilidad de las tarjetas frecuentemente utilizadas es permitirle ser almacenadas en sitios separados de la tradicional billetera maleta. Tales tarjetas podrían ser almacenadas en cadenas de llaves, cuerdas, ganchos, u otros dispositivos similares que son fácilmente retirados de una bolsa o bolsillo. De esta forma, cuando el consumidor necesita utilizar la tarjeta durante una transacción, la tarjeta puede ser fácilmente retirada y dada al comerciante. Esto suministra un nivel agregado de conveniencia al consumidor al hacer el proceso de pago más rápido y simple. Adicionalmente, el comerciante es capaz de mover a los clientes a través de la cola más rápidamente, mejorando la satisfacción del cliente. Un beneficio adicional de almacenar tarjetas frecuentemente

utilizadas en una cadena de llaves o dispositivos similares es que la posibilidad de que la tarjeta se pierda disminuye. Esto en razón a que una tarjeta simple es mucho más fácilmente extraviada que una tarjeta adherida a una cadena de llaves.

Las tarjetas de tamaño convencional, sin embargo, son demasiado grandes y problemáticas para ser convenientemente almacenadas en una cadena de llaves o dispositivo similar. Los ítems individuales sobre una cadena de llaves deben ser pequeños y compactos de tal forma que la cadena de llaves pueda acomodar numerosos ítems. Adicionalmente, la cadena de llaves y los similares son a menudo ubicadas en bolsillos de ropa, los cuales pueden ser pequeños. Finalmente, los ítems más grandes, tales como las tarjetas de crédito convencionales, podrían ser dobladas o dañadas de alguna otra forma cuando se almacenan en un dispositivo tal como en una cadena de llaves. De esta forma, para que una tarjeta sea efectivamente llevada en una cadena de llaves, su tamaño debe ser significativamente reducido.

El grado en el cual las tarjetas convencionales se pueden reducir en tamaño, sin embargo, está limitado por

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los requerimientos de los lectores de tarjetas de banda magnética estándar, tales como los terminales punto de venta ("POS") a través de los cuales el usuario "barre" la tarjeta para hacer una compra o pago. Con el fin de asegurar la Inter. operatividad entre los lectores de banda magnética y las tarjetas que llevan bandas magnéticas, los parámetros que definen la banda magnética están gobernados por la Internacional Organization for Standardization (ISO) y la Internacional Electrotechnical Comisión (IEC). La ISO/IEC 7811 suministra estándares para las características físicas de la banda magnética que incluyen la localización de la banda sobre la tarjeta, el perfil de la superficie de la banda, y la altura de la banda por encima de la superficie de la tarjeta. Sería ventajoso para una tarjeta de tamaño reducido cumplir con la ISO/IEC 7811, o ser de alguna otra manera compatible con los lectores de tarjeta existente y los terminales POS.

El funcionamiento adecuado de la banda magnética es muy importante. En las tarjetas convencionales, tales como las tarjetas de crédito, las bandas magnéticas contienen información codificada que los lectores electrónicos pueden leer para desarrollar una función o

confirmar una identificación. Por ejemplo, en las tarjetas crédito y débito, la banda magnética esta usualmente codificada con una información de cuenta específica tal como el número de tarjeta de crédito, el nombre del portador, la fecha de expiración de la tarjeta, y un código de identificación personal. Si el dispositivo electrónico para lectura de la información codificada no puede leer adecuadamente la banda magnética, el vendedor debe ingresar la información manualmente, utilizando un teclado, teléfono, u otro dispositivo similar. El ingresar manualmente la información codificada agrega tanto costos directos como indirectos al vendedor. Por ejemplo, el tiempo adicional necesario para ingresar la información manualmente puede incrementar las necesidades de registrar los operadores y disminuye la capacidad del vendedor de atender otros asuntos de los clientes. Además, los vendedores son frecuentemente cargados con tarifas de transacción que sienten por el emisor de la tarjeta por una transacción ingresada manualmente.

De esta forma, existe necesidad de suministrar tarjetas, tales como tarjetas de crédito, que sean de tamaño reducido comparadas con las tarjetas habitualmente

usadas, y a un sean operables con los lectores habitualmente utilizados. Tal tarjeta mejoraría grandemente la eficiencia de las transacciones frecuentes, incluyendo transacciones de ventas, al permitirle a las tarjetas regularmente utilizadas ser rápida y fácilmente retiradas. Adicionalmente, en razón a que tal tarjeta podría ser fácilmente almacenada en una cadena de llaves o dispositivo similar, la probabilidad de que la tarjeta se pierda o refunda se reduce. Finalmente, en razón a que tal tarjeta sería compatible con los lectores habitualmente utilizados, no se requeriría un rediseño de la tecnología de lectores de tarjeta existentes.

BREVE RESUMEN DE LA INVENCION

En un aspecto, la presente invención suministra una tarjeta de datos que es de un tamaño reducido comparada con las tarjetas de un tamaño de tarjeta de crédito, y contiene un medio de almacenamiento de información, tal como una banda magnética o un chip de computadora, que puede ser leído por la tecnología de lectores de tarjeta existente.

En otro aspecto, una tarjeta de datos de tamaño reducido se suministra con una banda magnética, la cual se localiza cerca de un borde de la tarjeta, sobre el cual se codifican datos. Tal banda magnética es de tamaño reducido comparada con las bandas magnéticas encontradas en las tarjetas de tamaño convencional, y contienen datos codificados a una mayor densidad de bits que sobre las tarjetas de tamaño convencional. La banda magnética es compatible con la tecnología de lectores De tarjeta existente.

En aun otra modalidad, una tarjeta de datos de tamaño reducido se suministra con un hueco para permitir el almacenamiento en una cadena de llaves, y el núcleo puede estar compuesto, al menos en parte, de poliéster. Adicionalmente, la superficie de la tarjeta de datos de la presente invención podría ser suministrada con hoyuelos resaltados o cráteres para mejorar la agarrabilidad de la tarjeta. Adicionalmente, la información puede ser impresa sobre la superficie de la tarjeta, con el fin de reducir o eliminar la necesidad de labrar la tarjeta con letras o labrados resaltados.

En aún otro aspecto, la tarjeta de datos de tamaño reducido de la presente invención puede tener un borde angulado.

BREVE DESCRIPCION DE LOS DIBUJOS.

La figura 1A es una ilustración de una vista frontal de una tarjeta de crédito convencional.

La figura 1B es una ilustración de una vista posterior de una tarjeta de crédito convencional.

La figura 2A es una ilustración de una vista frontal de una modalidad preferida de la tarjeta de datos de tamaño reducido de la presente invención.

La figura 2B es una ilustración de la vista posterior de la modalidad mostrada en la figura 2A.

La figura 3A es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos de tamaño reducido de la presente invención.

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La figura 3B es una ilustración de la vista posterior de la modalidad mostrada en la figura 3^a.

La figura 4A es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos de tamaño reducido de la presente invención.

La figura 4B es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos de tamaño reducido de la presente invención.

La figura 4C es una ilustración de la vista posterior de la modalidad mostrada en la figura 4A.

La figura 4D es una ilustración de una vista posterior alternativa de la modalidad mostrada en la figura 4A.

La figura 5A es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos de tamaño reducida de la presente invención.

La figura 5B es una ilustración de la vista posterior de la modalidad mostrada en la figura 5A.

La figura 6A es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos de tamaño de tamaño reducido de la presente invención.

La figura 6B es una ilustración de la vista posterior de la modalidad mostrada en la figura 6A.

La figura 7A es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos de tamaño reducido de la presente invención.

La figura 7B es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos de tamaño reducido de la presente invención.

La figura 7C es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos reducida de la presente invención.

La figura 8A es una vista parcial en sección de otra modalidad preferida de la tarjeta de datos de tamaño reducido de la presente invención tomada a través de la

banda de rodadura donde la banda de rodadura incluye hoyuelos resaltados.

La figura 8B es una vista parcial en sección de otra modalidad preferida de la tarjeta de datos de tamaño reducida de la presente invención tomada a través de la banda de rodadura donde la banda de rodadura incluye cráteres.

La figura 9A es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos de tamaño reducida de la presente invención.

La figura 9B es una ilustración de la vista posterior de la modalidad mostrada en la figura en la figura 9A.

La figura 9C es una ilustración de la vista lateral de la modalidad mostrada en la figura 9A.

La figura 10 es una ilustración de los estándares ISO/IEC 7811 para localización y anchura de las pistas 1 y 2 de los datos de banda magnética.

La figura 11 es una ilustración de los estándares ISO/IEC 7811 para localización y anchura de la pista 3 de datos de banda magnética.

La figura 12 es una ilustración de los estándares ISO/IEC 7811 para localización y tamaño de la banda magnética.

La figura 13A es una ilustración de la vista frontal de otra modalidad preferida de la tarjeta de datos de tamaño reducido de la presente invención.

La figura 13B es una ilustración de la vista posterior de la modalidad mostrada en la figura en la figura 13A.

DESCRIPCION DETALLADA DE LA INVENCION

Se hace ahora referencia a las modalidades preferidas presentes de la invención, cuyos ejemplos se ilustran en los dibujos que la acompañan.

Las figuras 1A-B ilustran una modalidad de una tarjeta de crédito convencional. La figura 1A muestra el

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lado frontal de una tarjeta de crédito de tamaño estándar convencional 10, que es típicamente labrada utilizando letras resaltadas con un número de tarjeta de crédito 11, una fecha de expiración 12 y el nombre del portador de la tarjeta 13. Tal tarjeta también usualmente mantiene el nombre del banco emisor 14, y la compañía de tarjeta de crédito, tal como American Express®, MasterCard®, o Visa®, 15. Esta también puede contener otra información, tal como los logos del patrocinador y/ un "platinum" o indicación similar. Adicionalmente, la tarjeta de crédito puede contener una fotografía de identificación del portador de la tarjeta con propósitos de seguridad. El lado posterior de la tarjeta convencional 10, mostrada en la figura 1B, contiene típicamente una caja 16 que se puede firmar por el portador de la tarjeta que se utiliza para propósitos de verificación cuando se hace una compra. Adicionalmente, el lado posterior de la tarjeta 10 contiene una banda magnética 17, que corre paralela a la dimensión más larga de la tarjeta. La banda magnética 17 almacena información, tal como el número de la tarjeta de crédito, que se puede leer por un punto convencional de terminales de venta ("POS"). Una tarjeta de crédito estándar es aproximadamente 33/8 de pulgada de largo por 2 1/4 de pulgada de alto, para una proporción de aspecto

X

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(longitud/altura) de aproximadamente 1.5 y tiene un grosor de aproximadamente 0,75 mm.

La tarjeta de la presente invención incluye un medio de almacenamiento de información. Por "medio de almacenamiento de información", se significa un medio que es agregado a la tarjeta que almacena información de una manera magnética, electrónica, o electromagnética. Este término no incluye información impresa o fijada o imprimida directamente sobre la tarjeta. Medios de almacenamiento de información de ejemplo adecuados para el uso con la presente invención incluyen, pero no están limitados a bandas magnéticas y chips de computadora.

Las figuras 2A-B describen una modalidad preferida de la presente invención, que incluye una tarjeta generalmente rectangular 20, una banda magnética 21, y un hueco 22. las dimensiones de la tarjeta 20 son aproximadamente 2 y 1/8 de pulgada de largo por 1 y 1/4 de pulgada de alto para una proporción de aspecto (longitud/altura) de aproximadamente 1.7, y un grosor de aproximadamente 0,75 mm. Esta es una reducción significativa de las dimensiones de una tarjeta de crédito estándar. Como se apreciaría por un experto en la

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técnica, las dimensiones específicas anteriores son solo representativas, y la presente invención no está limitada a ninguna dimensión e particular. Preferiblemente, la presente invención es llevada a cabo utilizando tarjetas con dimensiones que varían en longitud de aproximadamente 1 pulgada a 3 pulgadas, varían en altura desde aproximadamente 1 pulgada a $1 \frac{7}{8}$ de pulgada. De esta forma, la proporción de aspecto (longitud/altura) podría variar desde aproximadamente 0,53 ($1/1,875$) a 3 ($3/1$).

La banda magnética 21 está localizada sobre e lado posterior de la tarjeta 20, como se muestra en la figura 2B y está orientada perpendicularmente a la dimensión más larga de la tarjeta. Alternativamente, la banda magnética se podría localizar sobre el lado frontal de la tarjeta 20. En una modalidad de a presente invención, la banda magnética 21 es de aproximadamente 0,41 pulgadas de ancho. En otra modalidad mostrada por ejemplo en las figuras 33A-B la banda magnética 31 es de aproximadamente 0,25 pulgadas de ancho.

La ISO/IEC 7811 suministra estándares para la localización de la banda sobre la tarjeta, el perfil de la superficie de la banda, y la altura de la banda por

encima de la superficie de la tarjeta. Generalmente, los diseñadores de la tarjeta intentan cumplir con estos estándares para asegurarse la compatibilidad con los terminales POS existentes. Inesperadamente, la tarjeta de la presente invención es compatible con los terminales de punto de venta sin cumplir con varios de los aspectos de los estándares ISO/IEC, como se explica con más detalle adelante.

Finalmente, el hueco 22 es mostrado como localizado en una esquina de la tarjeta 20, y le permite a la tarjeta ser fácilmente llevada en una cadena de llaves o dispositivo similar. Debe ser evidente para el experto en la técnica que el hueco 20 se puede localizar en cualquier parte de la tarjeta que le permita a la tarjeta ser llevada por una cadena de llaves o dispositivo similar y no interfiera con la banda magnética.

Las figuras 3A-B muestran una modalidad alternativa preferida. Como en la modalidad previa esta modalidad incluye una tarjeta generalmente rectangular 30, una banda magnética 31, que esta orientada perpendicularmente a la dimensión más larga de la tarjeta, y un hueco 32. Aquí, sin embargo, la banda magnética 31 es más estrecha

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en lo ancho que la banda magnética 21 de la figura 2B. Una banda magnética más estrecha se puede utilizar cuando se necesita menos información almacenada en la banda magnética o cuando las técnicas de codificación permiten que mas información sea almacenada en un espacio reducido.

Las figuras 4A-D muestran a modalidades preferidas alternativas. La figura 4A muestra una tarjeta de forma generalmente rectangular 40 con un hueco 42. Las dimensiones de la tarjeta ($2 \frac{1}{8}$ pulgadas por $1 \frac{1}{4}$ pulgadas) son mostradas sobre a figura 4^a y son significativamente reducidas de la tarjeta de crédito de tamaño estándar. Adicionalmente, la tarjeta 40 contiene una fotografía de identificación 43, varios logos 44 y 45, y una información adicional 46. Además, la información labrada, tal como el número de tarjeta de crédito de la fecha de expiración (no mostrada) se puede incluir. Otras disposiciones de logos, e información debe ser evidente para un experto en la técnica de esta descripción o de la práctica. Por ejemplo, la figura 4B muestra la tarjeta 40' que es similar a la tarjeta 40 (figura 4A) pero sin la fotografía de identificación, y

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con una disposición diferente de logos y otra información.

La figura 4C muestra el lado posterior de la tarjeta 40, descrito en la figura 4A, que incluye la banda magnética 41 orientada perpendicularmente a la dimensión más larga de la tarjeta. Adicionalmente, la figura 4C incluye un bloque de firma 47. El bloque de firma 47 debe ser firmado por el portador de la tarjeta, y se utiliza para verificación de la firma cuando se hace una compra. Finalmente el lado posterior de la tarjeta 40 puede contener logos 48 y otra información, como sería evidente a un experto en la técnica.

La figura 4A muestra disposiciones alternativas del lado posterior de la tarjeta 40. Esta muestra la banda magnética 41' que es más angosta que la banda magnética 41 de la figura 4C. Las bandas magnéticas más estrechas se pueden utilizar cuando se requiere que menos información sea almacenada en la banda magnética, o cuando las técnicas de codificación permiten que más información sea almacenada en menos espacio.

Las figuras 5A-B muestran una modalidad alternativa preferida, que incluye una tarjeta de forma generalmente de forma rectangular 50, y una banda magnética 51, orientada perpendicularmente a la dimensión más larga de la tarjeta. A diferencia de las modalidades previas, la presente modalidad no contiene un hueco. Mientras que un hueco es una forma de ayuda para unir una tarjeta de la presente invención a una cadena de llaves o dispositivo similar, tal hueco no se requiere. De esta forma, la tarjeta se puede unir a la cadena de llaves mediante un clip o un dispositivo similar. Adicionalmente, la tarjeta de la presente invención no requiere ser almacenada sobre una cadena de llaves o dispositivo similar y podría ser almacenada de cualquier forma escogida por el consumidor, tal como directamente en el bolsillo o bolsa del consumidor. Debe ser fácilmente evidente para los expertos que cualquiera de las modalidades descritas aquí se podría modificar de tal forma que el hueco se remueva.

La figura 6A-B muestran aun otras modalidades preferidas alternativas, que incluyen una tarjeta de forma generalmente rectangular 60, una banda magnética 61, y un hueco 62.... La banda magnética 61 está orientada paralela a la dimensión más larga de la tarjeta. Como se

describe anteriormente, la banda magnética 61 es preferiblemente compatible con los lectores de banda magnética existentes. La banda magnética 61 puede ser estrecha o ancha dependiendo de la cantidad de datos requerida al ser almacenada y el grado de comprensión de los datos. En razón a que la banda magnética 61 está orientada en forma paralela a la dimensión más larga de la tarjeta, esta podría ser capaz de almacenar una cantidad mayor de información a una anchura dada que la banda magnética 21 de la figura 2B que esta orientada de manera perpendicular a la dimensión más grande de la tarjeta. Así, la presente modalidad puede ser mas fácilmente ejecutada cuando mayores cantidades de información almacenadas se requieren. Debe ser fácilmente evidente para un experto e la técnica que cualquiera de las modalidades descritas aquí se puedan modificar de tal forma que la banda magnética este orientada paralela a la dimensión más grande de la tarjeta.

Las tarjetas de crédito convencionales y las similares han sido generalmente de forma rectangular. Sin embargo, la tarjeta de la presente invención puede tomar otras formas. Por ejemplo, la tarjeta podría tener cualquier número de formas geométricas tal como

triangular o trapezoidal. Adicionalmente, la tarjeta podría tomar la forma de los objetos de ocurrencia natural o hechos por humanos, tales como árboles de pino aeroplanos. Tales formas podrían estar relacionadas con el emisor patrocinador de la tarjeta. Así, una tarjeta de crédito que un consumidor pueda utilizar para acumular millas de vuelo frecuente podría ser en la forma de un aeroplano. Las dimensiones de tales tarjetas generalmente se comportarían con los tamaños guía sugeridos aquí. En razón a que tales tarjetas no son rectangulares, la banda magnética no necesariamente estaría orientada como se describió anteriormente (paralela o perpendicular a la dimensión más grande de la tarjeta). Así, la banda magnética podría estar orientada en cualquier número de formas, dependiendo de la forma de la tarjeta.

Adicionalmente, cualquiera de las modalidades descritas aquí podrían ser suministradas con una banda de rodadura para incrementar la agarrabilidad de la tarjeta. Tales bandas de rodadura son descritas en detalle en la solicitud de patente estadounidense N. 09/611, 320 presentada en julio 6, 2000, cuya totalidad se incorpora aquí como referencia.

Estas bandas de rodadura podrían tomar la forma de una pluralidad de hoyuelos resaltados dispuestos sobre una superficie de la tarjeta. Las bandas de rodadura están preferiblemente dispuestas sobre la superficie o cara de la tarjeta que entra en contacto con el usuario para incrementar la agarrabilidad. Las figuras 7A-C muestran 3 modalidades preferidas alternativas de la presente invención en las cuales la superficie de la tarjeta se suministra con bandas de rodadura. Cada número de hoyuelo 77 está dispuesto para formar una pluralidad de bandas de rodadura 76 sobre la cara frontal 71 de la tarjeta 70. En la figura 7A, los hoyuelos 77 están dispuestos para formar bandas de rodadura 76 en un patrón triangular o una línea. Los hoyuelos 77, sin embargo, también pueden estar dispuestos en cualquier número de patrones. Como se describió en la figura 7A-7C, las bandas de rodadura 76 están localizadas cerca de un borde 73 de la tarjeta 70, y en cada modalidad preferida descritas en las figuras 7A-7C, una banda de rodadura 76 está localizada cerca al borde superior 72 de la tarjeta 70. Otras disposiciones de hoyuelo 77 que forman bandas de rodadura 76 deben ser evidentes para el experto en la técnica de esta descripción o de la práctica de la

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invención dependiendo del uso de la tarjeta pretendido o experimentado.

La figura 8A muestra una vista en sección de una modalidad preferida de la tarjeta 70 de la presente invención tomada a lo largo de la línea X-X de la figura 7A, en la cual los hoyuelos 77 están resaltados en la cara frontal 71 de la tarjeta 70. En tal modalidad, la altura de cada hoyuelo se debe seleccionar con el fin de no interferir con la operación adecuada del terminal POS u otros dispositivos que requieran que la tarjeta sea barrida en o a través del dispositivo.

La figura 8B muestra una vista en sección de una modalidad preferida alternativa de la tarjeta 70 de la presente invención. En esta modalidad, los hoyuelos son creados de tal manera que crean cráteres individuales 77 en los cuales el labio del cráter es resaltado ligeramente por encima de la superficie frontal 71 de la tarjeta 70, mientras que el centro del cráter está ligeramente por debajo de la superficie de la tarjeta.

Mientras que las modalidades específicas descritas aquí son tarjetas que tienen bandas magnéticas tales como

tarjetas de crédito, tarjetas debito, y tarjetas de banco estas son por vía de ejemplo, y la invención no esta limitada a este tipo de tarjetas. Así como la presente invención puede ser trabajada para muchos diferentes tipos de tarjetas de datos incluyendo tarjetas inteligentes (es decir tarjetas que contienen chips de computadora que almacenan información), tarjetas de valores almacenados, tarjetas de chips de proximidad, y otras tarjetas que son capaces de almacenar información. Una discusión detallada de las tarjetas de datos que contienen los chips de computadora empotrados se pueden encontrar en la patente estadounidense N. 4, 443,027 de McNeely et al, cuya totalidad se incorpora aquí como referencia.

Otra modalidad preferida de la presente invención será ahora descrita con gran detalle. Esta modalidad preferida, mostrada en las figuras 9^a-C, incluye una tarjeta generalmente rectangular 90, una tira magnética 91 y un hueco 92. La cara frontal 93 de la tarjeta 90 es mostrada en la figura 9A; la cara posterior 94 de la tarjeta 90 es mostrada en la figura 9B. Las dimensiones aproximadas de la tarjeta 90 como se indica en la figura 9, son 1 9/16 de pulgada (altura) por 2 9/16 de pulgada

(longitud). La anchura de la tarjeta, mostrada en la figura 9C (no escala) es aproximadamente 0,75 mm. Estas dimensiones de altura y longitud son reducidas de las dimensiones de la tarjeta de crédito de tamaño convencional, que son aproximadamente $2 \frac{1}{4}$ de pulgadas (altura) por $3 \frac{3}{8}$ de pulgadas (longitud).

Una vez de nuevo, las dimensiones específicas de la tarjeta 90 son representativas solamente, y la presente invención no esta limitada a ninguna dimensión en particular. Sin embargo, la presente invención es preferiblemente llevada a cabo utilizando tarjetas con dimensiones que varían desde aproximadamente 1 pulgada por 1 pulgada a aproximadamente $1 \frac{7}{8}$ de pulgada a 3 pulgadas.

La cara frontal 93 de la tarjeta 90 contiene varia información tal como el número de la tarjeta 95, la fecha de expiración 96, y el nombre del portador de la tarjeta 97. Esta información puede ser labrada sobre la tarjeta. En una modalidad preferida, la tarjeta esta libre o desprovista de labrados u otras letras resaltadas. En tal modalidad, la información puede ser impresa sobre la

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tarjeta utilizando técnicas de impresión láser, como son conocidas en el arte.

Entre las caras frontal y posterior 93 y 94 de la tarjeta 90 se encuentra el núcleo 99, como se muestra en la figura 9C. Este núcleo puede estar compuesto de, al menos en parte, poliéster. En una modalidad, el núcleo está compuesto de 80% de poliéster y 20% de polivinil cloruro (PVC). El uso del poliéster en el núcleo es ventajoso por que este incrementa la durabilidad de la tarjeta. Como será evidente para un experto en la técnica, varios porcentajes de poliéster y otros materiales se pueden utilizar para el núcleo de la tarjeta.

En la modalidad mostrada en las figuras 9A-C, la banda magnética 91 está ubicada paralela al borde inferior 98 de la tarjeta 90. El borde inferior, por supuesto, esta definido con respecto a la orientación particular de la tarjeta mostrada en la figura 9B. Como sería fácilmente evidente para un experto en la técnica, la rotación de la tarjeta 90 podría originar que el borde "inferior" 98 aparece como si este estuviera a la derecha, izquierda, o en el borde superior. La banda

magnética 91 se utiliza para almacenar datos codificados tal como el nombre del portador de la tarjeta, una tarjeta de crédito u otro número de cuenta, fecha de expiración de la tarjeta, y un código de identificación personal u otra seguridad de información. La dimensión longitudinal de la banda magnética 91 es aproximadamente $2 \frac{9}{16}$ de pulgadas. Como se definió aquí, la dimensión longitudinal de una banda magnética es la dimensión más grande de la banda magnética. Sin embargo, como se describió anteriormente, la presente invención no está limitada a ninguna dimensión en particular. Preferiblemente, la dimensión longitudinal de la banda magnética varía desde aproximadamente una pulgada a aproximadamente 3 pulgadas.

Los requisitos de la ISO/IEC 7811, que especifican los estándares internacionales para bandas magnéticas serán ahora discutidos, y luego comparados con las características de la banda magnética 91 de la presente invención. Los diseñadores de las tarjetas que llevan bandas magnéticas intentan cumplir con los estándares establecidos por la ISO/IEC 7811 con el fin de asegurar la compatibilidad y con los lectores de banda magnética y los terminales POS corrientes.

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La ISO/IEC 7811 especifica que una banda magnética puede contener hasta 3 pistas de información codificadas. Como se apreciará por un experto en la técnica, cada pista es esencialmente una banda con anchura especificada y localización que corre por la longitud de la banda magnética, sobre los cuales los datos están codificados. De acuerdo con la ISO/IEC 7811, la banda 1 está localizada en forma más cercana al borde de la tarjeta y contiene datos codificados a 210 bits por pulgada (bpi). La pista 2 es adyacente a la banda 1 y contiene datos codificados a 75 bpi. La figura 10 muestra la anchura y localización de pistas 1 y 2 como se especificó por la ISO/IEC 7811-4, cuya totalidad se incorpora aquí como referencia. La pista 3 es la más lejana desde el borde de la tarjeta y contiene datos codificados a 210 bpi. La figura 11 muestra la anchura y localización de la pista 3 como lo especifica la ISO/IEC 7811-5 cuya totalidad se incorpora aquí como referencia.

En todos los casos, los datos están codificados sobre las pistas utilizando codificación de dos frecuencias, como se especifica en la ISO/IEC 7811. Como lo entenderá un experto en la técnica, una codificación

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de dos frecuencias involucra el uso de transiciones de flujo para codificar datos. La codificación comprende datos y transiciones de reloj juntas. La presencia de una transición de flujo entre transiciones de reloj significa que el bit es un "uno", la ausencia de una transición de flujo significa un "cero". Discusión detallada adicional de la codificación de dos frecuencias se puede encontrar en la ISO/IEC 7811-2 y la 7811-6, cuya totalidad se incorpora aquí como referencia.

Cada pista de datos contiene un "centinela de inicio". El centinela de inicio es el primer bit de datos, e indica el inicio de los datos codificados sobre cada pista. Como se muestra en la figura 12 la ISO/IEC 7811 especifica que la localización del centinela de entrada es aproximadamente 0,293 pulgadas desde el lado derecho de la tarjeta para todas las pistas.

La figura 12 muestra características físicas adicionales para las bandas magnéticas, como se especificó en la ISO/IEC 7811. La longitud mínima de la banda magnética se especifica como 3,135 pulgadas (3,250 pulgadas de mínimo para el borde derecho de la tarjeta al borde izquierdo de la banda menos 0,115 pulgadas máximo

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desde el borde derecho De la tarjeta al borde derecho de la banda). La anchura mínima de la banda magnética es 0.25 pulgadas para tarjetas que utilizan pistas 1 y 2, y 0.41 pulgadas para tarjetas que utilizan todas las 3 pistas.

La banda magnética 91 (figura 9) es diferente en varios aspectos de las bandas magnéticas especificadas por la ISO/IEC 7811. Primero, la longitud de la banda magnética 91 es aproximadamente $2 \frac{9}{16}$ pulgadas, significativamente mas corta que ~~los 3, 135 pulgadas~~ mínimo de la longitud especificada por la ISO/IEC 7811.

Segundo, los datos sobre la banda magnética 91 se codifican en densidades de bit mayores que aquellas prescritas e la ISO/IEC 7811. La banda magnética 91 contiene datos que se codifican sobre las pistas 1 y 2. Con el fin de asegurar que se codifican suficientes datos en áreas de bandas magnéticas más pequeñas, los datos se codifican sobre la pista 1 a 260 bpi Y SOBRE LA PISTA 2 A 100 BPI. Juntas densidades de bip son significativamente mayores que aquellas especificadas en la ISO/IEC 7811 para las pistas 1 y 2 (210 bpi y 75 bpi, respectivamente). Como se apreciará por un experto en la técnica, los datos también pueden ser codificados sobre

la pista 3 si es necesario o deseable en una circunstancia particular. También se debe notar que la presente invención esta limitada por estas densidades de vida específicas, y otras densidades de bit podrían ser seleccionadas para asegurar el almacenamiento de la cantidad apropiada de información en el espacio disponible.

También, como se muestra en la figura 9B, el centinela de inicio del la banda magnética 91 está localizado a 0,200 pulgadas del borde derecho De la tarjeta 90. Esta localización del centinela de inicio es significativamente diferente de la especificada en la ISO/IEC 7811, que especifica que el centinela de inicio se debe localizar a 0,293 pulgadas del borde derecho de la tarjeta.

Preferiblemente, los datos sobre las pistas 1 y 2 de la banda magnética 91 se codifican utilizando codificación de dos frecuencias estándar. Sin embargo, se debe entender por un experto en la técnica que la presente invención no está limitada a una técnica de codificación particular. Preferiblemente, el ancho de cada pista y la distancia de cada pista desde e borde

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inferior 98 de la tarjeta 90 cumple con los requisitos de la ISO/ISE 7811, como se describió anteriormente y se muestra en la figura 10.

Las dimensiones de la tarjeta 90 misma son diferentes de las dimensiones especificadas en la ISO/ISE 7810, cuya totalidad se incorpora aquí como referencia, que generalmente especifica parámetros físicos y tarjetas de identificación. Notablemente, la ISO/ISE 7810 establece dimensiones mínimas para identificación de tarjetas a 2,125 pulgadas por 3,370 pulgadas. Las dimensiones de la tarjeta 90 son aproximadamente 1 9/16 pulgadas por 2 9/16 pulgadas.

Dado que la tarjeta 90 de la presente invención no cumple con numerosos estándares y especificaciones establecidos por la ISO/ISE 7810 y la 7811, se esperaría por aquellos expertos en la técnica que la tarjeta no fuera operable con lectores de banda magnética y terminales POS estándar. Sin embargo, los ensayos desarrollados sobre tarjetas prototipo indican que las tarjetas de datos de la presente invención son compatibles con los equipos estándar.

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Con el fin de ensayar las tarjetas prototipo, veinticinco tarjetas, sustancialmente similares a aquellas mostradas en las figuras 9A Y 9B y descritas anteriormente, fueron ensambladas y codificadas con 25 cuentas diferentes. Estas 25 tarjetas fueron entonces ensayadas utilizando 5 diferentes terminales POS. Los 5 terminales POS fueron terminales POS comerciales estándar elaborados por VeriFone Inc. Un número de veinticinco tarjetas fueron ensayadas en cada uno de los cinco terminales POS. Con el fin de asegurar la lectura adecuada de la tarjeta se desarrollaron dos ensayos. Primero, después de barrer cada tarjeta de ensayo a través de la terminal, la terminal intento imprimir un recibo que mostrará, entre otras cosas, el nombre de asociado con la cuenta codificada sobre cada tarjeta. Segundo, el terminal utilizó los datos obtenidos de la tarjeta, e intentó acceso a sistema de intercambio y obtener autorización para una transacción. Todas las tarjetas ensayadas pasaron ambas pruebas. Este ensayo indica que las tarjetas de datos de la presente invención son inesperadamente compatibles con los terminales POS, a pesar del no cumplimiento con numerosos aspectos de la ISO/ISE 7810 y 7811.

Ensayos adicionales se llevaron a cabo utilizando tarjetas similares a la tarjeta 130, mostrados en las figuras 13A Y 13B. La tarjeta 130 difiere de la tarjeta 90 solo en que el borde 139 de la tarjeta 130 es angulado. El mismo protocolo de ensayo descrito anteriormente se desarrollo sobre las veinticinco tarjetas de manera sustancialmente similar a la tarjeta 130 como se muestra en las figuras 13 A Y B. La banda magnética 131 sobre la tarjeta 130 es sustancialmente la misma que la banda magnética 91 de la tarjeta 90 (figura 9B). Todas las tarjetas ensayadas pasaron tanto los ensayos de recibo como de autorización. Así, ensayando las tarjetas prototipo de varias modalidades se revela que las tarjetas de la presente invención son Inter operables con tecnología de lector de tarjeta magnética y terminales POS a pesar del no cumplimiento con varias de los estándares ISO/IEC relevantes.

Ahora Se describirá un método de uso de una tarjeta de datos de tamaño reducido de la presente invención. Como se describió anteriormente, tal tarjeta se puede almacenar sobre una cadena de llaves, cuerda, gancho o dispositivo similar. Alternativamente, la tarjeta puede simplemente ser ubicada en el bolsillo o bolsa de un

consumidor. Cuando un consumidor que lleva una tarjeta de la tarjeta invención se aproxima a un terminal POS u otro lector de tarjeta, tal como cuando hace transacciones de venta, el consumidor puede ser requerido para que se produzca la tras acción completa de la tarjeta. En razón de la conveniencia de almacenamiento, el consumidor rápida y fácilmente retira la tarjeta, y da la tarjeta al comerciante para que la "barra" a través del lector, o el consumidor se le pueda permitir "barrer" la tarjeta a el mismo. El terminal POS u otra lector de tarjeta entonces "lee" la información codificada sobre la tarjeta, tal como el número de tarjeta, el limite de crédito o similar, y la transacción se completa. La tarjeta puede entonces ser realmacenada por el consumidor hasta el siguiente uso.

Aunque modalidades particulares de la invención se han descrito e ilustrado aquí, se reconoce que modificaciones variaciones se le puede fácilmente ocurrir a aquellos expertos en la técnica, y consecuentemente se pretende que las reivindicaciones sean interpretadas para cubrir tales modificaciones y equivalentes.

REIVINDICACIONES

1. Una Tarjeta de datos que comprende una primer cara, una segunda cara y un medio de almacenamiento de información, e donde dicha tarjeta tiene dimensiones que son menores de aproximadamente $2 \frac{1}{4}$ de pulgadas por aproximadamente $3 \frac{3}{8}$ de pulgadas.

2. Una tarjeta de datos como en la reivindicación 1, en donde las dimensiones de dicha tarjeta están en el rango de aproximadamente 1 pulgada por aproximadamente 1 pulgada a aproximadamente $1 \frac{7}{8}$ de pulgada por aproximadamente 3 pulgadas.

3. Una tarjeta de datos como en la reivindicación 1, en donde el medio de almacenamiento de información comprende una banda magnética.

4. Una banda de datos como en la reivindicación 3, en donde la banda magnética está ubicada paralela a un borde de dicha tarjeta.

L2

5. Una tarjeta de datos como en la reivindicación 3, en donde la banda magnética está ubicada perpendicular a la dimensión más grande de dicha tarjeta.

6. Una tarjeta de datos como en la reivindicación 3, en donde la banda magnética comprende dos pistas para almacenar datos codificados.

7. Una banda de datos como en la reivindicación 6, en donde una primera de dichas dos pistas comprende datos codificados a densidades mayores de aproximadamente 200 bits por pulgada.

8. Una tarjeta de datos como en la reivindicación 7, en donde la primera de dichas dos pistas comprende datos codificados a aproximadamente 260 bits por pulgada.

9. Una tarjeta de datos como en la reivindicación 6, en donde una segunda de dichas dos pistas comprende datos codificados a densidades mayores de aproximadamente 75 bits por pulgada.

10. Una tarjeta de datos como en la reivindicación 9, en donde la segunda de dichas dos pistas comprende datos codificados a aproximadamente 100 bits por pulgada.ç

11. Una tarjeta de datos como en la reivindicación 6, en donde los datos codificados se codifican utilizando dos frecuencias de codificación. u!

12. Una tarjeta de datos como en la reivindicación 1, en donde dicha primera y segunda caras definen un hueco a su través. u?

13. Una tarjeta de datos como e la reivindicación 1, comprende además un núcleo dispuesto entre dicha primera y segunda caras en donde dicho núcleo comprende poliéster. u?

14. Una tarjeta de datos como en la reivindicación 13, en donde, dicho núcleo comprende aproximadamente 80% de poliéster. 88

15. Una tarjeta de datos como en la reivindicación 1, en donde las dimensiones de dicha tarjeta son

42x

aproximadamente 1 9/16 pulgadas por aproximadamente 2 9/16 pulgadas.

16. Una tarjeta de datos como en la reivindicación 1, en donde dicha primera y segunda caras están desprovistas de letras resaltadas.

no es
correcto
/ec.

17. Una tarjeta de datos como en la reivindicación 1, que comprende además letras impresas sobre al menos una de dichas primera y segunda caras.

18. Una tarjeta de datos como en la reivindicación 1, en donde el medio de almacenamiento de información comprende un chip de computadora.

19. Una tarjeta de datos como en la reivindicación 1, que comprende además una banda de rodadura que comprende una pluralidad de hoyuelos resaltados para mejorar la agarrabilidad de dicha tarjeta, en donde dicha pluralidad de hoyuelos resaltados están dispuestos sobre una de dichas primeras y segundas caras, dicha una cara entra en contacto con un usuario para mejorar la agarrabilidad.

uno

exp
apuna

uno existe

20. Una tarjeta de datos como en la reivindicación 1, que comprende además una pluralidad de caracteres dispuestos sobre una de dichas primera y segunda caras, cada una de dicha pluralidad de cráteres comprende: un labio y un centro, y en donde el labio de cada cráter esta levantado ligeramente por encima de dicha una cara y el centro de cada cráter esta ligeramente indentado dentro de dicha una superficie.

absurda

OPP
ap
no
sint
cara
deben

21. Una tarjeta de datos que comprende una primer cara, una segunda cara y una banda magnética, en donde la banda magnética esta ubicada paralela a un borde de dicha tarjeta y la banda magnética tiene una dimensión en longitud de menos de aproximadamente 3, 135 pulgadas.

22. Una tarjeta de datos como en la reivindicación 21, en donde la dimensión en longitud de la banda magnética esta en rango de aproximadamente 1 pulgada a aproximadamente 3 pulgadas.

23. Una tarjeta de datos como en la reivindicación 22, en donde la banda magnética comprende 2 pistas para almacenar datos codificados.

24. Una tarjeta de datos como en la reivindicación 23, en donde una primera de dichas dos pistas comprende datos codificados a densidades mayores de 210 bits por pulgada.

25. Una tarjeta de datos como en la reivindicación 24, en donde la primera de dichas 2 pistas comprende datos codificados a aproximadamente 260 bits por pulgada.

26. Una tarjeta de datos como en la reivindicación 23, en donde una segunda de dichas 2 vistas comprende datos codificados a densidades mayores de aproximadamente 75 bits por pulgada.

27. Una tarjeta de datos como en la reivindicación 26, en donde la segunda de dichas dos pistas comprende datos codificados a aproximadamente 100 bits por pulgada.

28. Una tarjeta de datos como en la reivindicación 23, en donde los datos codificados están codificados utilizando codificación de dos frecuencias.

29. Una tarjeta de datos como en la reivindicación 21, que comprende además un núcleo dispuesto entre dicha

primera y segunda caras, en donde dicho núcleo comprende poliéster.

30. Una tarjeta de datos como en la reivindicación 29, en donde el núcleo comprende aproximadamente 80% de poliéster.

31. Una tarjeta de datos como en la reivindicación 21, en donde la dimensión de longitud de la banda magnética es aproximadamente 2 9/16 pulgadas.

32. Una tarjeta de datos como en la reivindicación 21, en donde dicha primera y segundas caras están desprovistas de letras resaltadas.

33. Una tarjeta de datos como en la reivindicación 21 que comprende además letras impresas sobre al menos una de dichas primera y segunda caras.

34. Una tarjeta de datos como en la reivindicación 21 que comprende además una banda de rodadura que comprende una pluralidad de hoyuelos resaltados para mejorar la agarrabilidad de dicha tarjeta, en donde dicha pluralidad de hoyuelos resaltados están dispuestos sobre una de

dichas primera y segunda caras, dicha una cara entra en contacto con un usuario para mejorar la agarrabilidad.

35. Una tarjeta de datos como en la reivindicación 21, que comprende además una pluralidad de cráteres disgustos sobre una de dichas primera y segunda caras, cada una de dicha pluralidad de cráteres comprende: un labio de un centro y en donde el labio de cada cráter está ligeramente levantado por encima de dicha una cara, y el centro de cada cráter está ligeramente indentado dentro de dicha una cara.

36. Una tarjeta de datos como en la reivindicación 21, en donde dicha primera y segundas caras definen un hueco a su través.

37. Una tarjeta de datos como en la reivindicación 21, que comprende además un borde angulado.

38. Una tarjeta de datos que comprende una primer cara, una segunda cara, un borde angulado y un medio de almacenamiento de información, en donde una dimensión más grande de dicha tarjeta es menor de aproximadamente $\frac{3}{8}$ de pulgada.

39. Una tarjeta de datos como en la reivindicación 38, en donde la dimensión más grande dicha tarjeta está en el rango de aproximadamente 1 7/8 de pulgada a aproximadamente 3 pulgadas.

40. Una tarjeta de datos como en la reivindicación 38, en donde el medio de almacenamiento de información comprende una banda magnética.

41. Una tarjeta de datos como en la reivindicación 40, en donde la banda magnética está ubicada paralela a un borde de dicha tarjeta.

42. Una tarjeta de datos como en la reivindicación 41, en donde la banda magnética comprende dos pistas para almacenar datos codificados.

43. Una tarjeta de datos como en la reivindicación 42, en donde una primera de dichas dos pistas comprende datos codificados a densidades mayores de aproximadamente 200 bits por pulgada.

44. Una tarjeta de datos como en la reivindicación 43, en donde la primera de dichas dos pistas comprende datos codificados a aproximadamente 260 bits por pulgada.

45. Una tarjeta de datos como en la reivindicación 42, en donde una segunda de dichas dos pistas comprende datos codificados a densidades mayores de aproximadamente 75 bits por pulgada.

46. Una tarjeta de datos como en la reivindicación 45, en donde la segunda de dichas dos pistas comprende datos codificados a aproximadamente 100 bits por pulgada.

47. Una tarjeta de datos como en la reivindicación 42, en donde los datos codificados se codifican utilizando codificación de dos frecuencias.

48. Una tarjeta de datos como en la reivindicación 38, en donde dicha primera y segunda cara definen un hueco a su través.

49. Una tarjeta de datos como en la reivindicación 38, que comprende además un núcleo dispuesto entre dicha

primera y segunda caras, en donde dicho núcleo comprende poliéster.

50. Una tarjeta de datos como en la reivindicación 49, en donde dicho núcleo comprende aproximadamente 80% de poliéster.

51. Una tarjeta de datos como en la reivindicación 38, en donde dicha primera y segunda caras están desprovistas de letras resaltadas.

52. Una tarjeta de datos como en la reivindicación 38, que comprende además letras impresas sobre al menos, una de dichas primera y segunda caras.

53. Una tarjeta de datos como en la reivindicación 38, en donde el medio de almacenamiento de información comprende un chip de computadora.

54. Una tarjeta de datos como en la reivindicación 38, que comprende además una pista de rodadura que comprende una pluralidad de hoyuelos resaltados para mejorar la agarrabilidad de dicha tarjeta, en donde dicha pluralidad de hoyuelos resaltados están dispuestos sobre una de

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dichas primera y segunda caras, dicha una cara entra en contacto con un usuario para mejorar la agarrabilidad.

55. U Una tarjeta de datos como en la reivindicación 38, que comprende además una pluralidad de cráteres dispuesta sobre una de dicha primera y segundas caras, cada una de dicha pluralidad de cráteres comprende: un labio y un centro, y en donde el labio de cada cráter es ligeramente levantado por encima de dicha una cara, el centro de cada cráter está ligeramente indentado dentro de dicha una cara.

56. Una tarjeta de datos como en la reivindicación 40, en donde la banda magnética está ubicada de manera perpendicular a la dimensión más grande de dicha tarjeta.

57. Una tarjeta de datos como en la reivindicación 40, en donde la banda magnética está ubicada paralela a dicho borde angulado.

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RESUMEN

Una tarjeta se reduce en tamaño desde el tamaño de la tarjeta de crédito convencional. La accesibilidad de la tarjeta se mejora por que a tarjeta puede ser almacenada en un sitio separado de las tarjetas de tamaño convencional, tal como en una cadena de llaves o dispositivo similar. La tarjeta de la presente invención tiene unos medios para almacenar información tal como una banda magnética o un chip de computador.

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5A

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HOJA SUSTITUTA (REGLA 26)

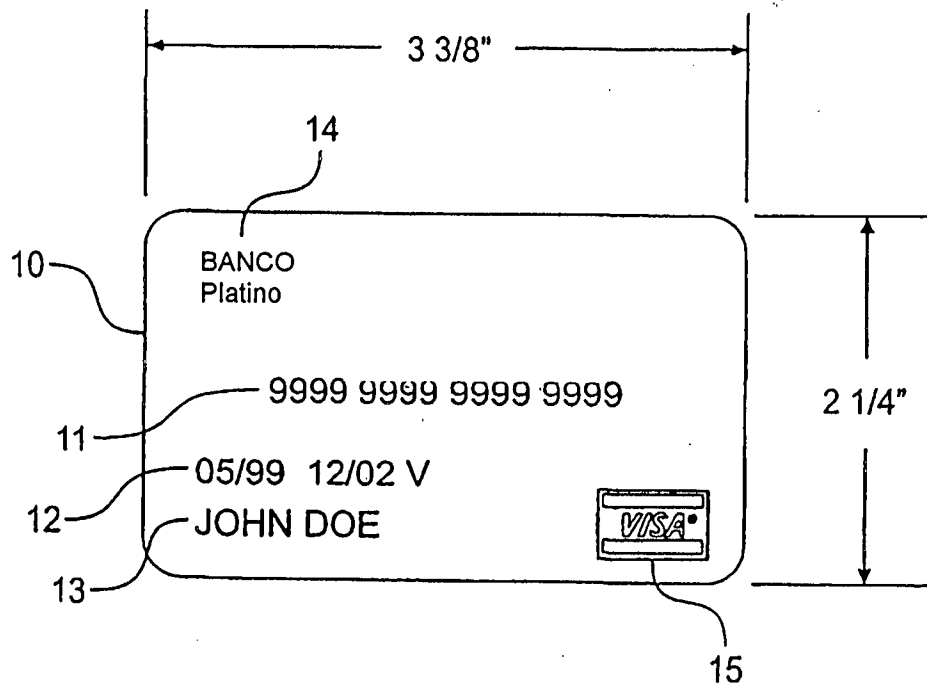


FIG. 1A

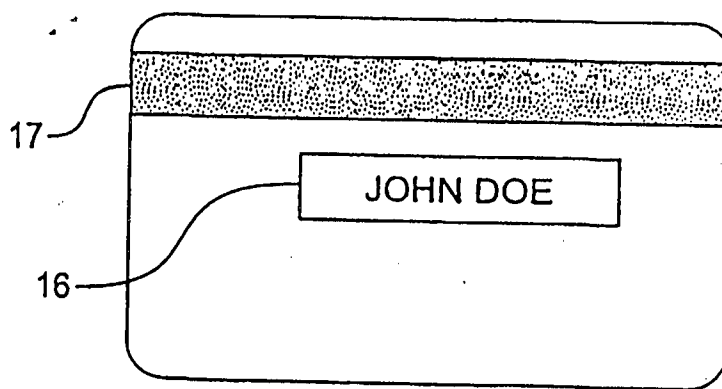


FIG. 1B

HOJA SUSTITUTA (REGLA 26)

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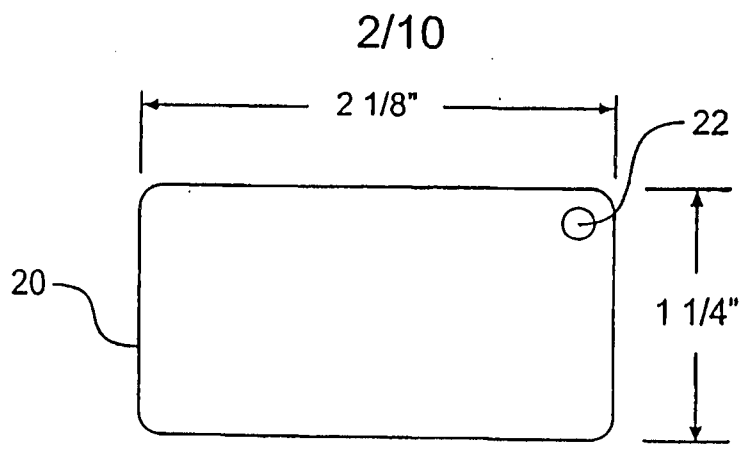


FIG. 2A

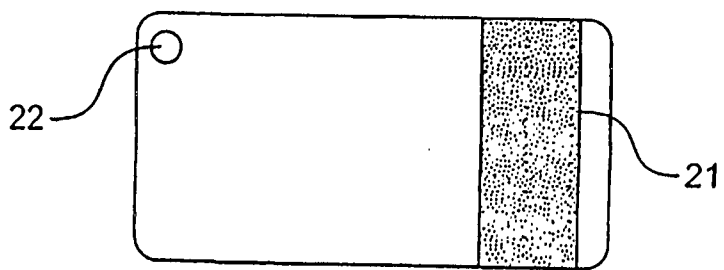


FIG. 2B

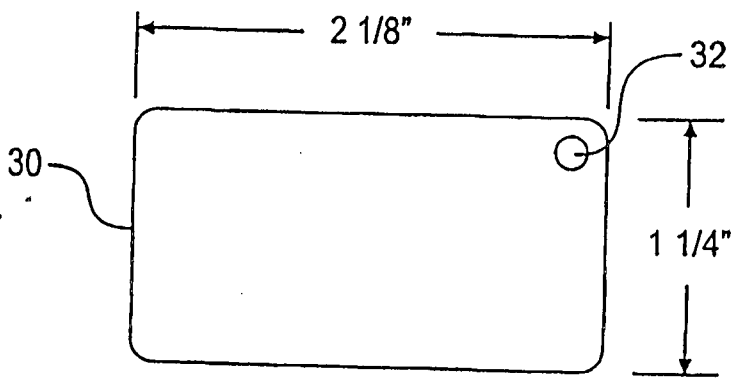


FIG. 3A

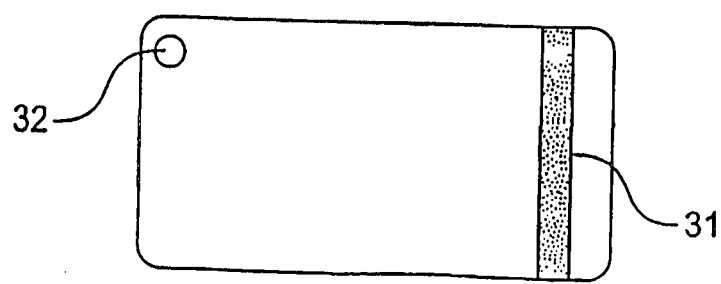


FIG. 3B

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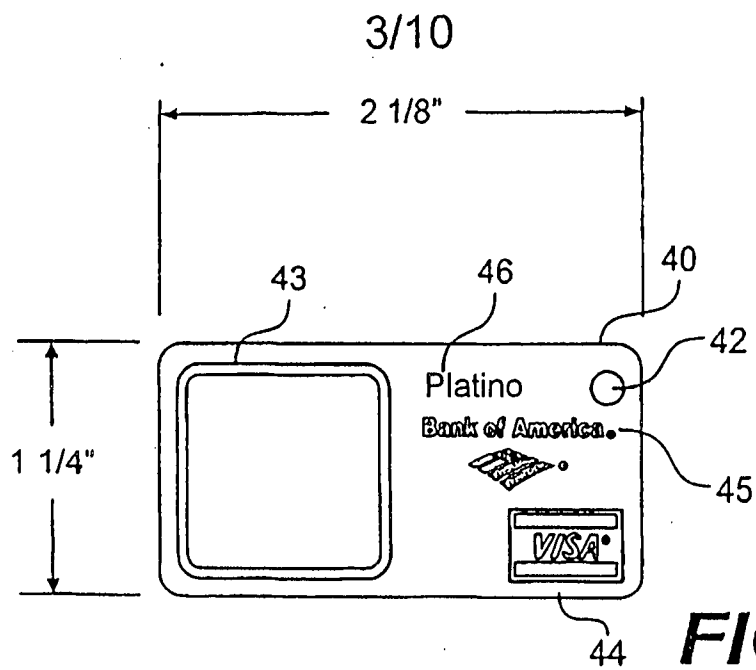


FIG. 4A

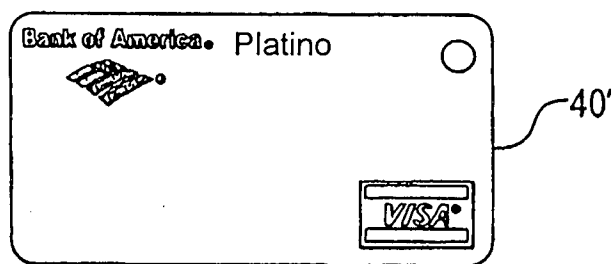


FIG. 4B

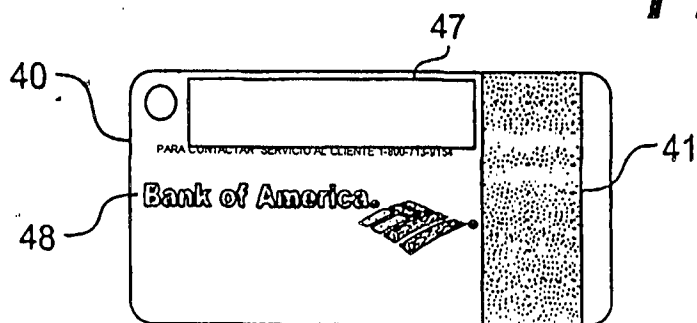


FIG. 4C

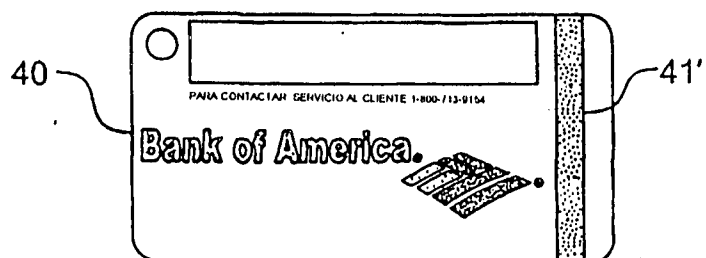


FIG. 4D

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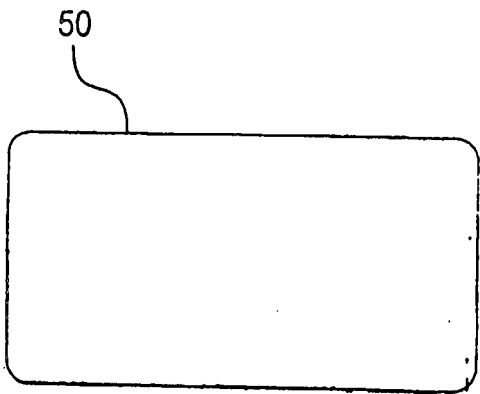


FIG. 5A

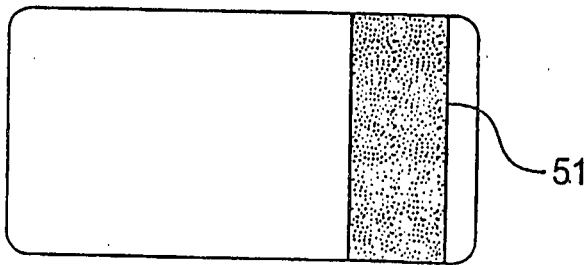


FIG. 5B

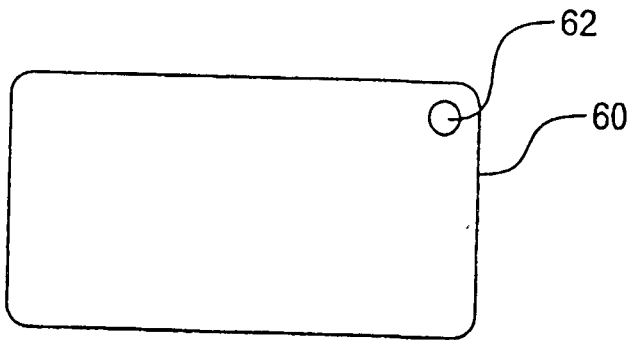


FIG. 6A

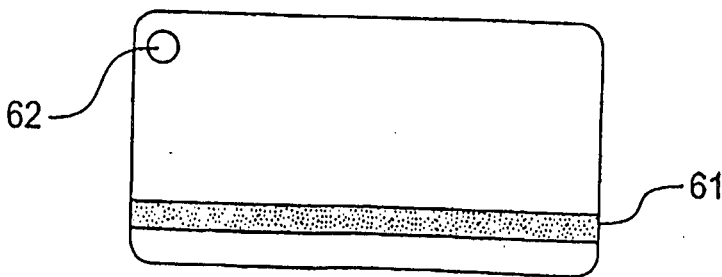


FIG. 6B

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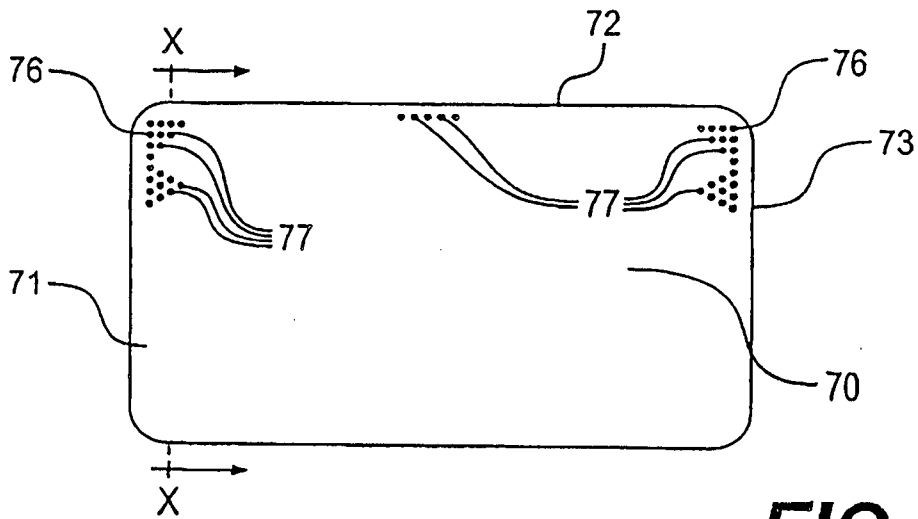


FIG. 7A

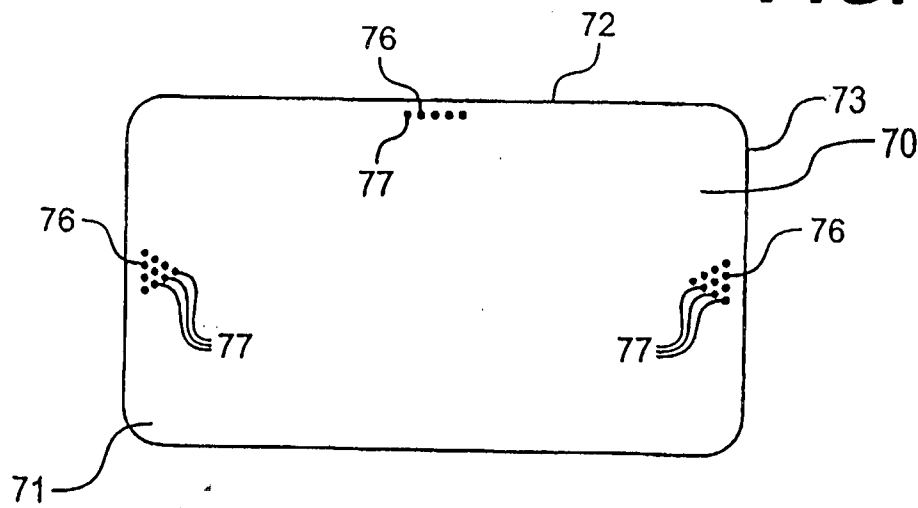


FIG. 7B

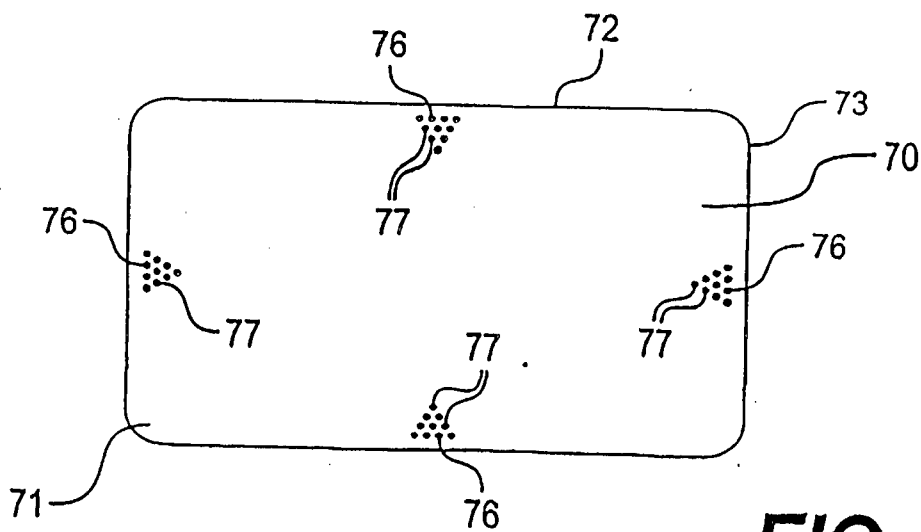


FIG. 7C

HOJA SUSTITUTA (REGLA 23)

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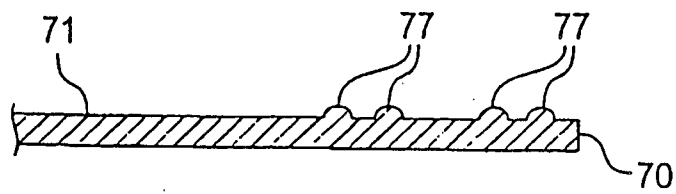


FIG. 8A

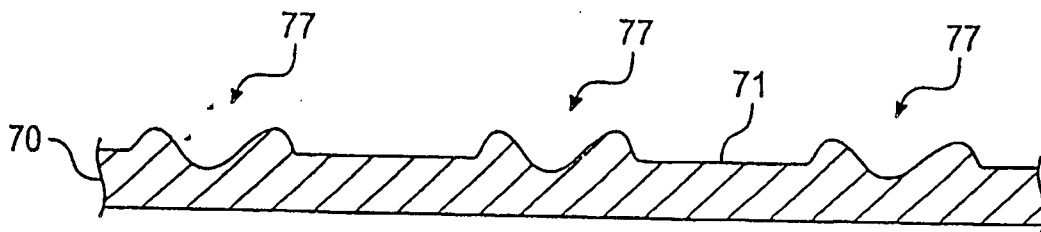
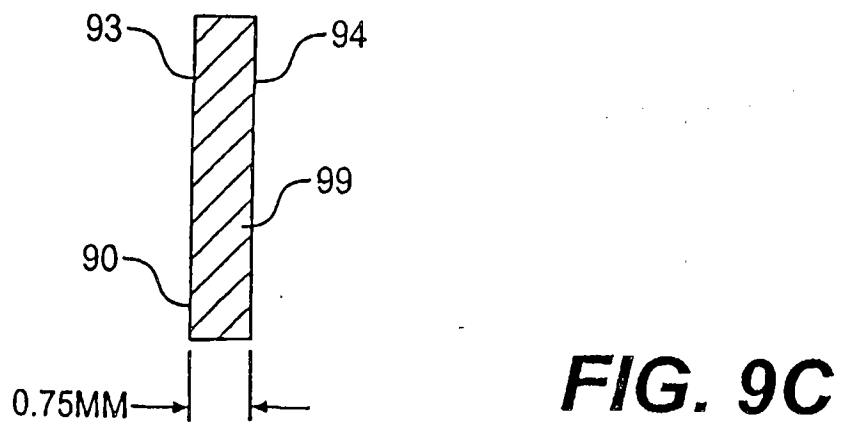
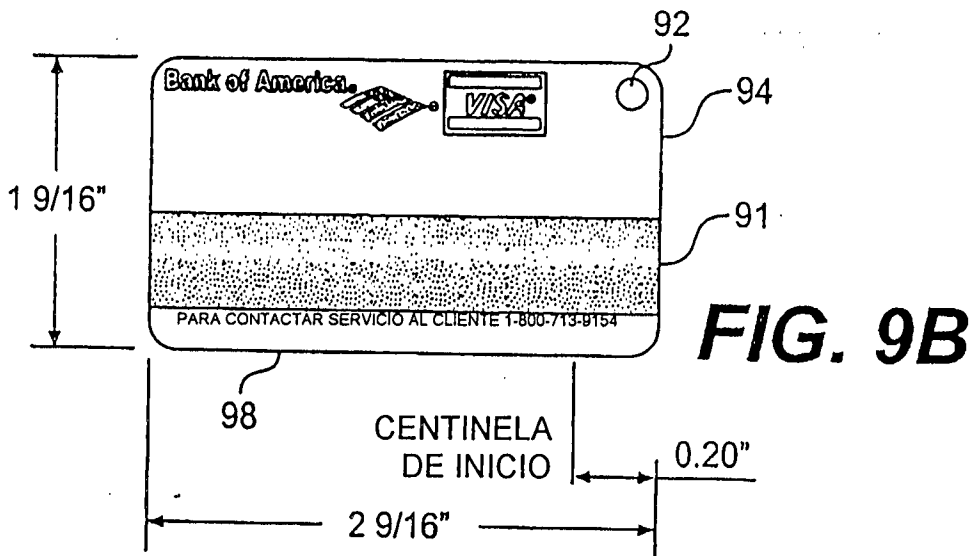
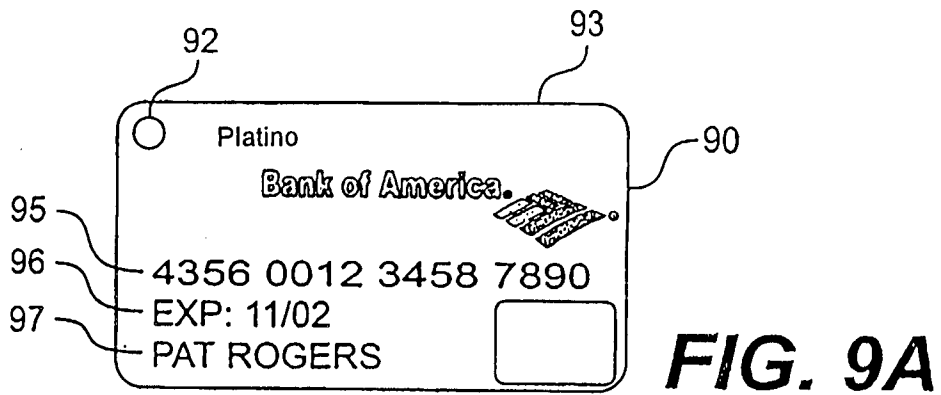


FIG. 8B

HOJA SUSTITUTA (REGLA 26)

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HOJA SUSTITUTA (REGLA 26)

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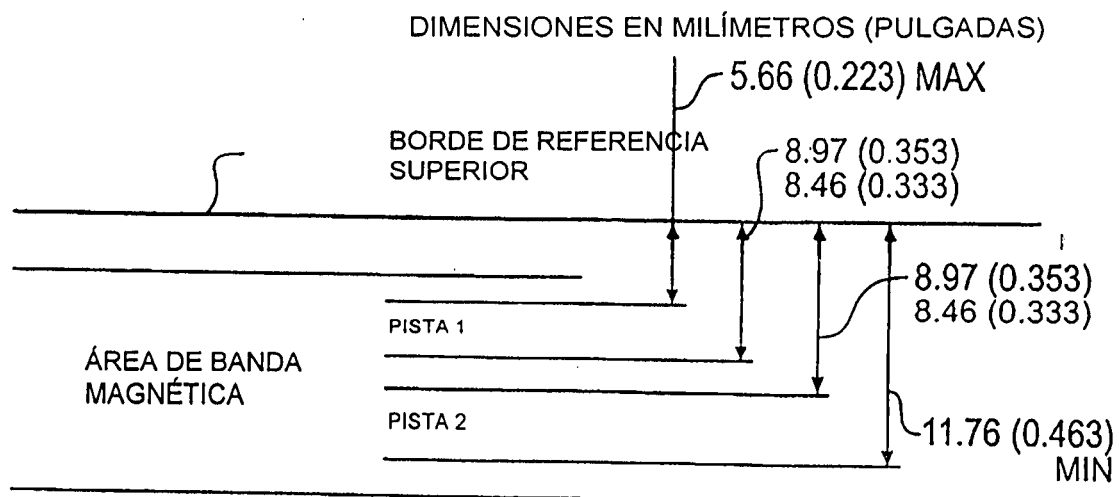


FIG. 10

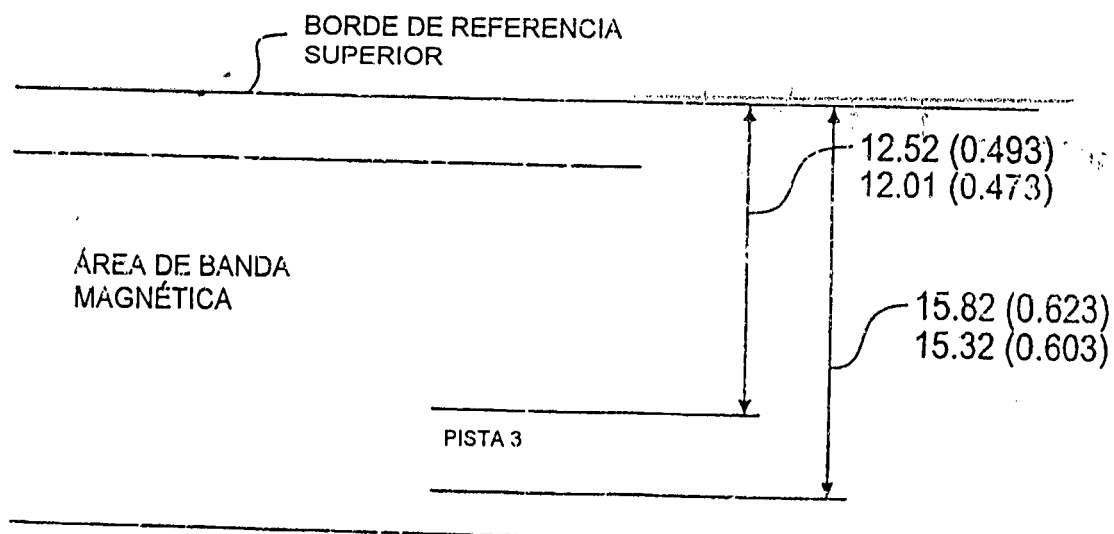


FIG. 11

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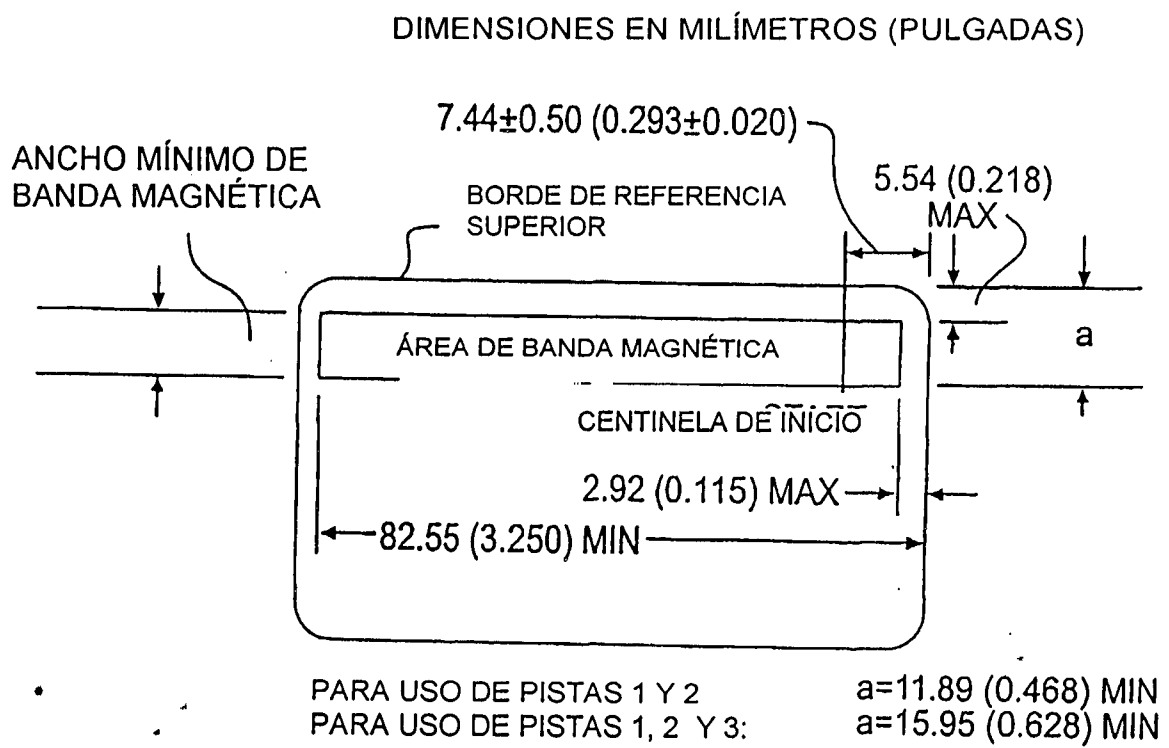


FIG. 12

HOJA SUSTITUTA (REGLA 26)

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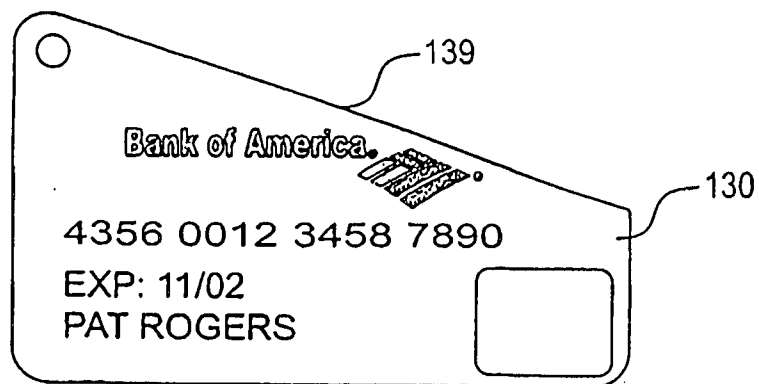


FIG. 13A

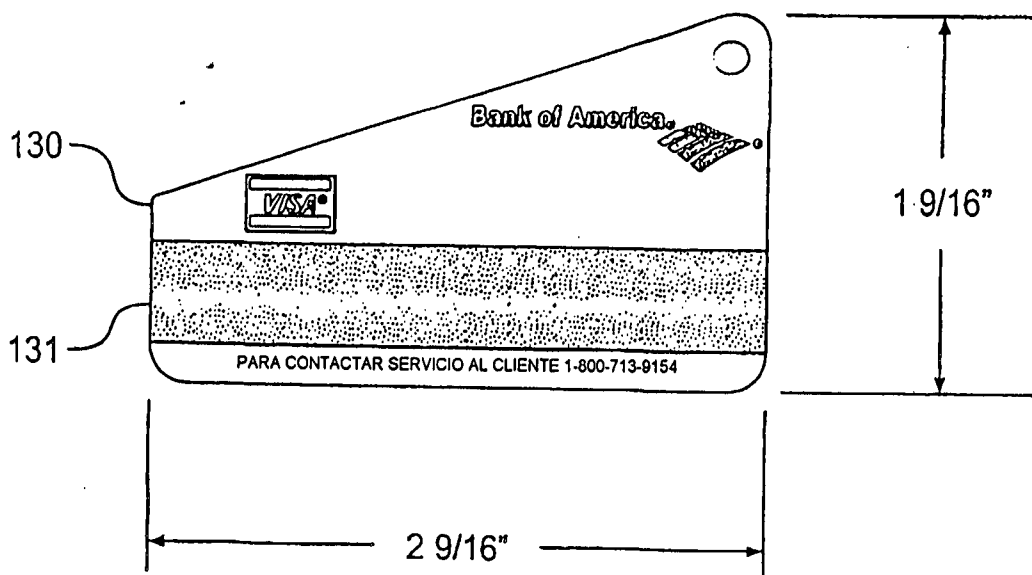


FIG. 13B

MINIATURE DATA CARD

BACKGROUND OF THE INVENTION

This invention relates generally to data cards, such as credit cards, that contain a magnetic stripe or other means of storing information. More particularly, this invention relates to such cards that are small in size.

Cards of various kinds have become ubiquitous in modern society. People often carry a number of cards in their wallet or carrying case, including credit cards, ATM or bank cards, debit cards, "smart cards," insurance cards, a driver's license, identification cards, telephone calling cards, transit cards, library cards, and card-entry hotel keys. An increasing number of consumer transactions require use of these cards, for example, as the form of payment, or as identification necessary for another form of payment or admission. Quick and accurate access to certain individual cards is useful and desirable for both the consumer and the vendor of goods or services.

Typically, consumers store credit cards and other types of cards in a wallet or carrying case. These wallets and carrying cases are frequently equipped with sleeves or slots for holding one or more cards in an arrangement selected by the user. Because of the proliferation of the types and numbers of cards carried by consumers, cards are often held very tightly within these sleeves or slots, making retrieval of a particular card difficult. Difficulty in removing a single selected card increases the time necessary for the transaction, causes stored cards to be frequently reshuffled and potentially disorganized, and increases the likelihood that cards will be dropped or lost.

While the number of cards typically carried by consumers is increasing, most consumers use certain types of cards much more frequently than others. For example, some consumers may use a credit card for nearly every sales transaction, but only rarely, if ever, use calling cards, library cards, or insurance cards. Because a subset of the total number of cards carried by consumers must be accessed repeatedly, it is particularly desirable to improve the accessibility of these types of cards.

One way to improve accessibility of frequently used cards is by allowing them to be stored in a separate location from the traditional wallet or carrying case. Such cards could be stored on key-chains, lanyards, hooks, or other similar devices that are easily retrieved from a

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bag or pocket. Thus, when a consumer needs to use the card during a transaction, the card may be quickly retrieved and given to the merchant. This provides an added level of convenience to the consumer by making the payment process quicker and simpler. Additionally, the merchant is able to move customers through the line more quickly, improving customer satisfaction. An additional benefit of storing frequently used cards on a key-chain or like device is that the possibility that the card will be lost is decreased. This is because a single card is much more easily misplaced than a card attached to a key-chain.

Conventionally sized cards, however, are too large and cumbersome to be conveniently stored on a key-chain or like device. The individual items on a key chain must be small and compact so that the key-chain can accommodate numerous items. Further, key-chains and the like are often placed in the pockets of clothing, which may be small. Finally, larger items, such as conventional credit cards, could be bent or otherwise damaged when stored on a device such as a key-chain. Thus, for a card to be effectively carried on a key-chain, its size must be significantly reduced.

The degree to which conventional cards may be reduced in size, however, is limited by the requirements of standard magnetic stripe card readers, such as point-of-sale ("POS") terminals through which the user "swipes" the card to make a purchase or payment. In order to ensure interoperability between the magnetic stripe readers and cards bearing magnetic stripes, the parameters defining the magnetic stripe are governed by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). ISO/IEC 7811 provides standards for the physical characteristics of the magnetic stripe including the location of the stripe on the card, the surface profile of the stripe, and the height of the stripe above the card surface. It would be advantageous for a reduced-size card to comply with ISO/IEC 7811, or otherwise be compatible with existing card readers and POS terminals.

Proper functioning of the magnetic stripe is very important. On conventional cards, such as credit cards, magnetic stripes contain encoded information that electronic readers can read to perform a function or confirm identification. For example, on credit and debit cards, the magnetic stripe is usually encoded with specific account information such as the credit card number, cardholder's name, the card expiration date, and a personal identification code. If the electronic device for reading the encoded information cannot properly read the magnetic stripe, the vendor must enter the information manually, using a keypad, telephone, or other similar

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device. Manually entering the encoded information adds both indirect and direct costs to the vendor. For example, the additional time necessary to enter the information manually may increase needs for register operators and decrease the vendor's ability to attend to other customer matters. In addition, vendors are frequently charged increased transaction fees by the card issuer for a manually entered transaction.

Thus, a need exists for providing cards, such as credit cards, that are reduced in size from currently used cards, and yet still are operable with currently used readers. Such a card would greatly enhance the efficiency of frequent transactions, including sales transactions, by allowing regularly used cards to be readily and easily retrieved. Further, because such a card could be readily stored on a key-chain or like device, the probability that the card would be lost or misplaced is reduced. Finally, because such a card would be compatible with currently used readers, no redesign of existing card reader technology would be required.

BRIEF SUMMARY OF THE INVENTION

In one aspect, the present invention provides a data card that is reduced in size from conventional credit-card-sized cards, and contains an information storage medium, such as a magnetic stripe or a computer chip, that can be read by existing card reader technology.

In another aspect, a reduced-size data card is provided with a magnetic stripe, which is located near an edge of the card, on which data is encoded. Such a magnetic stripe is reduced in size from the magnetic stripes found on conventionally sized cards, and contains data encoded at a higher bit density than on conventionally sized cards. The magnetic stripe is compatible with existing card reader technology.

In yet another aspect, a reduced-size data card is provided with a hole to allow key-chain storage, and the core may be composed, at least in part, of polyester. Additionally, the surface of a data card of the present invention may also be provided with raised dimples or craters to enhance gripability of the card. Further, information may be printed on the surface of the card, in order to reduce or eliminate the need to emboss the card with raised lettering or embossing.

In still another aspect, a reduced-size data card of the present invention may have an angled edge.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is an illustration of the front view of a conventional credit card.

FIG. 1B is an illustration of the back view of a conventional credit card.

FIG. 2A is an illustration of the front view of one preferred embodiment of the reduced-size data card of the present invention.

FIG. 2B is an illustration of the back view of the embodiment shown in FIG. 2A.

FIG. 3A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 3B is an illustration of the back view of the embodiment shown in FIG. 3A.

FIG. 4A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 4B is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 4C is an illustration of the back view of the embodiment shown in FIG. 4A.

FIG. 4D is an illustration of an alternate back view of the embodiment shown in FIG.

4A.

FIG. 5A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 5B is an illustration of the back view of the embodiment shown in FIG. 5A.

FIG. 6A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 6B is an illustration of the back view of the embodiment shown in FIG. 6A.

FIG. 7A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention

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FIG. 7B is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention

FIG. 7C is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention

FIG. 8A is a partial sectional view of another preferred embodiment of the reduced-size data card of the present invention taken through the tread where the tread includes raised dimples.

FIG. 8B is a partial sectional view of another preferred embodiment of the reduced-size data card of the present invention taken through the tread where the tread includes craters.

FIG. 9A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 9B is an illustration of the back view of the embodiment shown in FIG. 9A.

FIG. 9C is an illustration of a side view of the embodiment shown in FIG. 9A.

FIG. 10 is an illustration of the ISO/IEC 7811 standards for location and width of magnetic stripe data tracks 1 and 2.

FIG. 11 is an illustration of the ISO/IEC 7811 standards for location and width of magnetic stripe data track 3.

FIG. 12 is an illustration of the ISO/IEC 7811 standards for magnetic stripe location and size.

FIG. 13A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 13B is an illustration of the back view of the embodiment shown in FIG. 13A.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made to the present preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings.

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FIGs. 1A-B illustrate one embodiment of a conventional credit card. FIG. 1A shows the front side of a conventional standard size credit card 10, which is typically embossed using raised lettering with a credit card number 11, an expiration date 12, and the name of the card-holder 13. Such a card also usually contains the name of the issuing bank 14, and the credit card company, such as American Express®, MasterCard®, or VISA®, 15. It may also contain other information, such as sponsor logos and/or a "platinum" or similar indication. Additionally, the credit card may contain an identification photograph of the card-holder for security purposes. The back side of conventional card 10, shown in FIG. 1B, typically contains a box 16 that can be signed by the card holder, which is used for verification purposes when a purchase is made. Additionally, the back side of card 10 contains a magnetic stripe 17, which runs parallel to the card's largest dimension. Magnetic stripe 17 stores information, such as credit card number, that can be read by conventional point of sale ("POS") terminals. A standard credit card is approximately $3 \frac{3}{8}$ in. long by $2 \frac{1}{4}$ in. high, for an aspect ratio (length/height) of approximately 1.5, and has a thickness of approximately 0.75 mm.

The card of the present invention includes an information storage medium. By "information storage medium," is meant a medium that is added to the card that stores information in a magnetic, electronic, or electro-magnetic manner. This term does not include printed information either affixed to or printed directly on the card. Exemplary information storage media suitable for use with the present invention include, but are not limited to, magnetic stripes and computer chips.

FIGs. 2A-B depict a preferred embodiment of the present invention, including a generally rectangular card 20, a magnetic stripe 21, and a hole 22. The dimensions of card 20 are approximately $2 \frac{1}{8}$ in. long by $1 \frac{1}{4}$ in. high, for an aspect ratio (length/height) of approximately 1.7, and a thickness of approximately 0.75 mm. This is a significant reduction from the dimensions of a standard credit card. As would be appreciated by one skilled in the art, the foregoing specific dimensions are representative only, and the present invention is not limited to any particular dimensions. Preferably, the present invention is carried out using cards with dimensions ranging in length from approximately 1 in. to 3 in., and ranging in height from approximately 1 in. to $1 \frac{7}{8}$ in. Thus, the aspect ratio (length/height) could range from approximately 0.53 ($1 / 1.875$) to 3 ($3 / 1$).

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Magnetic stripe 21 is located on the back side of card 20, as shown in FIG. 2B, and is oriented perpendicularly to the card's largest dimension. Alternatively, the magnetic stripe could be located on the front side of card 20. In one embodiment of the present invention, magnetic stripe 21 is approximately 0.41 in. in width. In another embodiment, shown for example in FIGs. 3A-B, magnetic stripe 31 is approximately 0.25 in. in width.

ISO/IEC 7811 provides standards for the location of the stripe on the card, the surface profile of the stripe, and the height of the stripe above the card surface. Generally, designers of cards attempt to comply with these standards to ensure compatibility with existing POS terminals. Unexpectedly, the card of the present invention is compatible with existing point of sale terminals without complying with several aspects of the ISO/IEC standards, as explained in more detail below.

Finally, hole 22 is shown as located in a corner of card 20, and allows the card to be readily carried on a key-chain or like device. It should be apparent to one skilled in the art that hole 20 can be located anywhere on the card that allows the card to be carried by a key-chain or similar device and does not interfere with the magnetic stripe.

FIGs. 3A-B show an alternate preferred embodiment. Like the previous embodiment, this embodiment includes a generally rectangular card 30, a magnetic stripe 31, that is oriented perpendicularly to the card's largest dimension, and a hole 32. Here, however, magnetic stripe 31 is narrower in width than magnetic stripe 21 of FIG. 2B. A narrower magnetic stripe may be utilized when less information is needed to be stored by the magnetic stripe or when encoding techniques allow more information to be stored in a reduced space.

FIGs. 4A-D show alternate preferred embodiments. FIG. 4A shows a generally rectangular shaped card 40' with a hole 42. Card dimensions (2 1/8 in. by 1 1/4 in.) are shown on FIG. 4A and are significantly reduced from the standard size credit card. Additionally, card 40 contains an identification photograph 43, various logos 44 and 45, and additional information 46. Further, embossed information, such as credit card number or expiration date (not shown) could be included. Other arrangements of logos, and information should be apparent to one of ordinary skill in the art from this description or from practice. For example, FIG. 4B shows card 40', which is similar to card 40 (FIG. 4A) but without the identification photograph, and with a different arrangement of logos and other information.

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FIG. 4C shows the back side of card 40, depicted in FIG. 4A, which includes magnetic stripe 41 oriented perpendicularly to the card's largest dimension. Additionally, FIG. 4C includes signature block 47. Signature block 47 is to be signed by the card holder, and is used for signature verification when a purchase is made. Finally, the back side of card 40 may contain logos 48 and other information, as would be apparent to one of ordinary skill in the art.

FIG. 4D shows an alternate arrangement of the back side of card 40. It shows magnetic stripe 41' which is narrower than magnetic stripe 41 of FIG. 4C. Narrower magnetic stripes may be utilized when less information is required to be stored by the magnetic stripe, or when encoding techniques allow more information to be stored in less space.

FIGs. 5A-B show an alternate preferred embodiment, including a generally rectangular shaped card 50 and a magnetic stripe 51, oriented perpendicularly to the card's largest dimension. Unlike previous embodiments, the present embodiment does not contain a hole. While a hole is a helpful way to attach a card of the present invention to a key-chain or like device, such a hole is not required. Thus, the card can be attached to the key-chain by a clip or similar device. Additionally, the card of the present invention is not required to be stored on a key-chain or like device and could be stored in any fashion chosen by the consumer, such as directly in the consumer's pocket or bag. It should be readily apparent to one skilled in the art that any of the embodiments described herein could be modified such that the hole is removed.

FIGs. 6A-B show still another alternate preferred embodiment, including a generally rectangular shaped card 60, a magnetic stripe 61, and a hole 62. Magnetic stripe 61 is oriented parallel to the card's largest dimension. As described above, magnetic stripe 61 is preferably compatible with existing magnetic stripe readers. Magnetic stripe 61 may be either narrow or wide, depending on the amount of data required to be stored and the degree of data compression. Because magnetic stripe 61 is oriented parallel to the card's longest dimension, it may be capable of storing a greater amount of information at a given width than magnetic stripe 21 of FIG. 2B which is oriented perpendicularly to the card's largest dimension. Thus, the present embodiment may be more easily implemented when greater amounts of information storage is required. It should be readily apparent to one of ordinary skill in the art that any of the embodiments described herein could be modified such that the magnetic stripe is oriented parallel to the card's largest dimension.

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Conventional credit cards and the like have been generally rectangular in shape. However, the card of the present invention may take on other shapes. For example, the card could be any number of geometric shapes such as triangular or trapezoidal. Additionally, the card could take on the shape of naturally occurring or human-made objects, such as pine trees or airplanes. Such shapes could be related to the card issuer or sponsor. Thus, a credit card that a consumer can use to accrue frequent flier miles could be in the shape of an airplane. The dimensions of such cards generally comport with the size guidelines suggested herein. Because such cards are not rectangular, the magnetic stripe would not necessarily be oriented as described above (either parallel to or perpendicular to the card's largest dimension). Thus, the magnetic stripe could be oriented in any number of ways, depending on the shape of the card.

Additionally, any of the embodiments described herein could be provided with a tread to increase the gripability of the card. Such treads are described in detail in U.S. Patent Application No. 09/611,320 filed on July 6, 2000, the entirety of which is hereby incorporated by reference.

These treads could take the form of a plurality raised dimples disposed on a surface of the card. The treads are preferably disposed on the surface or face of the card that comes into contact with the user to increase gripability. FIGs. 7A-C show three alternate preferred embodiments of the present invention in which the surface of the card is provided with treads. In each a number of dimples 77 is arranged to form a plurality of treads 76 on the front face 71 of card 70. In FIG. 7A, the dimples 77 are arranged to form treads 76 in either a triangular pattern or a line. The dimples 77, however, can also be arranged in any number of patterns. As depicted in FIGs. 7A-7C, the treads 76 are located near an edge 73 of card 70, and in each preferred embodiment depicted in FIGs. 7A-7C, a tread 76 is located near the top edge 72 of the card 70. Other arrangements of dimples 77 forming treads 76 should be apparent to one of skill in the art from this description or from practice of the invention depending on the intended or experienced use of the card.

FIG. 8A shows a sectional view of a preferred embodiment of card 70 of the present invention taken along the line X-X of FIG. 7A, in which the dimples 77 are raised from the front face 71 of the card 70. In such an embodiment, the height of each dimple should be selected so as not to interfere with the proper operation of POS terminals or other devices that require the card to be swiped by or through the device.

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FIG. 8B shows a sectional view of an alternate preferred embodiment of card 70 of the present invention. In this embodiment, the dimples are created in such a manner as to create individual craters 77 in which the lip of the crater is raised slightly above the front surface 71 of the card 70, while the center of the crater is slightly below the surface of the card.

While the specific embodiments described herein are cards having magnetic stripes such as credit cards, debit cards, and bank cards, this is by way of example, and the invention is not limited to these types of cards. Thus, the present invention can be implemented for many different types of data cards including Smart Cards (i.e. cards containing computer chips that store information), stored value cards, proximity chip cards, and other cards that are capable of storing information. A detailed discussion of data cards containing embedded computer chips may be found in U.S. Patent No. 4,443,027 to McNeely et al., the entirety of which is hereby incorporated by reference.

Another preferred embodiment of the present invention will now be described in greater detail. This preferred embodiment, shown in FIGs. 9A-C, includes a generally rectangular card 90, a magnetic stripe 91, and a hole 92. The front face 93 of card 90 is shown in FIG. 9A; the rear face 94 of card 90 is shown in FIG. 9B. Approximate dimensions of card 90, as indicated on FIG. 9B, are $1 \frac{9}{16}$ inches (height) by $2 \frac{9}{16}$ inches (length). The width of the card, shown in FIG. 9C (not to scale), is approximately 0.75 mm. These height and length dimensions are reduced from conventionally-sized credit card dimensions, which are approximately $2 \frac{1}{4}$ inches (height) by $3 \frac{3}{8}$ inches (length).

Once again, the specific dimensions of card 90 are representative only, and the present invention is not limited to any particular dimensions. Nevertheless, the present invention is preferably carried out using cards with dimensions ranging from approximately 1 inch by 1 inch to approximately $1 \frac{7}{8}$ inches to 3 inches.

The front face 93 of card 90 contains various information such as card number 95, expiration date 96, and card-holder name 97. This information may be embossed on the card. In a preferred embodiment, the card is free from or devoid of embossing or other raised lettering. In such an embodiment, the information may be printed on the card using laser printing techniques, as are known in the art.

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Between front and rear faces 93 and 94 of card 90 is a core 99, as shown in FIG. 9C. This core may be composed of, at least in part, polyester. In one embodiment, the core is composed of 80% polyester and 20% polyvinyl chloride (PVC). The use of polyester in the core is advantageous because it increases the durability of the card. As would be apparent to one skilled in the art, various percentages of polyester and other materials may be used for the card core.

In the embodiment shown in FIGs. 9A-C, magnetic stripe 91 is positioned parallel to the bottom edge 98 of card 90. The bottom edge, of course, is defined with respect to the particular card orientation shown in FIG. 9B. As would be readily apparent to one skilled in the art, rotation of card 90 could cause "bottom" edge 98 to appear as if it is a right, left, or top edge. Magnetic stripe 91 is used to store encoded data such as the name of the card-holder, a credit card or other account number, card expiration date, and a personal identification code or other security information. The lengthwise dimension of magnetic stripe 91 is approximately 2 9/16 inches. As defined herein, the lengthwise dimension of a magnetic stripe is the largest dimension of the magnetic stripe. However, as described above, the present invention is not limited to any particular dimensions. Preferably, the lengthwise dimension of the magnetic stripe ranges from approximately 1 inch to approximately 3 inches.

The requirements of ISO/IEC 7811, which specifies the international standards for magnetic stripes will now be discussed, and then compared to the characteristics of magnetic stripe 91 of the present invention. Designers of cards bearing magnetic stripes attempt to comply with the standards set forth in ISO/IEC 7811 in order to ensure compatibility and interoperability with current magnetic stripe readers and POS terminals.

ISO/IEC 7811 specifies that a magnetic stripe may contain up to three tracks of encoded information. As will be appreciated by one skilled in the art, each track is essentially a strip of specified width and location running the length of the magnetic stripe, on which data is encoded. According to ISO/IEC 7811, track 1 is located closest to the edge of the card and contains data encoded at 210 bits per inch (bpi). Track 2 is adjacent to track 1 and contains data encoded at 75 bpi. FIG. 10 shows the width and location of tracks 1 and 2 as specified by ISO/IEC 7811-4, the entirety of which is hereby incorporated by reference. Track 3 is the furthest from the edge of the card and contains data encoded at 210 bpi. FIG. 11 shows the

width and location of track 3 as specified by ISO/IEC 7811-5, the entirety of which is hereby incorporated by reference.

In all cases, data is encoded on the tracks using two-frequency encoding, as specified in ISO/IEC 7811. As will be understood by one skilled in the art, two-frequency encoding involves the use of flux transitions to encode data. The encoding comprises data and clocking transitions together. The presence of a flux transition between clocking transitions signifies that the bit is a "one;" the absence of a flux transition signifies a "zero." Additional detailed discussion of two-frequency encoding may be found in ISO/IEC 7811-2 and 7811-6, the entirety of which is incorporated herein by reference.

Each track of data contains a "start sentinel." The start sentinel is the first data bit, and indicates the beginning of the encoded data on each track. As shown in FIG. 12, ISO/IEC 7811 specifies that the location of the start sentinel is approximately 0.293 inches from the right side of the card for all tracks.

FIG. 12 shows additional physical characteristics for magnetic stripes, as specified by ISO/IEC 7811. The minimum length of the magnetic stripe is specified as 3.135 inches (3.250 inches minimum from the right edge of the card to the left edge of the stripe minus the 0.115 inches maximum from the right edge of the card to the right edge of the stripe). The minimum width of the magnetic stripe is 0.25 inches for cards using tracks 1 and 2, and 0.41 inches for cards using all three tracks.

Magnetic stripe 91 (FIG. 9B) is different in several respects from the magnetic stripes specified by ISO/IEC 7811. First, the length of magnetic stripe 91 is approximately 2 9/16 inches, significantly shorter than the 3.135 inch minimum length specified by ISO/IEC 7811.

Second, the data on magnetic stripe 91 is encoded at bit densities higher than those prescribed in ISO/IEC 7811. Magnetic stripe 91 contains data encoded on tracks 1 and 2. In order to ensure that sufficient data is encoded in the smaller magnetic stripe area, data is encoded on track 1 at 260 bpi and on track 2 at 100 bpi. Both of these bit densities are significantly higher than those specified in ISO/IEC 7811 for tracks 1 and 2 (210 bpi and 75 bpi, respectively). As should be appreciated by one skilled in the art, data could also be encoded on track 3 if necessary or desirable in a particular circumstance. It should also be noted that the

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present invention is not limited by these specific bit densities, and other bit densities could be selected that ensure the storage of the appropriate amount of information in the available space.

Also, as shown in FIG. 9B, the start sentinel of magnetic stripe 91 is located 0.200 inches from the right edge of card 90. This start sentinel location is significantly different from that specified in ISO/IEC 7811, which specifies that the start sentinel must be located 0.293 inches from the right edge of the card.

Preferably, the data on tracks 1 and 2 of magnetic stripe 91 is encoded using standard two-frequency encoding. However, it should be understood by one skilled in the art that the present invention is not limited to a particular encoding technique. Preferably, the width of each track and the distance of each track from the bottom edge 98 of card 90 complies with the requirements of ISO/IEC 7811, as described above and shown in FIG. 10.

The dimensions of card 90 itself are different from the dimensions specified in ISO/IEC 7810, the entirety of which is hereby incorporated by reference, which generally specifies physical parameters of identification cards. Notably, ISO/IEC 7810 establishes minimum dimensions for identification cards at 2.125 inches by 3.370 inches. The dimensions of card 90 are approximately 1 9/16 inches by 2 9/16 inches.

Given that card 90 of the present invention does not comply with numerous standards and specifications set forth in ISO/IEC 7810 and 7811, it would be expected by those skilled in the art that the card would not be operable with standard magnetic stripe readers and POS terminals. However, tests performed on prototype cards indicate that the data cards of the present invention are compatible with standard equipment.

In order to test the prototype cards, twenty-five cards, substantially similar to that shown in FIGs. 9A and 9B and described above, were assembled and encoded with twenty-five different accounts. These twenty-five cards were then tested using five different POS terminals. The five POS terminals were standard merchant POS terminals manufactured by VeriFone Inc. A number of the twenty-five cards were tested on each of the five POS terminals. In order to ensure proper reading of the card, two tests were performed. First, after swiping each test card through the terminal, the terminal attempted to print a receipt showing, among other things, the name associated with the account encoded on each card. Second, the terminal used the data obtained from the card, and attempted to access the interchange system and obtain authorization

for a transaction. All tested cards passed both tests. This testing indicates that the data card of the present invention is unexpectedly compatible with POS terminals, despite the non-compliance with numerous aspects of ISO/IEC 7810 and 7811.

Additional testing was carried out using cards similar to card 130, shown in FIGs. 13A and 13B. Card 130 differs from card 90 only in that edge 139 of card 130 is angled. The same testing protocol described above was performed on twenty-five cards substantially similar to card 130 as shown in FIGs. 13A and B. The magnetic stripe 131 on card 130 is substantially the same as magnetic stripe 91 of card 90 (FIG. 9B). All cards tested passed both the receipt and authorization tests.

Thus, testing the prototype cards of various embodiments reveals that cards of the present invention are interoperable with magnetic card reader technology and POS terminals despite non-compliance with several of the relevant ISO/IEC standards.

Now will be described a method of use for a reduced-size data card of the present invention. As described above, such a card may be stored on a key-chain, lanyard, hook or similar device. Alternatively, the card may simply be placed in the pocket or bag of a consumer. When a consumer carrying a card of the present invention approaches a POS terminal or other card reader, such as when making sales transaction, the consumer may be required to produce the card to complete the transaction. Because of the convenience of storage, the consumer quickly and easily retrieves the card, and either gives the card to the merchant to "swipe" through the reader, or the consumer may be permitted to "swipe" the card him/herself. The POS terminal or other card reader then "reads" the encoded information on the card, such as card number, credit limit or the like, and the transaction is completed. The card may then be re-stored by the consumer until the next usage.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art, and consequently it is intended that the claims be interpreted to cover such modifications and equivalents.

CLAIMS

1. A data card comprising a first face, a second face, and an information storage medium, wherein said card has dimensions that are less than about 2 1/4 inches by about 3 3/8 inches.
2. A data card as in claim 1, wherein the dimensions of said card are in the range of about 1 inch by about 1 inch to about 1 7/8 inches by about 3 inches.
3. A data card as in claim 1, wherein the information storage medium comprises a magnetic stripe.
4. A data card as in claim 3, wherein the magnetic stripe is positioned parallel to an edge of said card.
5. A data card as in claim 3, wherein the magnetic stripe is positioned perpendicular to a largest dimension of said card.
6. A data card as in claim 3, wherein the magnetic stripe comprises two tracks for storing encoded data.
7. A data card as in claim 6, wherein a first of said two tracks comprises data encoded at greater than about 210 bits per inch.
8. A data card as in claim 7, wherein the first of said two tracks comprises data encoded at about 260 bits per inch.
9. A data card as in claim 6, wherein a second of said two tracks comprises data encoded at greater than about 75 bits per inch.
10. A data card as in claim 9, wherein the second of said two tracks comprises data encoded at about 100 bits per inch.
11. A data card as in claim 6, wherein the encoded data is encoded using two-frequency encoding.

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12. A data card as in claim 1, wherein said first and second faces define a hole therethrough.
13. A data card as in claim 1, further comprising a core disposed between said first and second faces, wherein said core comprises polyester.
14. A data card as in claim 13, wherein said core comprises about 80% polyester.
15. A data card as in claim 1, wherein the dimensions of said card are about 1 9/16 inches by about 2 9/16 inches.
16. A data card as in claim 1, wherein said first and second faces are devoid of raised lettering.
17. A data card as in claim 1, further comprising lettering printed on at least one of said first and second faces.
18. A data card as in claim 1, wherein the information storage medium comprises a computer chip.
19. A data card as in claim 1, further comprising a tread comprising a plurality of raised dimples for improving the gripability of said card, wherein said plurality of raised dimples are disposed on one of said first and second faces, said one face coming into contact with a user to improve gripability.
20. A data card as in claim 1, further comprising a plurality of craters disposed on one of said first and second faces, each of said plurality of craters comprising: a lip and a center, and wherein the lip of each crater is raised slightly above said one face, and the center of each crater is indented slightly into said one face.
21. A data card comprising a first face, a second face, and a magnetic stripe, wherein the magnetic stripe is positioned parallel to an edge of said card, and the magnetic stripe has a lengthwise dimension of less than about 3.135 inches.

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22. A data card as in claim 21, wherein the lengthwise dimension of the magnetic stripe is in the range of about 1 inch to about 3 inches.

23. A data card as in claim 22, wherein the magnetic stripe comprises two tracks for storing encoded data.

24. A data card as in claim 23, wherein a first of said two tracks comprises data encoded at greater than about 210 bits per inch.

25. A data card as in claim 24, wherein the first of said two tracks comprises data encoded at about 260 bits per inch.

26. A data card as in claim 23, wherein a second of said two tracks comprises data encoded at greater than about 75 bits per inch.

27. A data card as in claim 26, wherein the second of said two tracks comprises data encoded at about 100 bits per inch.

28. A data card as in claim 23, wherein the encoded data is encoded using two-frequency encoding.

29. A data card as in claim 21, further comprising a core disposed between said first and second faces, wherein said core comprises polyester.

30. A data card as in claim 29, wherein the core comprises about 80% polyester.

31. A data card as in claim 21, wherein the lengthwise dimension of the magnetic stripe is about $2 \frac{9}{16}$ inches.

32. A data card as in claim 21, wherein said first and second faces are devoid of raised lettering.

33. A data card as in claim 21 further comprising lettering printed on at least one of said first and second faces.

34. A data card as in claim 21 further comprising a tread comprising a plurality of raised dimples for improving the gripability of said card;

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wherein said plurality of raised dimples are disposed on one of said first and second faces, said one face coming into contact with a user to improve gripability.

35. A data card as in claim 21, further comprising a plurality of craters disposed on one of said first and second faces, each of said plurality of craters comprising: a lip and a center, and wherein the lip of each crater is raised slightly above said one face, and the center of each crater is indented slightly into said one face.

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36. A data card as in claim 21, wherein said first and second faces define a hole therethrough.

37. A data card as in claim 21, further comprising an angled edge.

38. A data card comprising a first face, a second face, an angled edge, and an information storage medium, wherein a largest dimension of said card is less than about 3 3/8 inches.

39. A data card as in claim 38, wherein the largest dimension of said card is in the range of about 1 7/8 inches to about 3 inches.

40. A data card as in claim 38, wherein the information storage medium comprises a magnetic stripe.

41. A data card as in claim 40, wherein the magnetic stripe is positioned parallel to an edge of said card.

42. A data card as in claim 41, wherein the magnetic stripe comprises two tracks for storing encoded data.

43. A data card as in claim 42, wherein a first of said two tracks comprises data encoded at greater than about 210 bits per inch.

44. A data card as in claim 43, wherein the first of said two tracks comprises data encoded at about 260 bits per inch.

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45. A data card as in claim 42, wherein a second of said two tracks comprises data encoded at greater than about 75 bits per inch.

46. A data card as in claim 45, wherein the second of said two tracks comprises data encoded at about 100 bits per inch.

47. A data card as in claim 42, wherein the encoded data is encoded using two-frequency encoding.

48. A data card as in claim 38, wherein said first and second faces define a hole therethrough.

49. A data card as in claim 38, further comprising a core disposed between said first and second faces, wherein said core comprises polyester.

50. A data card as in claim 49, wherein said core comprises about 80% polyester.

51. A data card as in claim 38, wherein said first and second faces are devoid of raised lettering.

52. A data card as in claim 38, further comprising lettering printed on at least one of said first and second faces.

53. A data card as in claim 38, wherein the information storage medium comprises a computer chip.

54. A data card as in claim 38, further comprising a tread comprising a plurality of raised dimples for improving the gripability of said card, wherein said plurality of raised dimples are disposed on one of said first and second faces, said one face coming into contact with a user to improve gripability.

55. A data card as in claim 38, further comprising a plurality of craters disposed on one of said first and second faces, each of said plurality of craters comprising: a lip and a center, and wherein the lip of each crater is raised slightly above said one face, and the center of each crater is indented slightly into said one face.

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SUBSTITUTE SHEET (RULE 26)

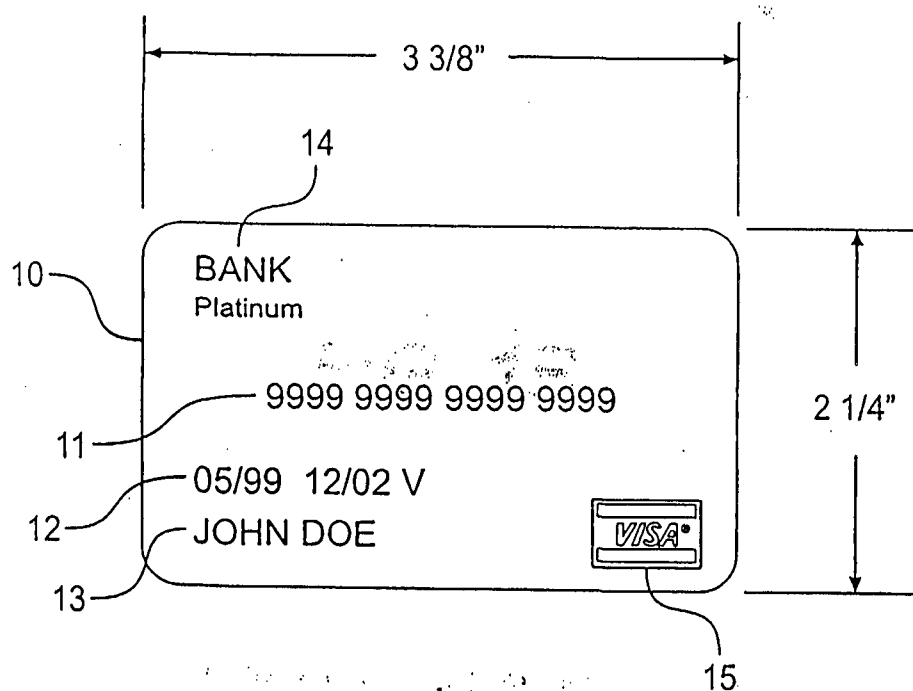


FIG. 1A

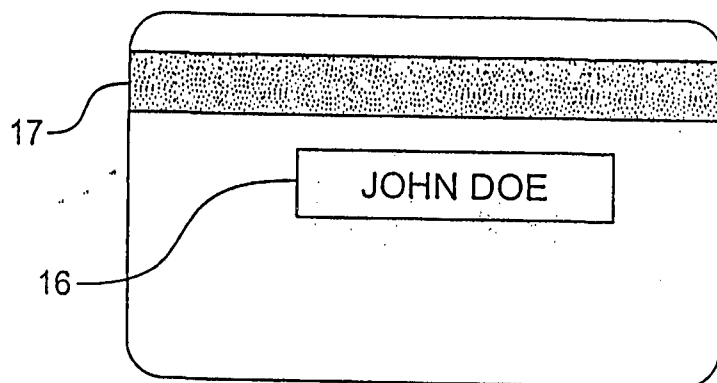
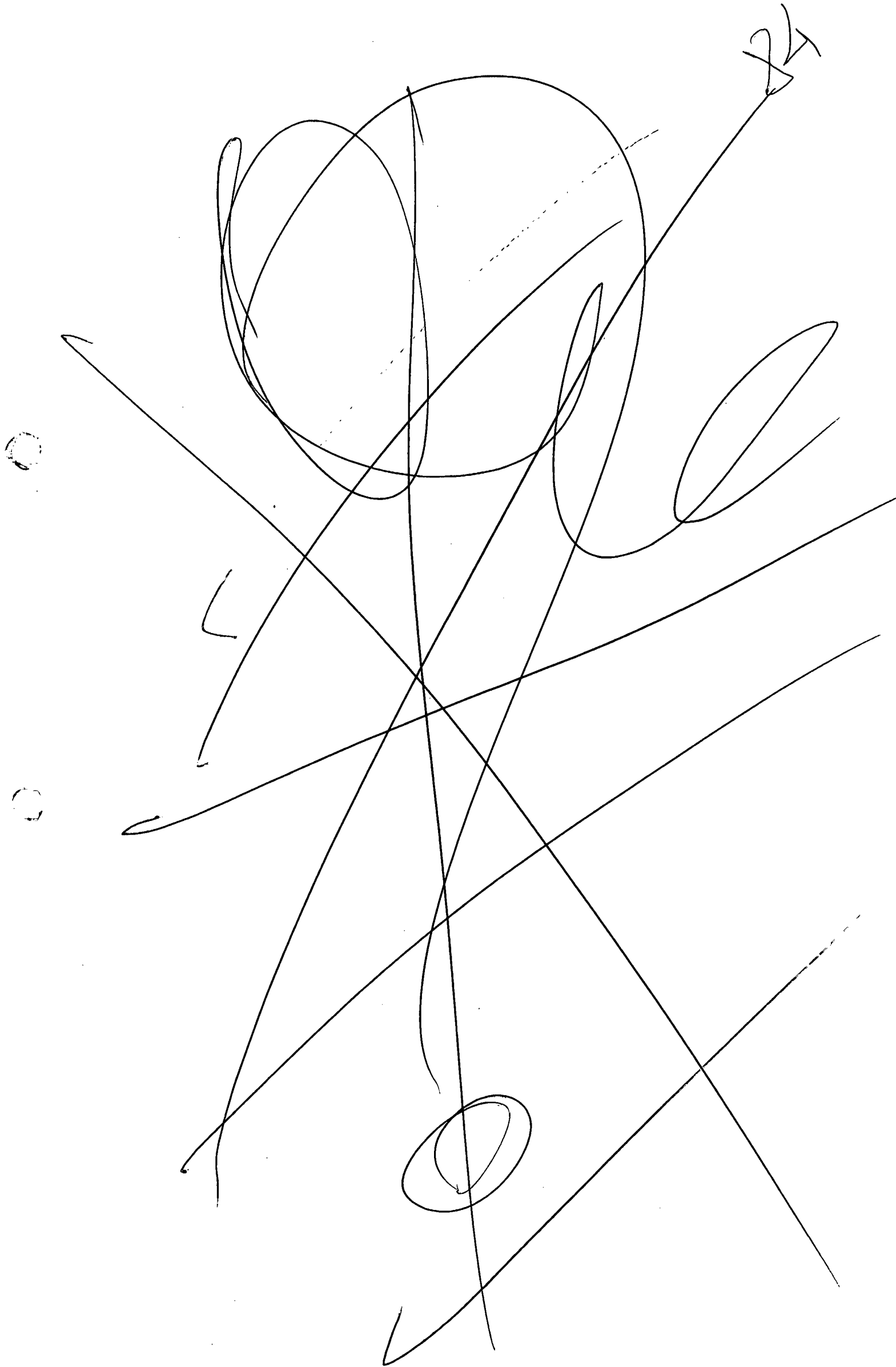


FIG. 1B

SUBSTITUTE SHEET (RULE 26)



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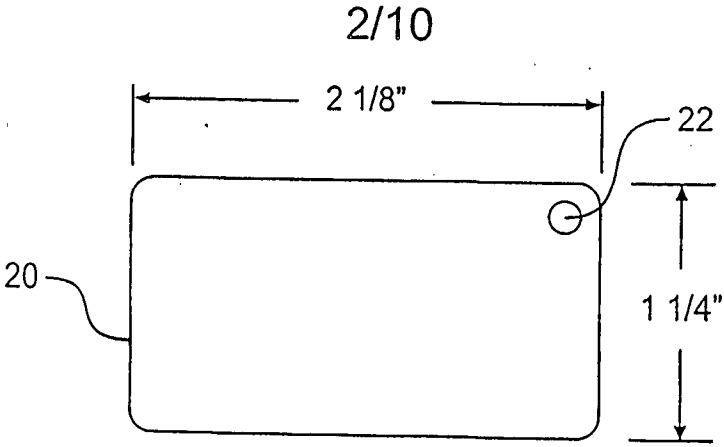


FIG. 2A

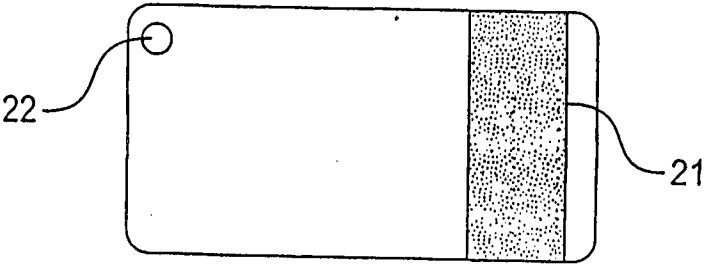


FIG. 2B

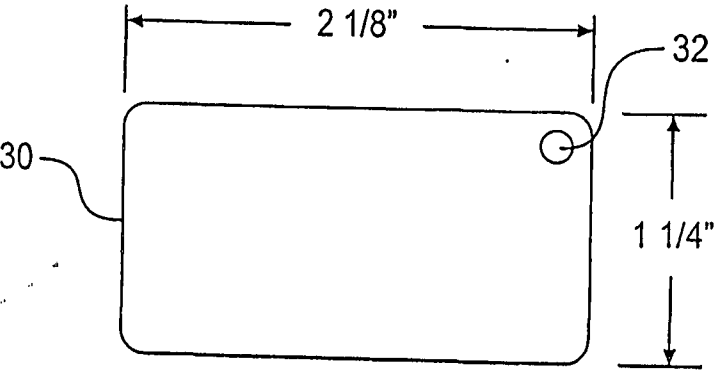


FIG. 3A

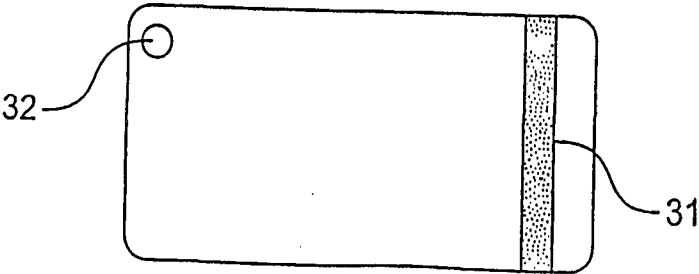


FIG. 3B

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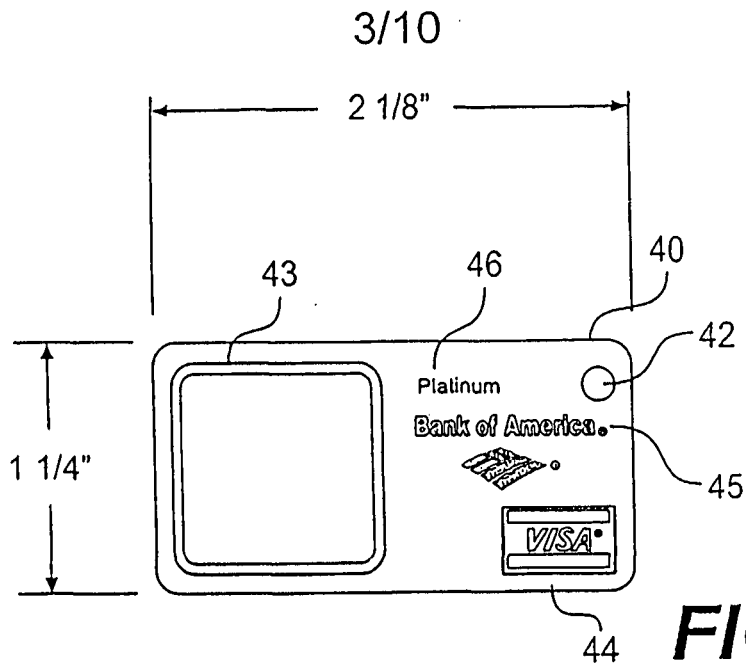


FIG. 4A

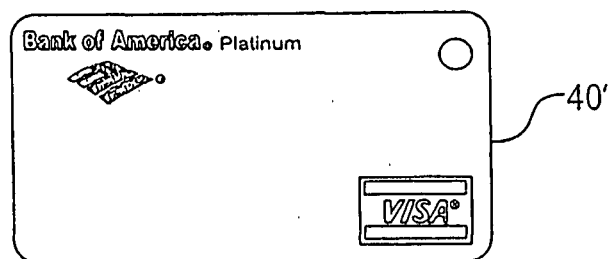


FIG. 4B

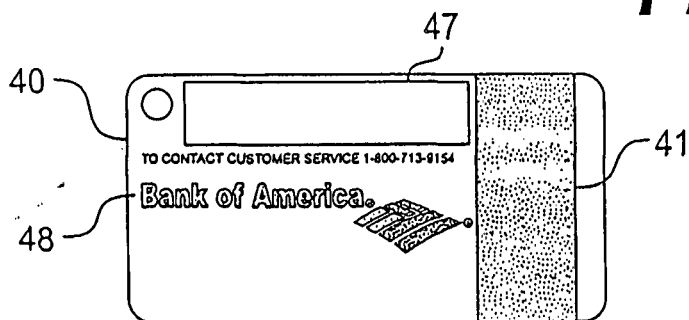


FIG. 4C

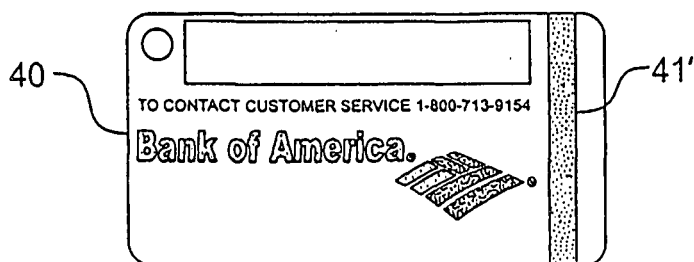


FIG. 4D

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SL 111 111 111 111 111 111

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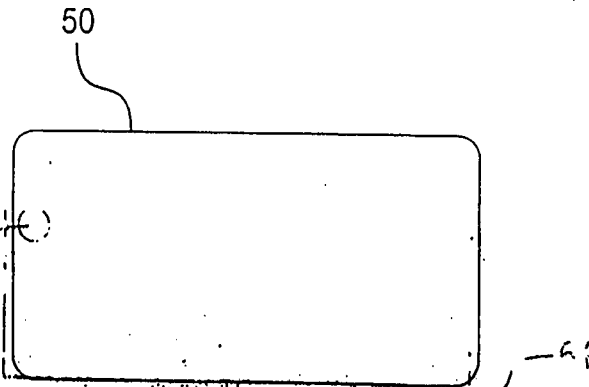


FIG. 5A

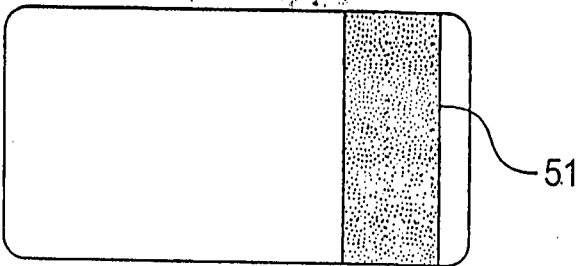


FIG. 5B

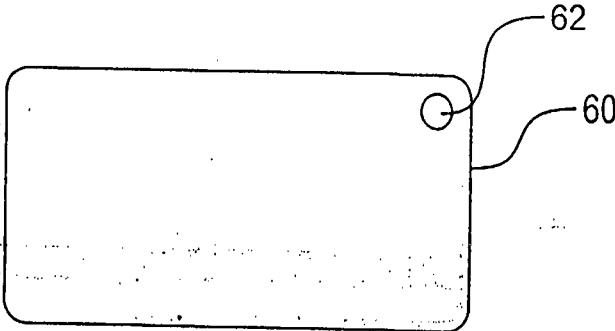


FIG. 6A

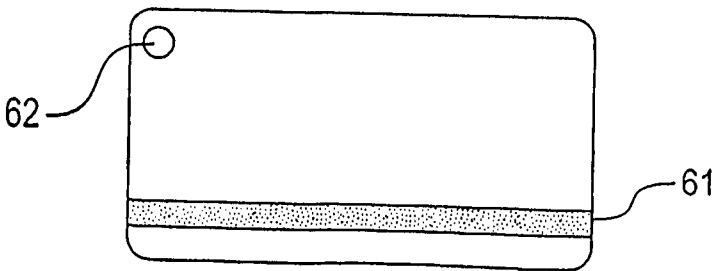


FIG. 6B

Handwritten signature or mark.

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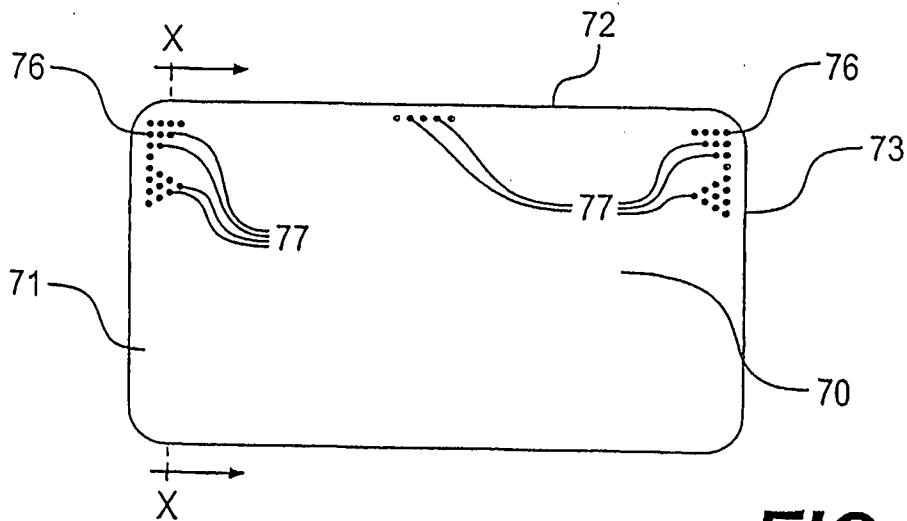


FIG. 7A

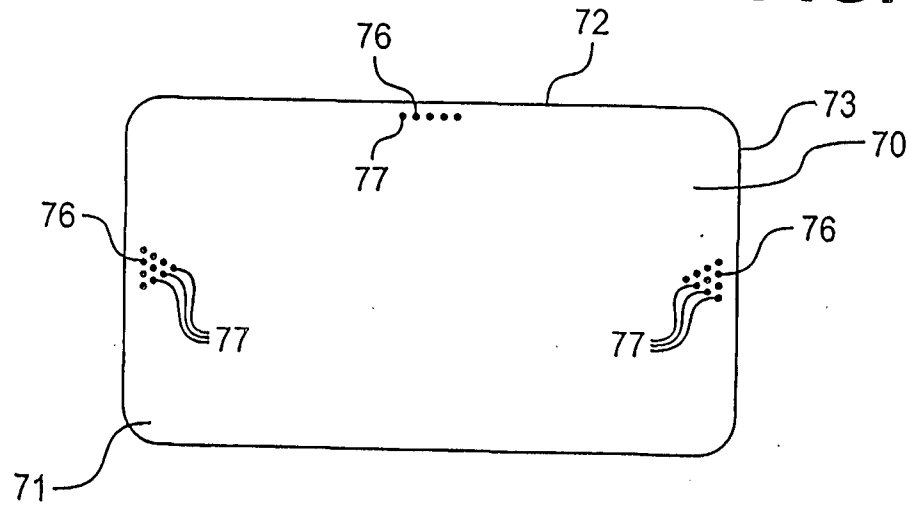


FIG. 7B

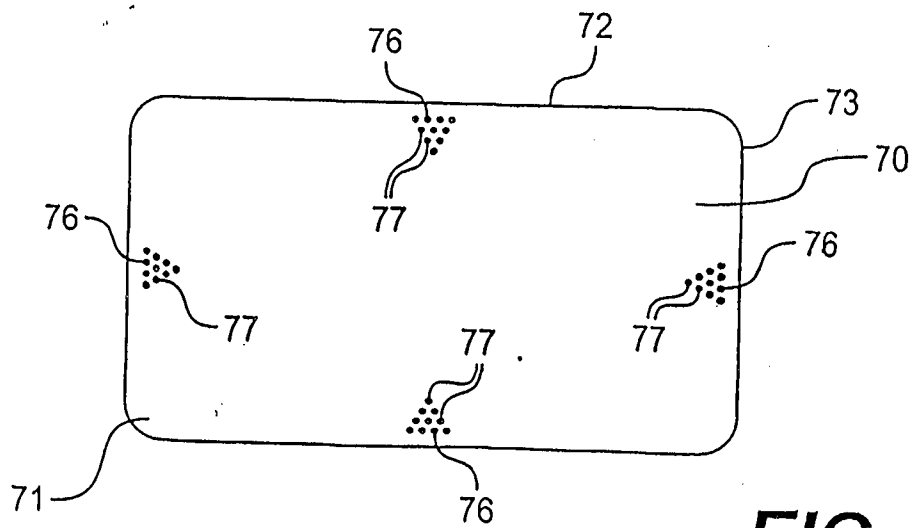


FIG. 7C

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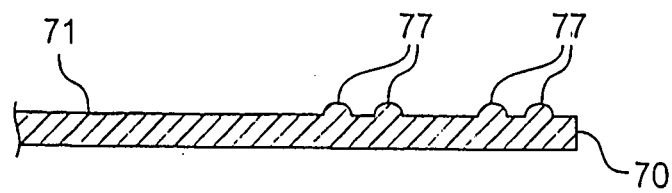


FIG. 8A

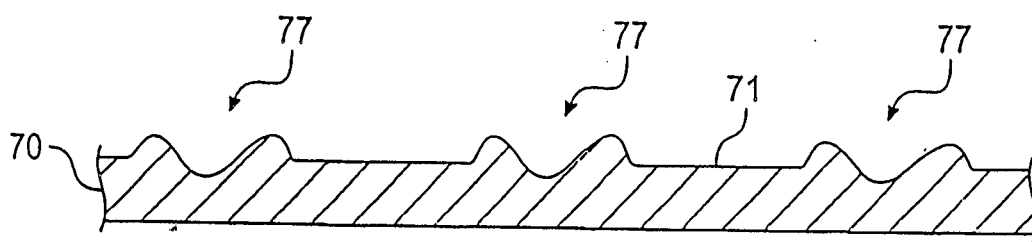
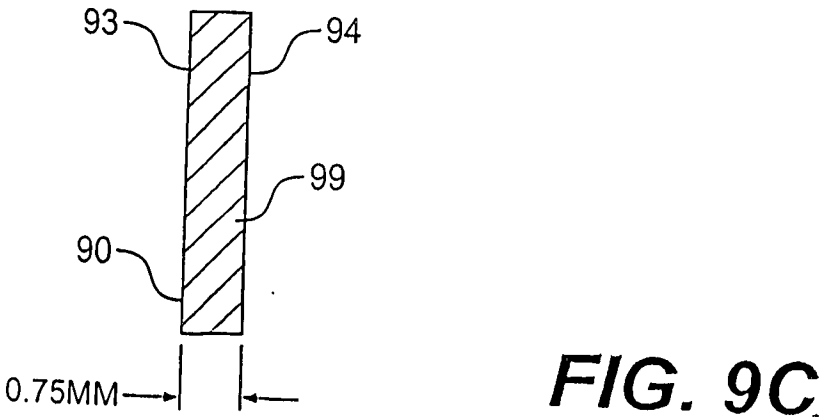
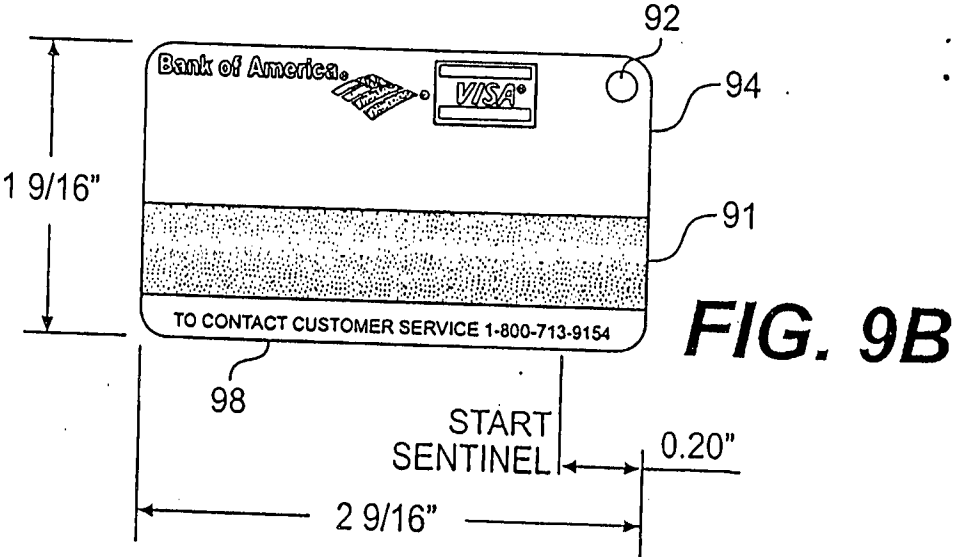
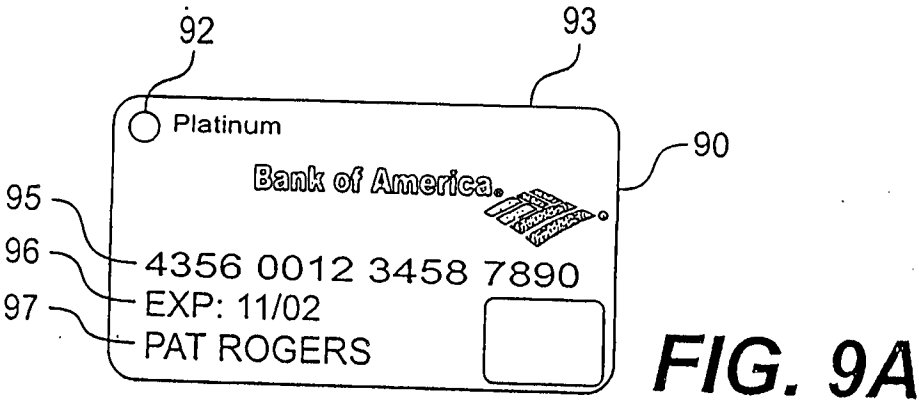


FIG. 8B

NO

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ON

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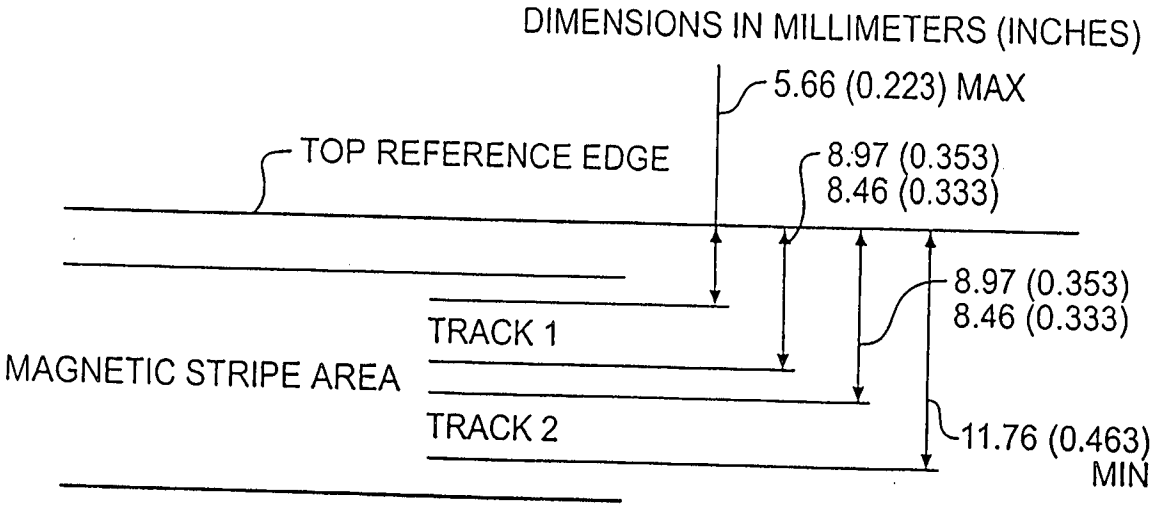


FIG. 10

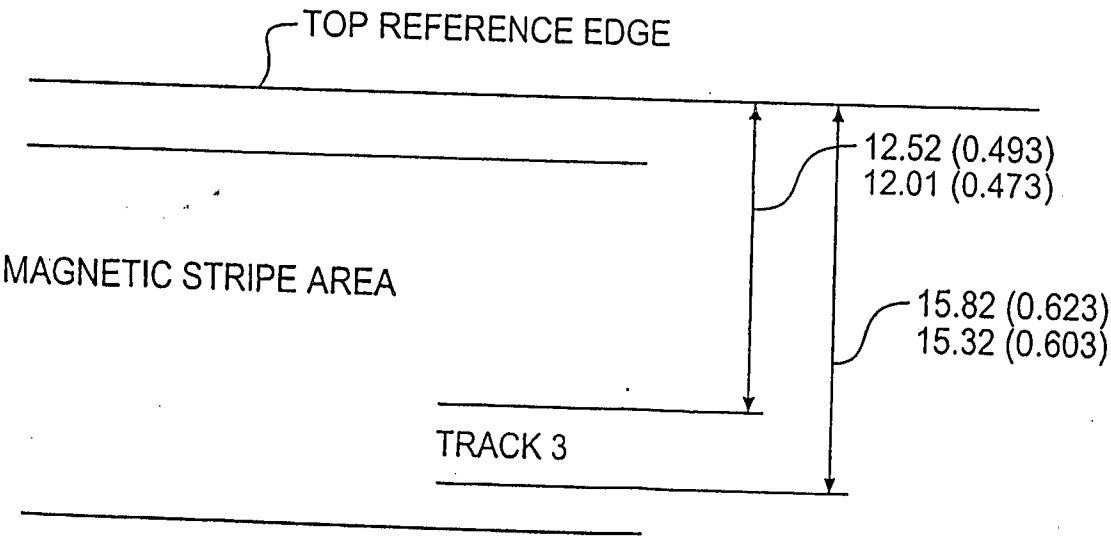


FIG. 11

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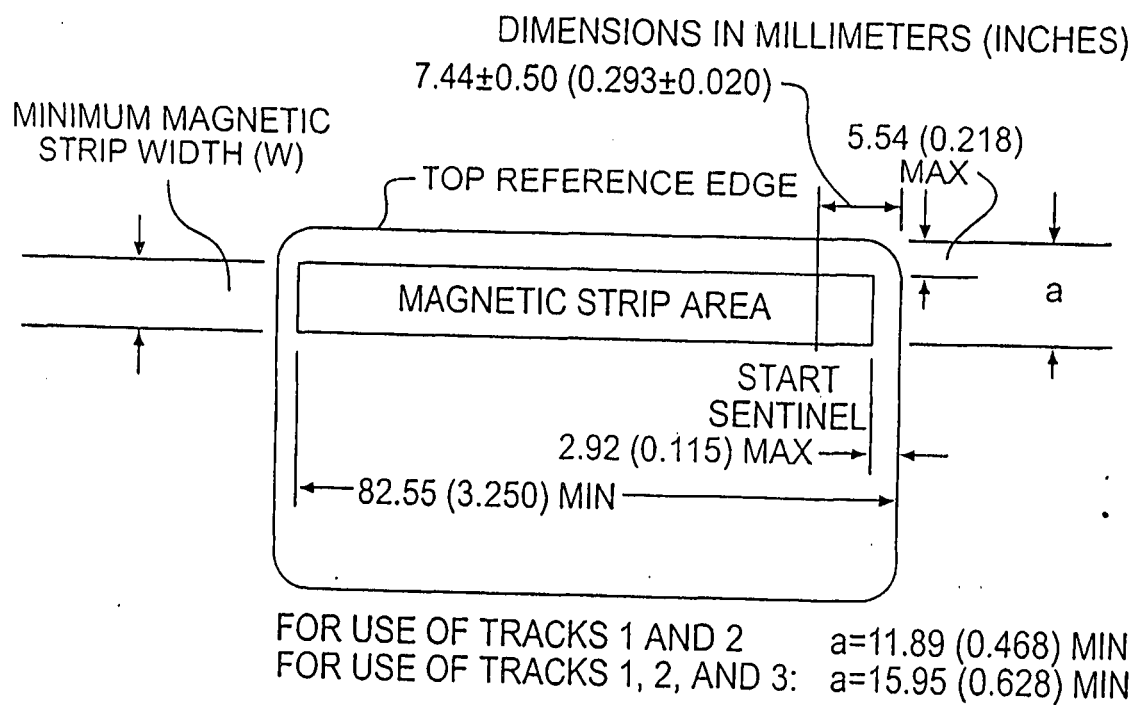


FIG. 12

AB

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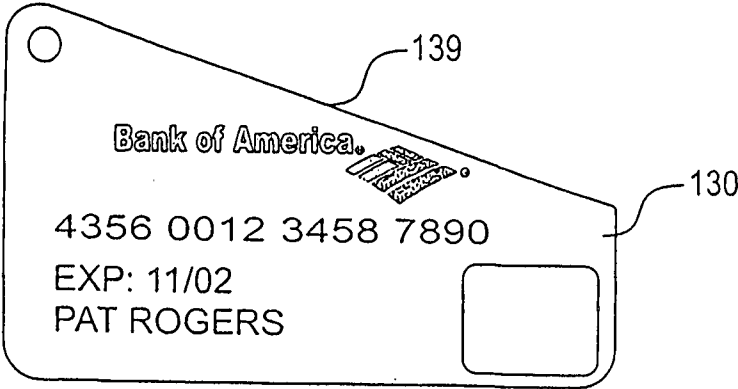


FIG. 13A

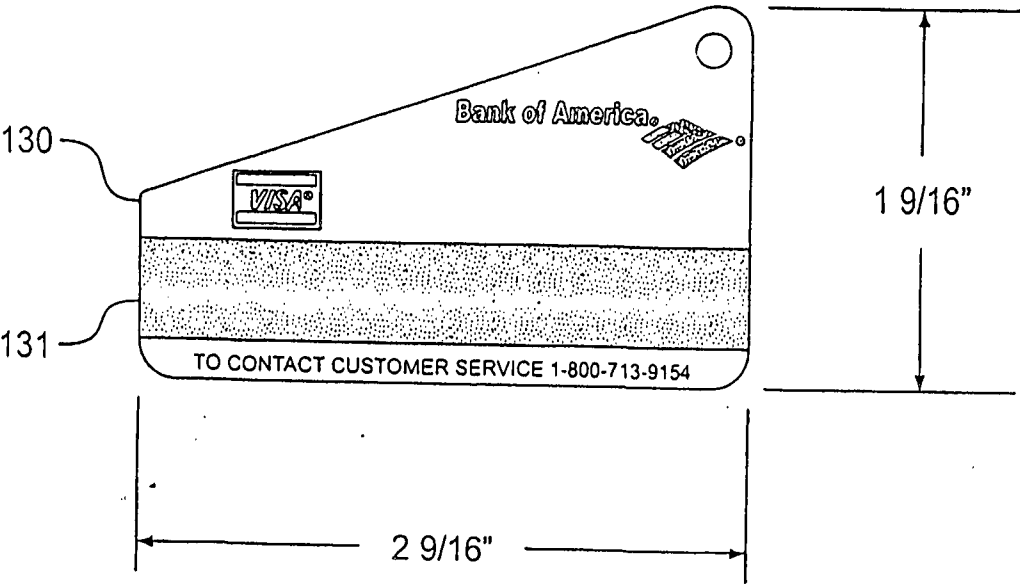


FIG. 13B

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 August 2002 (29.08.2002)

PCT

(10) International Publication Number
WO 02/067190 A2

(51) International Patent Classification⁷: **G06K 19/00**

(21) International Application Number: **PCT/US02/01284**

(22) International Filing Date: 18 January 2002 (18.01.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/263,756 25 January 2001 (25.01.2001) US
09/988,151 19 November 2001 (19.11.2001) US

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(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GI, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **MINIATURE DATA CARD**



(57) Abstract: A data card is reduced in size from the conventional standard size credit card. Accessibility of the card is enhanced because the card may be stored in a separate location from conventionally sized cards, such as on a key-chain or similar device. The card of the present invention has a means for storing information, such as a magnetic stripe or computer chip.

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MINIATURE DATA CARD

BACKGROUND OF THE INVENTION

This invention relates generally to data cards, such as credit cards, that contain a magnetic stripe or other means of storing information. More particularly, this invention relates to such cards that are small in size.

Cards of various kinds have become ubiquitous in modern society. People often carry a number of cards in their wallet or carrying case, including credit cards, ATM or bank cards, debit cards, "smart cards," insurance cards, a driver's license, identification cards, telephone calling cards, transit cards, library cards, and card-entry hotel keys. An increasing number of consumer transactions require use of these cards, for example, as the form of payment, or as identification necessary for another form of payment or admission. Quick and accurate access to certain individual cards is useful and desirable for both the consumer and the vendor of goods or services.

Typically, consumers store credit cards and other types of cards in a wallet or carrying case. These wallets and carrying cases are frequently equipped with sleeves or slots for holding one or more cards in an arrangement selected by the user. Because of the proliferation of the types and numbers of cards carried by consumers, cards are often held very tightly within these sleeves or slots, making retrieval of a particular card difficult. Difficulty in removing a single selected card increases the time necessary for the transaction, causes stored cards to be frequently reshuffled and potentially disorganized, and increases the likelihood that cards will be dropped or lost.

While the number of cards typically carried by consumers is increasing, most consumers use certain types of cards much more frequently than others. For example, some consumers may use a credit card for nearly every sales transaction, but only rarely, if ever, use calling cards, library cards, or insurance cards. Because a subset of the total number of cards carried by consumers must be accessed repeatedly, it is particularly desirable to improve the accessibility of these types of cards.

One way to improve accessibility of frequently used cards is by allowing them to be stored in a separate location from the traditional wallet or carrying case. Such cards could be stored on key-chains, lanyards, hooks, or other similar devices that are easily retrieved from a

ab

bag or pocket. Thus, when a consumer needs to use the card during a transaction, the card may be quickly retrieved and given to the merchant. This provides an added level of convenience to the consumer by making the payment process quicker and simpler. Additionally, the merchant is able to move customers through the line more quickly, improving customer satisfaction. An additional benefit of storing frequently used cards on a key-chain or like device is that the possibility that the card will be lost is decreased. This is because a single card is much more easily misplaced than a card attached to a key-chain.

Conventionally sized cards, however, are too large and cumbersome to be conveniently stored on a key-chain or like device. The individual items on a key chain must be small and compact so that the key-chain can accommodate numerous items. Further, key-chains and the like are often placed in the pockets of clothing, which may be small. Finally, larger items, such as conventional credit cards, could be bent or otherwise damaged when stored on a device such as a key-chain. Thus, for a card to be effectively carried on a key-chain, its size must be significantly reduced.

The degree to which conventional cards may be reduced in size, however, is limited by the requirements of standard magnetic stripe card readers, such as point-of-sale ("POS") terminals through which the user "swipes" the card to make a purchase or payment. In order to ensure interoperability between the magnetic stripe readers and cards bearing magnetic stripes, the parameters defining the magnetic stripe are governed by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). ISO/IEC 7811 provides standards for the physical characteristics of the magnetic stripe including the location of the stripe on the card, the surface profile of the stripe, and the height of the stripe above the card surface. It would be advantageous for a reduced-size card to comply with ISO/IEC 7811, or otherwise be compatible with existing card readers and POS terminals.

Proper functioning of the magnetic stripe is very important. On conventional cards, such as credit cards, magnetic stripes contain encoded information that electronic readers can read to perform a function or confirm identification. For example, on credit and debit cards, the magnetic stripe is usually encoded with specific account information such as the credit card number, cardholder's name, the card expiration date, and a personal identification code. If the electronic device for reading the encoded information cannot properly read the magnetic stripe, the vendor must enter the information manually, using a keypad, telephone, or other similar

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device. Manually entering the encoded information adds both indirect and direct costs to the vendor. For example, the additional time necessary to enter the information manually may increase needs for register operators and decrease the vendor's ability to attend to other customer matters. In addition, vendors are frequently charged increased transaction fees by the card issuer for a manually entered transaction.

Thus, a need exists for providing cards, such as credit cards, that are reduced in size from currently used cards, and yet still are operable with currently used readers. Such a card would greatly enhance the efficiency of frequent transactions, including sales transactions, by allowing regularly used cards to be readily and easily retrieved. Further, because such a card could be readily stored on a key-chain or like device, the probability that the card would be lost or misplaced is reduced. Finally, because such a card would be compatible with currently used readers, no redesign of existing card reader technology would be required.

BRIEF SUMMARY OF THE INVENTION

In one aspect, the present invention provides a data card that is reduced in size from conventional credit-card-sized cards, and contains an information storage medium, such as a magnetic stripe or a computer chip, that can be read by existing card reader technology.

In another aspect, a reduced-size data card is provided with a magnetic stripe, which is located near an edge of the card, on which data is encoded. Such a magnetic stripe is reduced in size from the magnetic stripes found on conventionally sized cards, and contains data encoded at a higher bit density than on conventionally sized cards. The magnetic stripe is compatible with existing card reader technology.

In yet another aspect, a reduced-size data card is provided with a hole to allow key-chain storage, and the core may be composed, at least in part, of polyester. Additionally, the surface of a data card of the present invention may also be provided with raised dimples or craters to enhance gripability of the card. Further, information may be printed on the surface of the card, in order to reduce or eliminate the need to emboss the card with raised lettering or embossing.

In still another aspect, a reduced-size data card of the present invention may have an angled edge.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is an illustration of the front view of a conventional credit card.

FIG. 1B is an illustration of the back view of a conventional credit card.

FIG. 2A is an illustration of the front view of one preferred embodiment of the reduced-size data card of the present invention.

FIG. 2B is an illustration of the back view of the embodiment shown in FIG. 2A.

FIG. 3A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 3B is an illustration of the back view of the embodiment shown in FIG. 3A.

FIG. 4A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 4B is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 4C is an illustration of the back view of the embodiment shown in FIG. 4A.

FIG. 4D is an illustration of an alternate back view of the embodiment shown in FIG. 4A.

FIG. 5A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 5B is an illustration of the back view of the embodiment shown in FIG. 5A.

FIG. 6A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 6B is an illustration of the back view of the embodiment shown in FIG. 6A.

FIG. 7A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention

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FIG. 7B is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention

FIG. 7C is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention

FIG. 8A is a partial sectional view of another preferred embodiment of the reduced-size data card of the present invention taken through the tread where the tread includes raised dimples.

FIG. 8B is a partial sectional view of another preferred embodiment of the reduced-size data card of the present invention taken through the tread where the tread includes craters.

FIG. 9A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 9B is an illustration of the back view of the embodiment shown in FIG. 9A.

FIG. 9C is an illustration of a side view of the embodiment shown in FIG. 9A.

FIG. 10 is an illustration of the ISO/IEC 7811 standards for location and width of magnetic stripe data tracks 1 and 2.

FIG. 11 is an illustration of the ISO/IEC 7811 standards for location and width of magnetic stripe data track 3.

FIG. 12 is an illustration of the ISO/IEC 7811 standards for magnetic stripe location and size.

FIG. 13A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 13B is an illustration of the back view of the embodiment shown in FIG. 13A.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made to the present preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings.

FIGs. 1A-B illustrate one embodiment of a conventional credit card. FIG. 1A shows the front side of a conventional standard size credit card 10, which is typically embossed using raised lettering with a credit card number 11, an expiration date 12, and the name of the cardholder 13. Such a card also usually contains the name of the issuing bank 14, and the credit card company, such as American Express®, MasterCard®, or VISA®, 15. It may also contain other information, such as sponsor logos and/or a "platinum" or similar indication. Additionally, the credit card may contain an identification photograph of the card-holder for security purposes. The back side of conventional card 10, shown in FIG. 1B, typically contains a box 16 that can be signed by the card holder, which is used for verification purposes when a purchase is made. Additionally, the back side of card 10 contains a magnetic stripe 17, which runs parallel to the card's largest dimension. Magnetic stripe 17 stores information, such as credit card number, that can be read by conventional point of sale ("POS") terminals. A standard credit card is approximately 3 3/8 in. long by 2 1/4 in. high, for an aspect ratio (length/height) of approximately 1.5, and has a thickness of approximately 0.75 mm.

The card of the present invention includes an information storage medium. By "information storage medium," is meant a medium that is added to the card that stores information in a magnetic, electronic, or electro-magnetic manner. This term does not include printed information either affixed to or printed directly on the card. Exemplary information storage media suitable for use with the present invention include, but are not limited to, magnetic stripes and computer chips.

FIGs. 2A-B depict a preferred embodiment of the present invention, including a generally rectangular card 20, a magnetic stripe 21, and a hole 22. The dimensions of card 20 are approximately 2 1/8 in. long by 1 1/4 in. high, for an aspect ratio (length/height) of approximately 1.7, and a thickness of approximately 0.75 mm. This is a significant reduction from the dimensions of a standard credit card. As would be appreciated by one skilled in the art, the foregoing specific dimensions are representative only, and the present invention is not limited to any particular dimensions. Preferably, the present invention is carried out using cards with dimensions ranging in length from approximately 1 in. to 3 in., and ranging in height from approximately 1 in. to 1 7/8 in. Thus, the aspect ratio (length/height) could range from approximately 0.53 (1 / 1.875) to 3 (3 / 1).

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Magnetic stripe 21 is located on the back side of card 20, as shown in FIG. 2B, and is oriented perpendicularly to the card's largest dimension. Alternatively, the magnetic stripe could be located on the front side of card 20. In one embodiment of the present invention, magnetic stripe 21 is approximately 0.41 in. in width. In another embodiment, shown for example in FIGs. 3A-B, magnetic stripe 31 is approximately 0.25 in. in width.

ISO/IEC 7811 provides standards for the location of the stripe on the card, the surface profile of the stripe, and the height of the stripe above the card surface. Generally, designers of cards attempt to comply with these standards to ensure compatibility with existing POS terminals. Unexpectedly, the card of the present invention is compatible with existing point of sale terminals without complying with several aspects of the ISO/IEC standards, as explained in more detail below.

Finally, hole 22 is shown as located in a corner of card 20, and allows the card to be readily carried on a key-chain or like device. It should be apparent to one skilled in the art that hole 20 can be located anywhere on the card that allows the card to be carried by a key-chain or similar device and does not interfere with the magnetic stripe.

FIGs. 3A-B show an alternate preferred embodiment. Like the previous embodiment, this embodiment includes a generally rectangular card 30, a magnetic stripe 31, that is oriented perpendicularly to the card's largest dimension, and a hole 32. Here, however, magnetic stripe 31 is narrower in width than magnetic stripe 21 of FIG. 2B. A narrower magnetic stripe may be utilized when less information is needed to be stored by the magnetic stripe or when encoding techniques allow more information to be stored in a reduced space.

FIGs. 4A-D show alternate preferred embodiments. FIG. 4A shows a generally rectangular shaped card 40 with a hole 42. Card dimensions (2 1/8 in. by 1 1/4 in.) are shown on FIG. 4A and are significantly reduced from the standard size credit card. Additionally, card 40 contains an identification photograph 43, various logos 44 and 45, and additional information 46. Further, embossed information, such as credit card number or expiration date (not shown) could be included. Other arrangements of logos, and information should be apparent to one of ordinary skill in the art from this description or from practice. For example, FIG. 4B shows card 40', which is similar to card 40 (FIG. 4A) but without the identification photograph, and with a different arrangement of logos and other information.

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FIG. 4C shows the back side of card 40, depicted in FIG. 4A, which includes magnetic stripe 41 oriented perpendicularly to the card's largest dimension. Additionally, FIG. 4C includes signature block 47. Signature block 47 is to be signed by the card holder, and is used for signature verification when a purchase is made. Finally, the back side of card 40 may contain logos 48 and other information, as would be apparent to one of ordinary skill in the art.

FIG. 4D shows an alternate arrangement of the back side of card 40. It shows magnetic stripe 41' which is narrower than magnetic stripe 41 of FIG. 4C. Narrower magnetic stripes may be utilized when less information is required to be stored by the magnetic stripe, or when encoding techniques allow more information to be stored in less space.

FIGs. 5A-B show an alternate preferred embodiment, including a generally rectangular shaped card 50 and a magnetic stripe 51, oriented perpendicularly to the card's largest dimension. Unlike previous embodiments, the present embodiment does not contain a hole. While a hole is a helpful way to attach a card of the present invention to a key-chain or like device, such a hole is not required. Thus, the card can be attached to the key-chain by a clip or similar device. Additionally, the card of the present invention is not required to be stored on a key-chain or like device and could be stored in any fashion chosen by the consumer, such as directly in the consumer's pocket or bag. It should be readily apparent to one skilled in the art that any of the embodiments described herein could be modified such that the hole is removed.

FIGs. 6A-B show still another alternate preferred embodiment, including a generally rectangular shaped card 60, a magnetic stripe 61, and a hole 62. Magnetic stripe 61 is oriented parallel to the card's largest dimension. As described above, magnetic stripe 61 is preferably compatible with existing magnetic stripe readers. Magnetic stripe 61 may be either narrow or wide, depending on the amount of data required to be stored and the degree of data compression. Because magnetic stripe 61 is oriented parallel to the card's longest dimension, it may be capable of storing a greater amount of information at a given width than magnetic stripe 21 of FIG. 2B which is oriented perpendicularly to the card's largest dimension. Thus, the present embodiment may be more easily implemented when greater amounts of information storage is required. It should be readily apparent to one of ordinary skill in the art that any of the embodiments described herein could be modified such that the magnetic stripe is oriented parallel to the card's largest dimension.

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Conventional credit cards and the like have been generally rectangular in shape. However, the card of the present invention may take on other shapes. For example, the card could be any number of geometric shapes such as triangular or trapezoidal. Additionally, the card could take on the shape of naturally occurring or human-made objects, such as pine trees or airplanes. Such shapes could be related to the card issuer or sponsor. Thus, a credit card that a consumer can use to accrue frequent flier miles could be in the shape of an airplane. The dimensions of such cards generally comport with the size guidelines suggested herein. Because such cards are not rectangular, the magnetic stripe would not necessarily be oriented as described above (either parallel to or perpendicular to the card's largest dimension). Thus, the magnetic stripe could be oriented in any number of ways, depending on the shape of the card.

Additionally, any of the embodiments described herein could be provided with a tread to increase the gripability of the card. Such treads are described in detail in U.S. Patent Application No. 09/611,320 filed on July 6, 2000, the entirety of which is hereby incorporated by reference.

These treads could take the form of a plurality raised dimples disposed on a surface of the card. The treads are preferably disposed on the surface or face of the card that comes into contact with the user to increase gripability. FIGs. 7A-C show three alternate preferred embodiments of the present invention in which the surface of the card is provided with treads. In each a number of dimples 77 is arranged to form a plurality of treads 76 on the front face 71 of card 70. In FIG. 7A, the dimples 77 are arranged to form treads 76 in either a triangular pattern or a line. The dimples 77, however, can also be arranged in any number of patterns. As depicted in FIGs. 7A-7C, the treads 76 are located near an edge 73 of card 70, and in each preferred embodiment depicted in FIGs. 7A-7C, a tread 76 is located near the top edge 72 of the card 70. Other arrangements of dimples 77 forming treads 76 should be apparent to one of skill in the art from this description of from practice of the invention depending on the intended or experienced use of the card.

FIG. 8A shows a sectional view of a preferred embodiment of card 70 of the present invention taken along the line X-X of FIG. 7A, in which the dimples 77 are raised from the front face 71 of the card 70. In such an embodiment, the height of each dimple should be selected so as not to interfere with the proper operation of POS terminals or other devices that require the card to be swiped by or through the device.

FIG. 8B shows a sectional view of an alternate preferred embodiment of card 70 of the present invention. In this embodiment, the dimples are created in such a manner as to create individual craters 77 in which the lip of the crater is raised slightly above the front surface 71 of the card 70, while the center of the crater is slightly below the surface of the card.

While the specific embodiments described herein are cards having magnetic stripes such as credit cards, debit cards, and bank cards, this is by way of example, and the invention is not limited to these types of cards. Thus, the present invention can be implemented for many different types of data cards including Smart Cards (i.e. cards containing computer chips that store information), stored value cards, proximity chip cards, and other cards that are capable of storing information. A detailed discussion of data cards containing embedded computer chips may be found in U.S. Patent No. 4,443,027 to McNeely et al., the entirety of which is hereby incorporated by reference.

Another preferred embodiment of the present invention will now be described in greater detail. This preferred embodiment, shown in FIGs. 9A-C, includes a generally rectangular card 90, a magnetic stripe 91, and a hole 92. The front face 93 of card 90 is shown in FIG. 9A; the rear face 94 of card 90 is shown in FIG. 9B. Approximate dimensions of card 90, as indicated on FIG. 9B, are $1 \frac{9}{16}$ inches (height) by $2 \frac{9}{16}$ inches (length). The width of the card, shown in FIG. 9C (not to scale), is approximately 0.75 mm. These height and length dimensions are reduced from conventionally-sized credit card dimensions, which are approximately $2 \frac{1}{4}$ inches (height) by $3 \frac{3}{8}$ inches (length).

Once again, the specific dimensions of card 90 are representative only, and the present invention is not limited to any particular dimensions. Nevertheless, the present invention is preferably carried out using cards with dimensions ranging from approximately 1 inch by 1 inch to approximately $1 \frac{7}{8}$ inches to 3 inches.

The front face 93 of card 90 contains various information such as card number 95, expiration date 96, and card-holder name 97. This information may be embossed on the card. In a preferred embodiment, the card is free from or devoid of embossing or other raised lettering. In such an embodiment, the information may be printed on the card using laser printing techniques, as are known in the art.

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Between front and rear faces 93 and 94 of card 90 is a core 99, as shown in FIG. 9C. This core may be composed of, at least in part, polyester. In one embodiment, the core is composed of 80% polyester and 20% polyvinyl chloride (PVC). The use of polyester in the core is advantageous because it increases the durability of the card. As would be apparent to one skilled in the art, various percentages of polyester and other materials may be used for the card core.

In the embodiment shown in FIGs. 9A-C, magnetic stripe 91 is positioned parallel to the bottom edge 98 of card 90. The bottom edge, of course, is defined with respect to the particular card orientation shown in FIG. 9B. As would be readily apparent to one skilled in the art, rotation of card 90 could cause "bottom" edge 98 to appear as if it is a right, left, or top edge. Magnetic stripe 91 is used to store encoded data such as the name of the card-holder, a credit card or other account number, card expiration date, and a personal identification code or other security information. The lengthwise dimension of magnetic stripe 91 is approximately 2 9/16 inches. As defined herein, the lengthwise dimension of a magnetic stripe is the largest dimension of the magnetic stripe. However, as described above, the present invention is not limited to any particular dimensions. Preferably, the lengthwise dimension of the magnetic stripe ranges from approximately 1 inch to approximately 3 inches.

The requirements of ISO/IEC 7811, which specifies the international standards for magnetic stripes will now be discussed, and then compared to the characteristics of magnetic stripe 91 of the present invention. Designers of cards bearing magnetic stripes attempt to comply with the standards set forth in ISO/IEC 7811 in order to ensure compatibility and interoperability with current magnetic stripe readers and POS terminals.

ISO/IEC 7811 specifies that a magnetic stripe may contain up to three tracks of encoded information. As will be appreciated by one skilled in the art, each track is essentially a strip of specified width and location running the length of the magnetic stripe, on which data is encoded. According to ISO/IEC 7811, track 1 is located closest to the edge of the card and contains data encoded at 210 bits per inch (bpi). Track 2 is adjacent to track 1 and contains data encoded at 75 bpi. FIG. 10 shows the width and location of tracks 1 and 2 as specified by ISO/IEC 7811-4, the entirety of which is hereby incorporated by reference. Track 3 is the furthest from the edge of the card and contains data encoded at 210 bpi. FIG. 11 shows the

width and location of track 3 as specified by ISO/IEC 7811-5, the entirety of which is hereby incorporated by reference.

In all cases, data is encoded on the tracks using two-frequency encoding, as specified in ISO/IEC 7811. As will be understood by one skilled in the art, two-frequency encoding involves the use of flux transitions to encode data. The encoding comprises data and clocking transitions together. The presence of a flux transition between clocking transitions signifies that the bit is a "one;" the absence of a flux transition signifies a "zero." Additional detailed discussion of two-frequency encoding may be found in ISO/IEC 7811-2 and 7811-6, the entirety of which is incorporated herein by reference.

Each track of data contains a "start sentinel." The start sentinel is the first data bit, and indicates the beginning of the encoded data on each track. As shown in FIG. 12, ISO/IEC 7811 specifies that the location of the start sentinel is approximately 0.293 inches from the right side of the card for all tracks.

FIG. 12 shows additional physical characteristics for magnetic stripes, as specified by ISO/IEC 7811. The minimum length of the magnetic stripe is specified as 3.135 inches (3.250 inches minimum from the right edge of the card to the left edge of the stripe minus the 0.115 inches maximum from the right edge of the card to the right edge of the stripe). The minimum width of the magnetic stripe is 0.25 inches for cards using tracks 1 and 2, and 0.41 inches for cards using all three tracks.

Magnetic stripe 91 (FIG. 9B) is different in several respects from the magnetic stripes specified by ISO/IEC 7811. First, the length of magnetic stripe 91 is approximately 2 9/16 inches, significantly shorter than the 3.135 inch minimum length specified by ISO/IEC 7811.

Second, the data on magnetic stripe 91 is encoded at bit densities higher than those prescribed in ISO/IEC 7811. Magnetic stripe 91 contains data encoded on tracks 1 and 2. In order to ensure that sufficient data is encoded in the smaller magnetic stripe area, data is encoded on track 1 at 260 bpi and on track 2 at 100 bpi. Both of these bit densities are significantly higher than those specified in ISO/IEC 7811 for tracks 1 and 2 (210 bpi and 75 bpi, respectively). As should be appreciated by one skilled in the art, data could also be encoded on track 3 if necessary or desirable in a particular circumstance. It should also be noted that the

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present invention is not limited by these specific bit densities, and other bit densities could be selected that ensure the storage of the appropriate amount of information in the available space.

Also, as shown in FIG. 9B, the start sentinel of magnetic stripe 91 is located 0.200 inches from the right edge of card 90. This start sentinel location is significantly different from that specified in ISO/IEC 7811, which specifies that the start sentinel must be located 0.293 inches from the right edge of the card.

Preferably, the data on tracks 1 and 2 of magnetic stripe 91 is encoded using standard two-frequency encoding. However, it should be understood by one skilled in the art that the present invention is not limited to a particular encoding technique. Preferably, the width of each track and the distance of each track from the bottom edge 98 of card 90 complies with the requirements of ISO/IEC 7811, as described above and shown in FIG. 10.

The dimensions of card 90 itself are different from the dimensions specified in ISO/IEC 7810, the entirety of which is hereby incorporated by reference, which generally specifies physical parameters of identification cards. Notably, ISO/IEC 7810 establishes minimum dimensions for identification cards at 2.125 inches by 3.370 inches. The dimensions of card 90 are approximately 1 9/16 inches by 2 9/16 inches.

Given that card 90 of the present invention does not comply with numerous standards and specifications set forth in ISO/IEC 7810 and 7811, it would be expected by those skilled in the art that the card would not be operable with standard magnetic stripe readers and POS terminals. However, tests performed on prototype cards indicate that the data cards of the present invention are compatible with standard equipment.

In order to test the prototype cards, twenty-five cards, substantially similar to that shown in FIGs. 9A and 9B and described above, were assembled and encoded with twenty-five different accounts. These twenty-five cards were then tested using five different POS terminals. The five POS terminals were standard merchant POS terminals manufactured by VeriFone Inc. A number of the twenty-five cards were tested on each of the five POS terminals. In order to ensure proper reading of the card, two tests were performed. First, after swiping each test card through the terminal, the terminal attempted to print a receipt showing, among other things, the name associated with the account encoded on each card. Second, the terminal used the data obtained from the card, and attempted to access the interchange system and obtain authorization

for a transaction. All tested cards passed both tests. This testing indicates that the data card of the present invention is unexpectedly compatible with POS terminals, despite the non-compliance with numerous aspects of ISO/IEC 7810 and 7811.

Additional testing was carried out using cards similar to card 130, shown in FIGs. 13A and 13B. Card 130 differs from card 90 only in that edge 139 of card 130 is angled. The same testing protocol described above was performed on twenty-five cards substantially similar to card 130 as shown in FIGs. 13A and B. The magnetic stripe 131 on card 130 is substantially the same as magnetic stripe 91 of card 90 (FIG. 9B). All cards tested passed both the receipt and authorization tests.

Thus, testing the prototype cards of various embodiments reveals that cards of the present invention are interoperable with magnetic card reader technology and POS terminals despite non-compliance with several of the relevant ISO/IEC standards.

Now will be described a method of use for a reduced-size data card of the present invention. As described above, such a card may be stored on a key-chain, lanyard, hook or similar device. Alternatively, the card may simply be placed in the pocket or bag of a consumer. When a consumer carrying a card of the present invention approaches a POS terminal or other card reader, such as when making sales transaction, the consumer may be required to produce the card to complete the transaction. Because of the convenience of storage, the consumer quickly and easily retrieves the card, and either gives the card to the merchant to "swipe" through the reader, or the consumer may be permitted to "swipe" the card him/herself. The POS terminal or other card reader then "reads" the encoded information on the card, such as card number, credit limit or the like, and the transaction is completed. The card may then be re-stored by the consumer until the next usage.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art, and consequently it is intended that the claims be interpreted to cover such modifications and equivalents.

CLAIMS

1. A data card comprising a first face, a second face, and an information storage medium, wherein said card has dimensions that are less than about 2 1/4 inches by about 3 3/8 inches.
2. A data card as in claim 1, wherein the dimensions of said card are in the range of about 1 inch by about 1 inch to about 1 7/8 inches by about 3 inches.
3. A data card as in claim 1, wherein the information storage medium comprises a magnetic stripe.
4. A data card as in claim 3, wherein the magnetic stripe is positioned parallel to an edge of said card.
5. A data card as in claim 3, wherein the magnetic stripe is positioned perpendicular to a largest dimension of said card.
6. A data card as in claim 3, wherein the magnetic stripe comprises two tracks for storing encoded data.
7. A data card as in claim 6, wherein a first of said two tracks comprises data encoded at greater than about 210 bits per inch.
8. A data card as in claim 7, wherein the first of said two tracks comprises data encoded at about 260 bits per inch.
9. A data card as in claim 6, wherein a second of said two tracks comprises data encoded at greater than about 75 bits per inch.
10. A data card as in claim 9, wherein the second of said two tracks comprises data encoded at about 100 bits per inch.
11. A data card as in claim 6, wherein the encoded data is encoded using two-frequency encoding.

12. A data card as in claim 1, wherein said first and second faces define a hole therethrough.

13. A data card as in claim 1, further comprising a core disposed between said first and second faces, wherein said core comprises polyester.

14. A data card as in claim 13, wherein said core comprises about 80% polyester.

15. A data card as in claim 1, wherein the dimensions of said card are about 1 9/16 inches by about 2 9/16 inches.

16. A data card as in claim 1, wherein said first and second faces are devoid of raised lettering.

17. A data card as in claim 1, further comprising lettering printed on at least one of said first and second faces.

18. A data card as in claim 1, wherein the information storage medium comprises a computer chip.

19. A data card as in claim 1, further comprising a tread comprising a plurality of raised dimples for improving the gripability of said card, wherein said plurality of raised dimples are disposed on one of said first and second faces, said one face coming into contact with a user to improve gripability.

20. A data card as in claim 1, further comprising a plurality of craters disposed on one of said first and second faces, each of said plurality of craters comprising: a lip and a center, and wherein the lip of each crater is raised slightly above said one face, and the center of each crater is indented slightly into said one face.

21. A data card comprising a first face, a second face, and a magnetic stripe, wherein the magnetic stripe is positioned parallel to an edge of said card, and the magnetic stripe has a lengthwise dimension of less than about 3.135 inches.

22. A data card as in claim 21, wherein the lengthwise dimension of the magnetic stripe is in the range of about 1 inch to about 3 inches.
23. A data card as in claim 22, wherein the magnetic stripe comprises two tracks for storing encoded data.
24. A data card as in claim 23, wherein a first of said two tracks comprises data encoded at greater than about 210 bits per inch.
25. A data card as in claim 24, wherein the first of said two tracks comprises data encoded at about 260 bits per inch.
26. A data card as in claim 23, wherein a second of said two tracks comprises data encoded at greater than about 75 bits per inch.
27. A data card as in claim 26, wherein the second of said two tracks comprises data encoded at about 100 bits per inch.
28. A data card as in claim 23, wherein the encoded data is encoded using two-frequency encoding.
29. A data card as in claim 21, further comprising a core disposed between said first and second faces, wherein said core comprises polyester.
30. A data card as in claim 29, wherein the core comprises about 80% polyester.
31. A data card as in claim 21, wherein the lengthwise dimension of the magnetic stripe is about $2 \frac{9}{16}$ inches.
32. A data card as in claim 21, wherein said first and second faces are devoid of raised lettering.
33. A data card as in claim 21 further comprising lettering printed on at least one of said first and second faces.
34. A data card as in claim 21 further comprising a tread comprising a plurality of raised dimples for improving the gripability of said card;

wherein said plurality of raised dimples are disposed on one of said first and second faces, said one face coming into contact with a user to improve gripability.

35. A data card as in claim 21, further comprising a plurality of craters disposed on one of said first and second faces, each of said plurality of craters comprising: a lip and a center, and wherein the lip of each crater is raised slightly above said one face, and the center of each crater is indented slightly into said one face.

36. A data card as in claim 21, wherein said first and second faces define a hole therethrough.

37. A data card as in claim 21, further comprising an angled edge.

38. A data card comprising a first face, a second face, an angled edge, and an information storage medium, wherein a largest dimension of said card is less than about 3 3/8 inches.

39. A data card as in claim 38, wherein the largest dimension of said card is in the range of about 1 7/8 inches to about 3 inches.

40. A data card as in claim 38, wherein the information storage medium comprises a magnetic stripe.

41. A data card as in claim 40, wherein the magnetic stripe is positioned parallel to an edge of said card.

42. A data card as in claim 41, wherein the magnetic stripe comprises two tracks for storing encoded data.

43. A data card as in claim 42, wherein a first of said two tracks comprises data encoded at greater than about 210 bits per inch.

44. A data card as in claim 43, wherein the first of said two tracks comprises data encoded at about 260 bits per inch.

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45. A data card as in claim 42, wherein a second of said two tracks comprises data encoded at greater than about 75 bits per inch.
46. A data card as in claim 45, wherein the second of said two tracks comprises data encoded at about 100 bits per inch.
47. A data card as in claim 42, wherein the encoded data is encoded using two-frequency encoding.
48. A data card as in claim 38, wherein said first and second faces define a hole therethrough.
49. A data card as in claim 38, further comprising a core disposed between said first and second faces, wherein said core comprises polyester.
50. A data card as in claim 49, wherein said core comprises about 80% polyester.
51. A data card as in claim 38, wherein said first and second faces are devoid of raised lettering.
52. A data card as in claim 38, further comprising lettering printed on at least one of said first and second faces.
53. A data card as in claim 38, wherein the information storage medium comprises a computer chip.
54. A data card as in claim 38, further comprising a tread comprising a plurality of raised dimples for improving the gripability of said card, wherein said plurality of raised dimples are disposed on one of said first and second faces, said one face coming into contact with a user to improve gripability.
55. A data card as in claim 38, further comprising a plurality of craters disposed on one of said first and second faces, each of said plurality of craters comprising: a lip and a center, and wherein the lip of each crater is raised slightly above said one face, and the center of each crater is indented slightly into said one face.

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56. A data card as in claim 40, wherein the magnetic stripe is positioned perpendicular to the largest dimension of said card.

57. A data card as in claim 40, wherein the magnetic stripe is positioned parallel to said angled edge.

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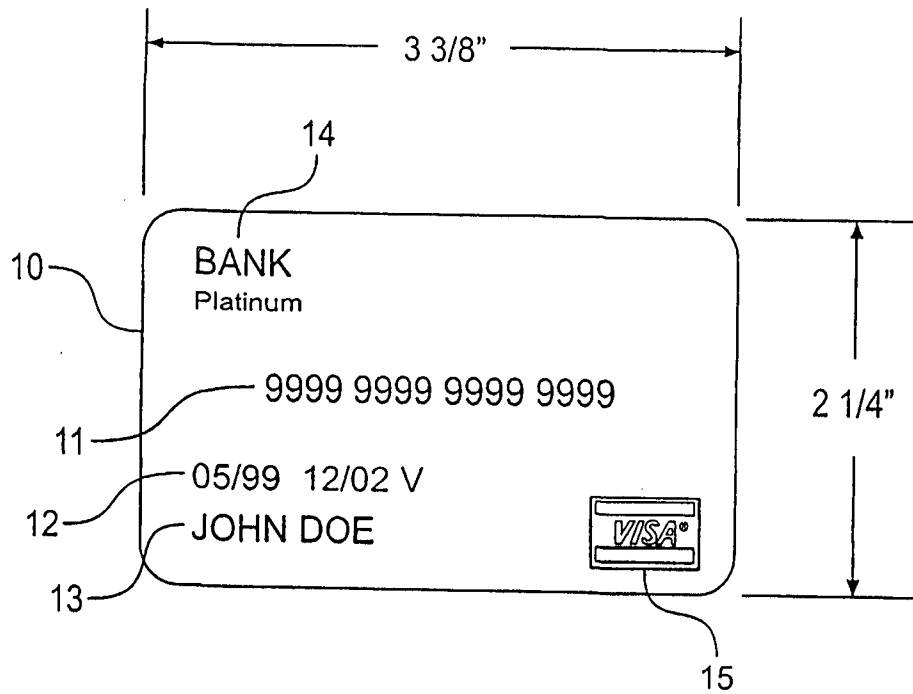


FIG. 1A

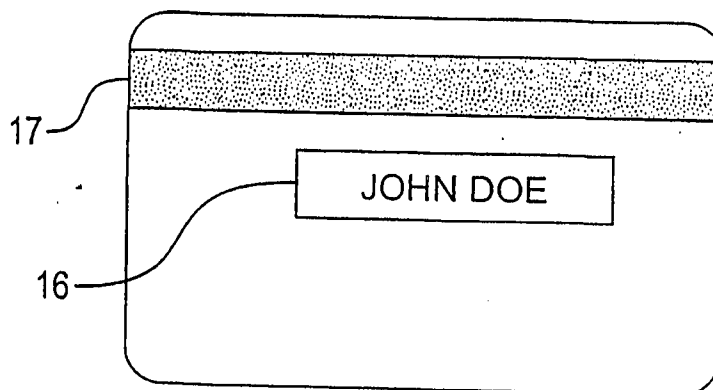


FIG. 1B

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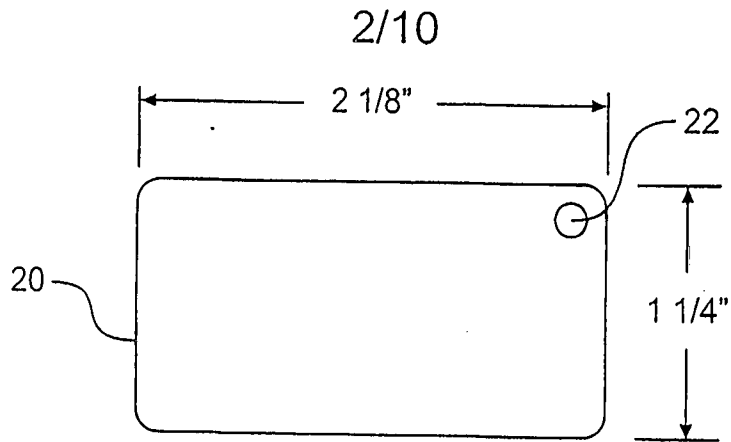


FIG. 2A

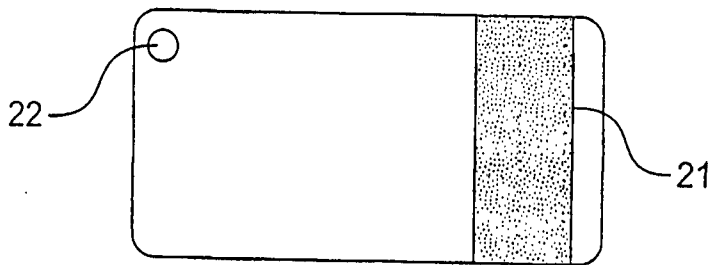


FIG. 2B

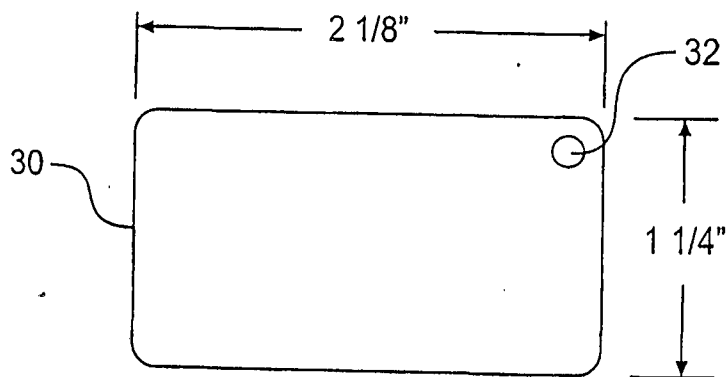


FIG. 3A

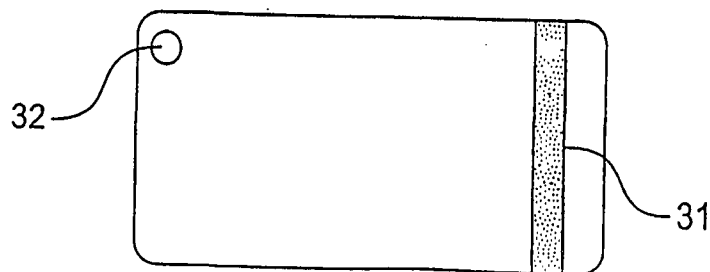


FIG. 3B

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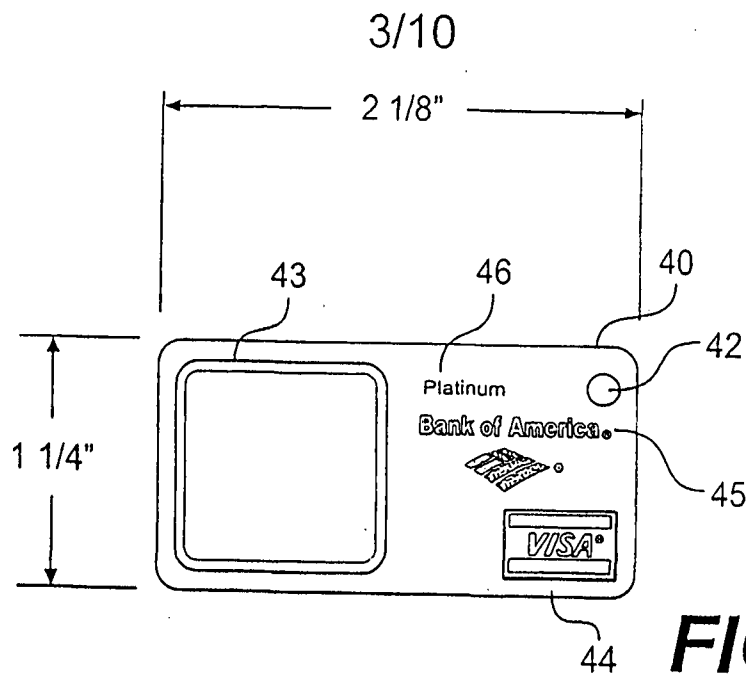


FIG. 4A

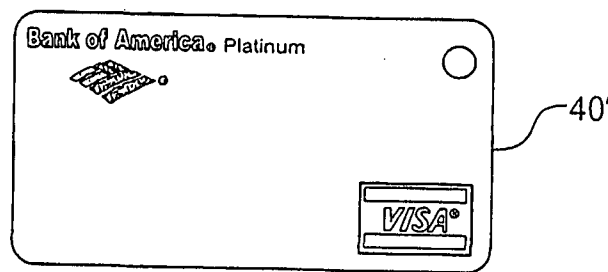


FIG. 4B

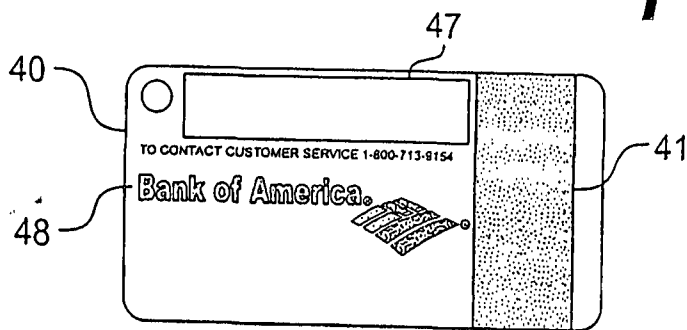


FIG. 4C

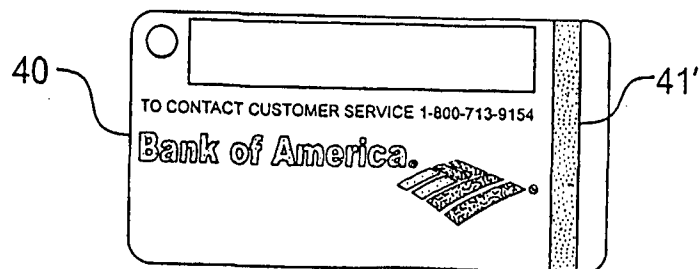


FIG. 4D

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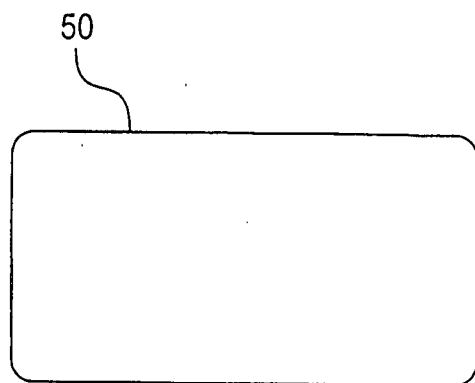


FIG. 5A

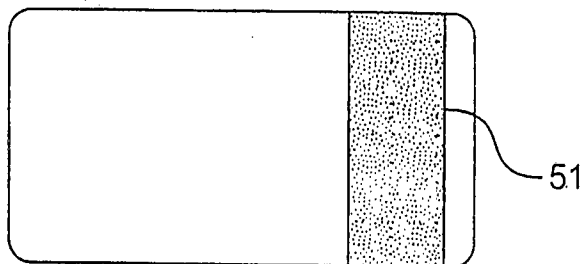


FIG. 5B

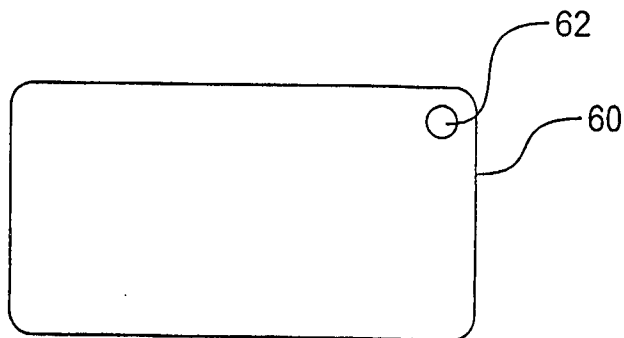


FIG. 6A

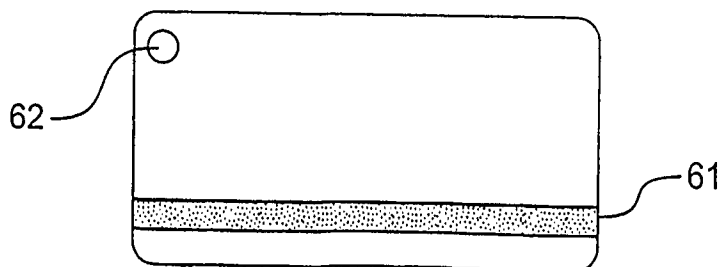


FIG. 6B

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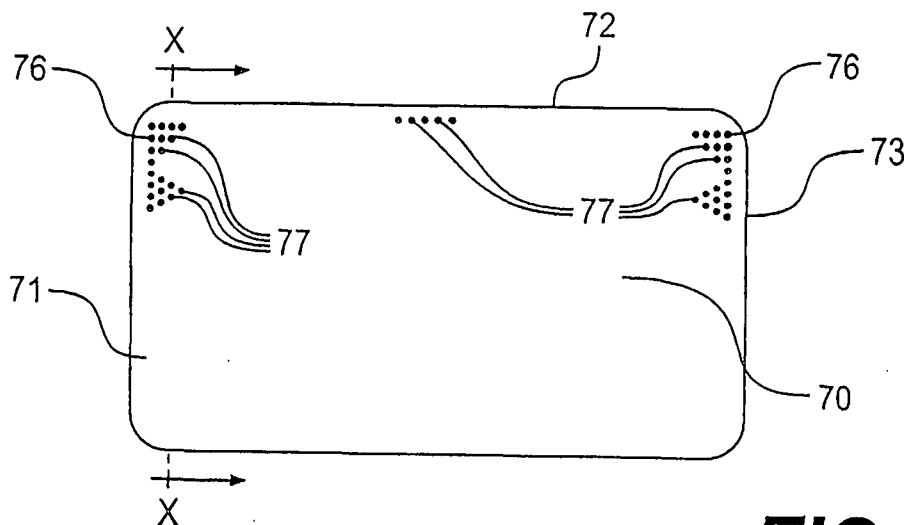


FIG. 7A

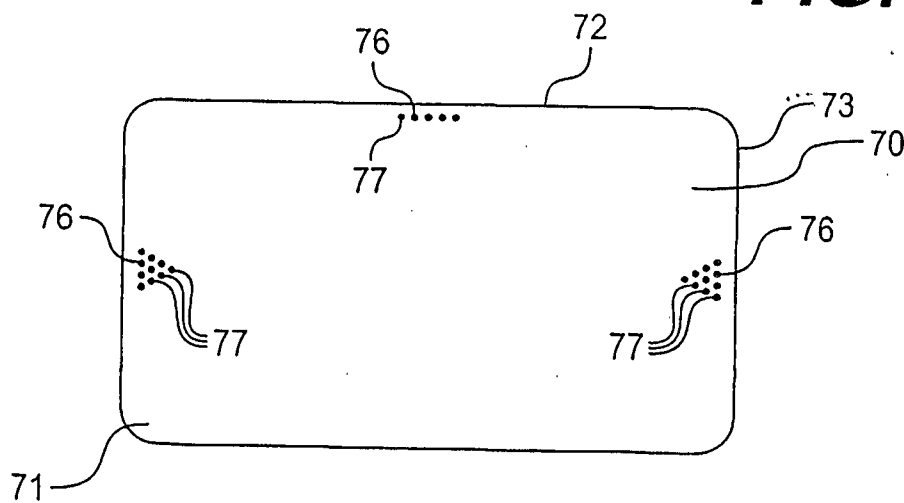


FIG. 7B

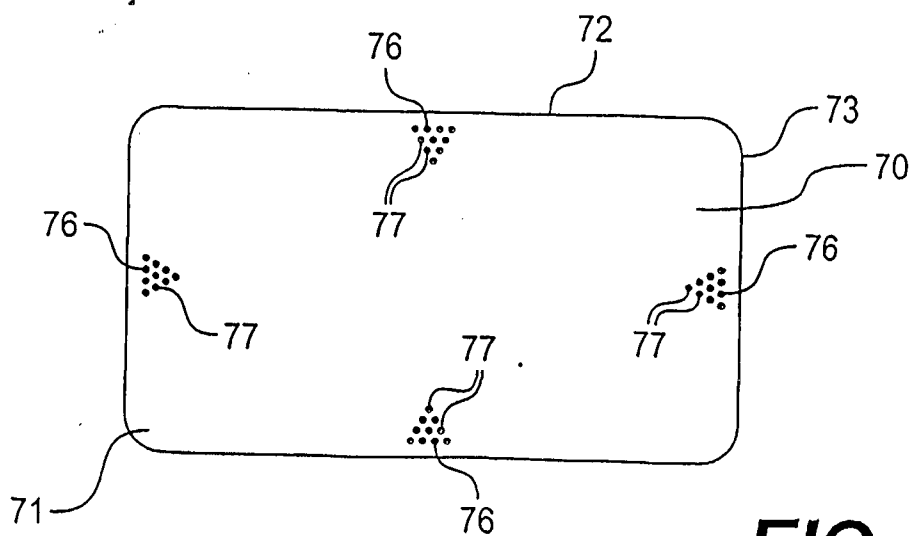


FIG. 7C

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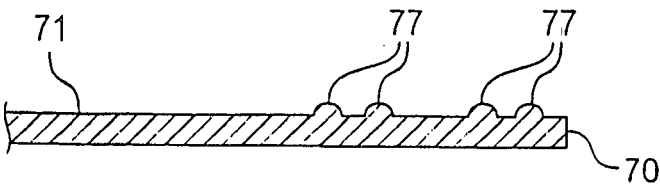


FIG. 8A

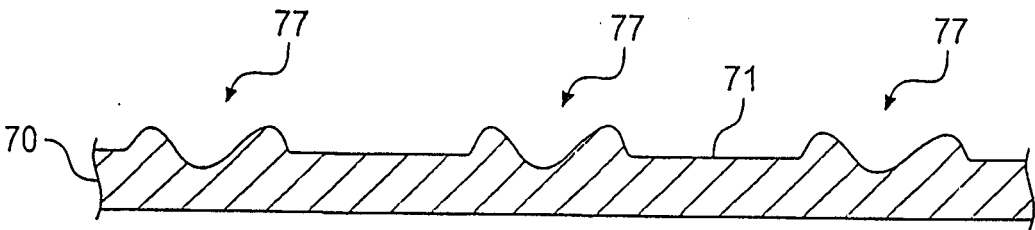


FIG. 8B

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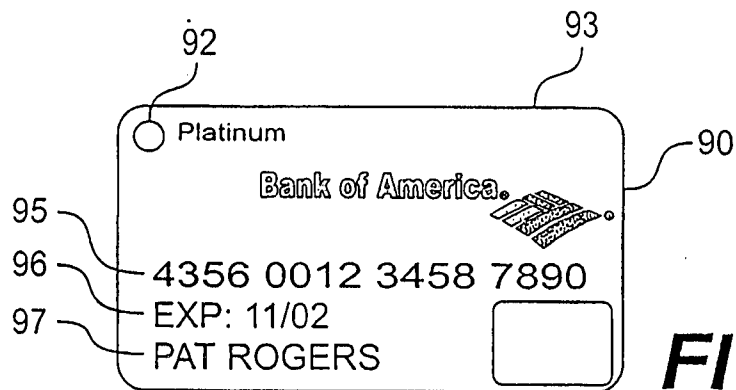


FIG. 9A

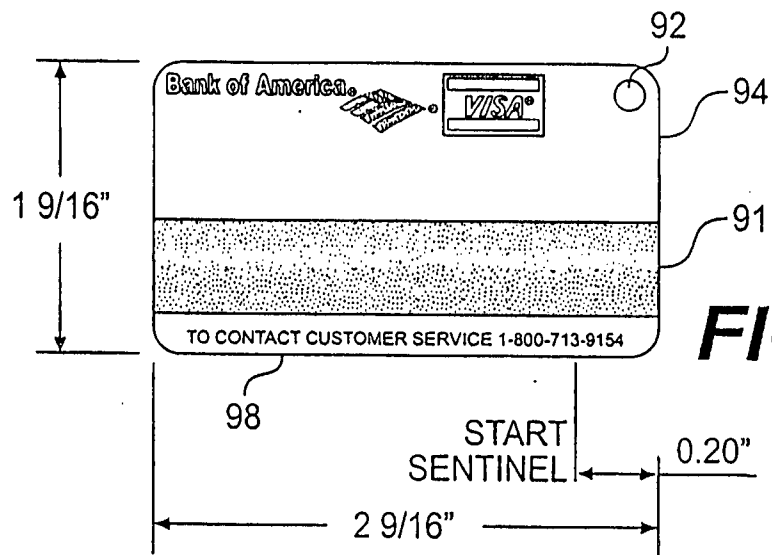


FIG. 9B

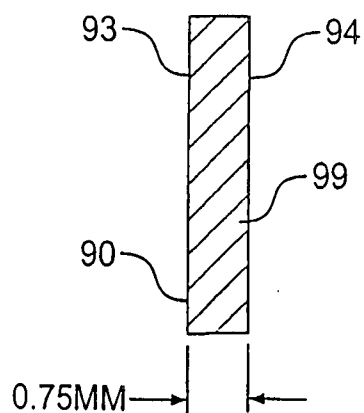


FIG. 9C

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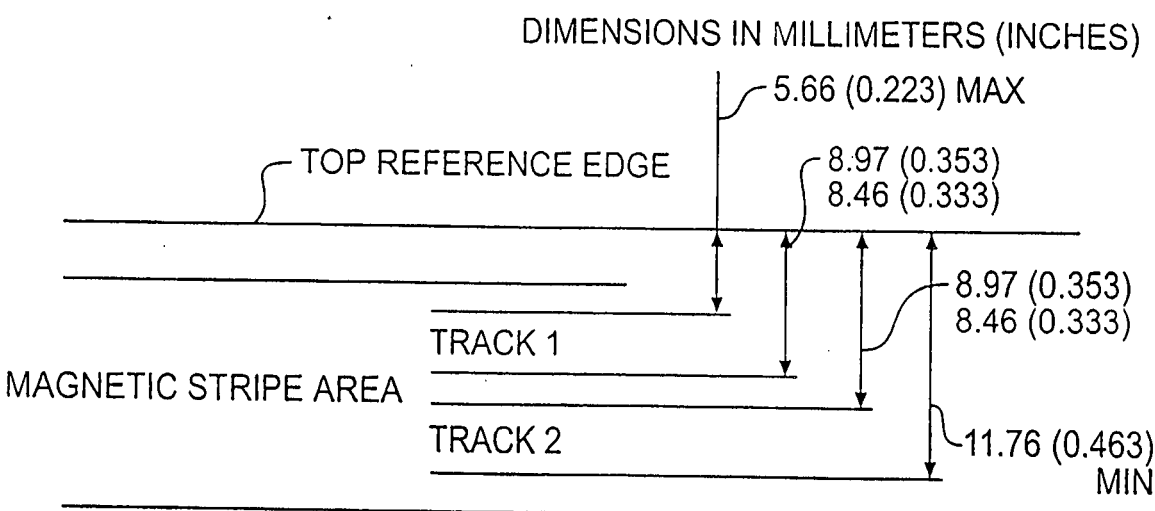


FIG. 10

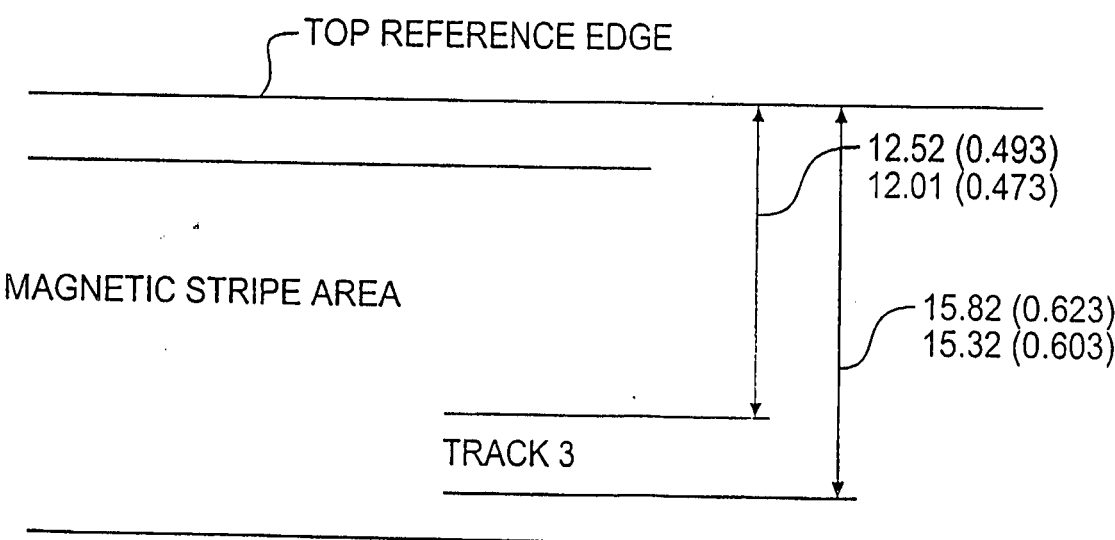


FIG. 11

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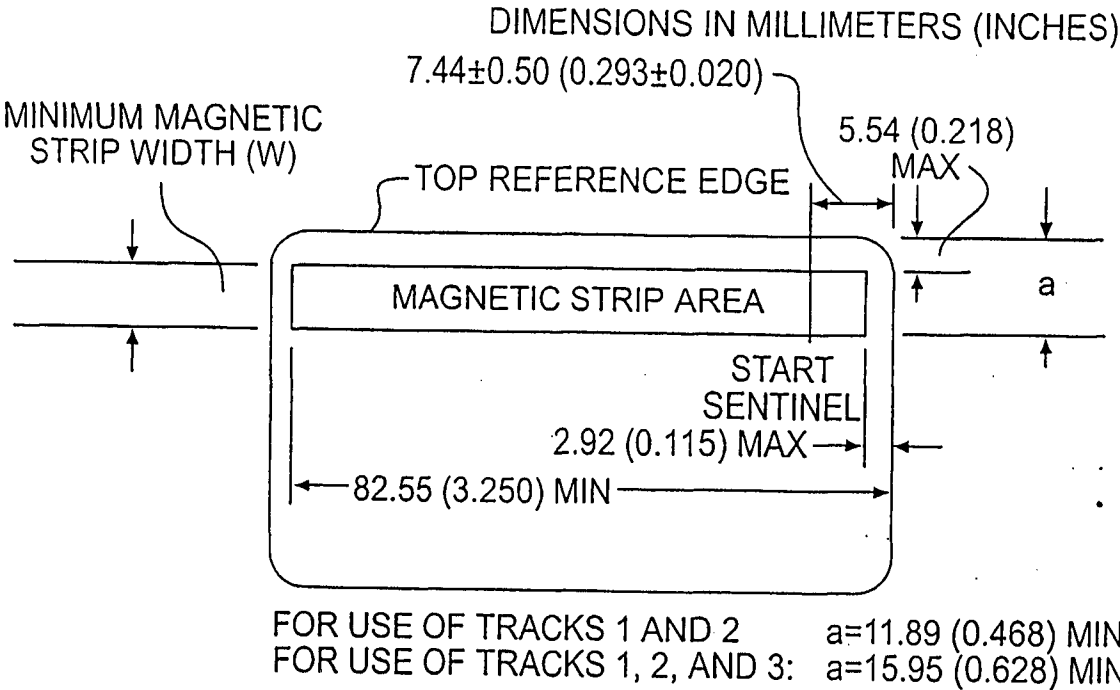


FIG. 12

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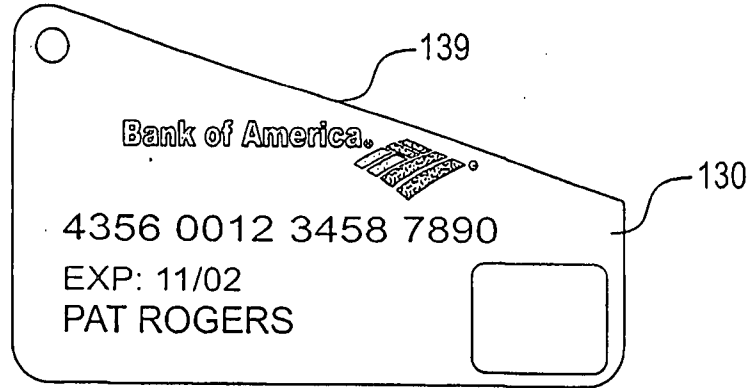


FIG. 13A

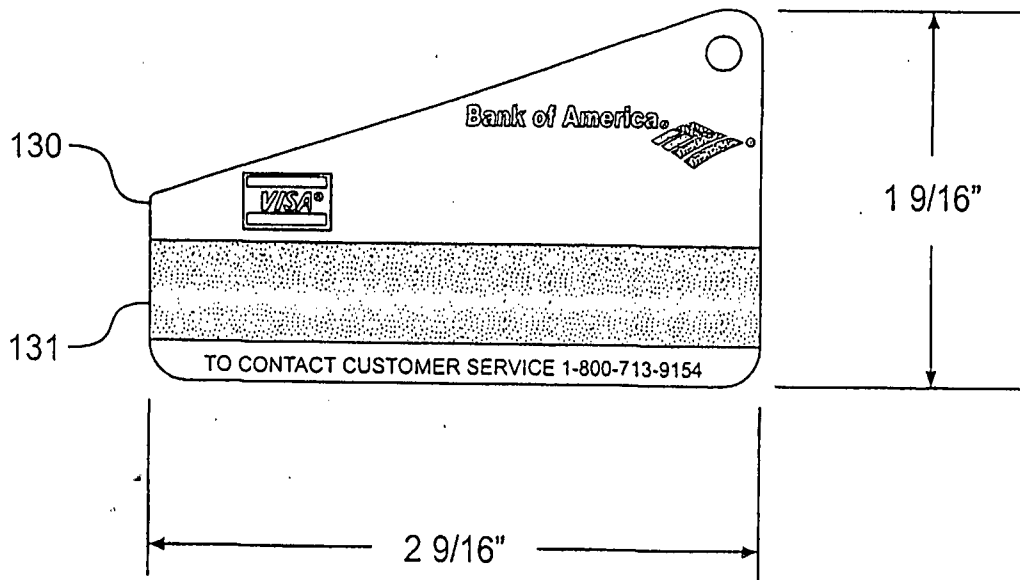


FIG. 13B

PATENT COOPERATION TREA

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From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

To:

COVINGTON & BURLING
Attn. Reister, Andrea G.
1201 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2401
UNITED STATES OF AMERICADate of mailing
(day/month/year)

12/09/2002

Applicant's or agent's file reference

16762.0217W0

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/US 02/01284

International filing date
(day/month/year)

18/01/2002

Applicant

BANK OF AMERICA CORPORATION

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority

European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Roger Thomas

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 16762.0217W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 02/ 01284	International filing date (day/month/year) 18/01/2002	(Earliest) Priority Date (day/month/year) 25/01/2001
Applicant BANK OF AMERICA CORPORATION		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 05 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the title,

the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,

the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

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None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 02/01284

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

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A data card (10) is reduced in size from the conventional standard size credit card. Accessibility of the card is enhanced because the card may be stored in a separate location from conventionally sized cards, such as on a key-chain or similar device. The card of the present invention has a means (17) for storing information, such as a magnetic stripe or computer chip.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/01284

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06K19/04 B42D15/10 G06K19/00 G06K7/08 G06K19/12

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06K B42D

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	RANKL, WOLFGANG: "HANDBUCH DER CHIPKARTEN: AUFBAU, USW." 1999, HANSER VERLAG, MUNICH, VIENNA; ISBN 3-446-21115-2 XP002211214	1-7,9, 11, 13-18, 38-43, 45,47, 49-53, 56,57, 6,7,9, 11,12, 19,20, 42,43, 45,47, 48,54,55
Y	page 44 -page 47 page 56 -page 61 page 68 -page 71 --- -/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

28 August 2002

Date of mailing of the international search report

12/09/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Heusler, N

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/01284

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 199 01 965 A (GIESECKE & DEVRIENT GMBH) 20 July 2000 (2000-07-20)	1, 2, 12, 18, 38, 48, 53
Y	column 1, line 22 - line 37	5-7, 9, 11, 12, 19-21, 42, 43, 45, 47, 48, 54-56
	column 2, line 33 - line 35; figure 1	
X	EP 0 495 216 A (ORGA KARTENSYSTEME GMBH) 22 July 1992 (1992-07-22)	1-5, 13, 17, 18, 21, 22, 29, 31, 33
Y	the whole document	23, 24, 26, 28, 34, 35
X	WO 01 01324 A (MICHELSEN CHRISTIAN ; IP TPG HOLDCO SARL (LU)) 4 January 2001 (2001-01-04) figure 1	1, 38
Y	US 5 298 897 A (HARRISON CLARENCE ET AL) 29 March 1994 (1994-03-29)	6, 7, 9, 11, 23, 24, 26, 28, 42, 43, 45, 47
	column 1, line 16 - line 22 column 7, line 28 - line 46	
Y	DE 298 02 638 U (POHL THOMAS) 10 June 1998 (1998-06-10) the whole document	12, 36, 48
Y	DE 298 12 046 U (BUERGER ROLF) 26 November 1998 (1998-11-26)	12, 19, 20, 34-36, 48, 54, 55
	claims 2-4; figures 1, 2	
Y	WO 99 34323 A (BANK OF AMERICA) 8 July 1999 (1999-07-08)	19, 20, 34, 35, 54, 55
	claims 1, 6-9	
Y	EP 0 933 718 A (STAR MFG CO) 4 August 1999 (1999-08-04)	7-10, 24-27, 43-46
	paragraphs '0009!', '0024!	
	-/--	

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/01284

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 204 513 A (STEELE GEORGE R) 20 April 1993 (1993-04-20) column 2, line 1,42,43 ---	7-10, 24-27, 43-46
Y	US 4 857 945 A (FAES STEVEN M) 15 August 1989 (1989-08-15) column 19, line 28; figure 2 ---	5,21,56
Y	US 5 461 219 A (CRONVALL LEIF) 24 October 1995 (1995-10-24) column 7, line 4 - line 8; figure 1 ---	5,21,56
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 07, 29 September 2000 (2000-09-29) & JP 2000 113136 A (ADAMUSU: KK), 21 April 2000 (2000-04-21) abstract ---	12,36,48
E	US 2002/092914 A1 (COLLINS RICHARD J ET AL) 18 July 2002 (2002-07-18) paragraphs '0075!', '0076! -----	1-57
X		8,10,25, 27,44,46

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/01284

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 19901965	A	20-07-2000	DE 19901965 A1	20-07-2000
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/01284

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NOTES TO FORM PCT/ISA/220

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These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

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The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

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The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/ US

PCT

DEMAND

CHAPTER II

under Article 31 of the Patent Cooperation Treaty:
The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only			
Identification of IPEA		Date of receipt of DEMAND	
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION		Applicant's or agent's file reference	
		16762.0217-WO	
International application No.	International filing date (day/month/year)	(Earliest) Priority date (day/month/year)	
PCT/US02/01284	18 January 2002 (18.01.2002)	25 January 2001 (25.01.2001)	
Title of Invention	MINIATURE DATA CARD		
Box No. II APPLICANT(S)			
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) BANK OF AMERICA CORPORATION NC1-002-29-01 101 South Tryon Street Charlotte, North Carolina 28255 United States of America		Telephone No.: (704) 388-6952	
		Facsimile No.: (704) 388-7343	
		Teleprinter No.:	
		Applicant's registration No. with the Office	
State (that is, country) of nationality: US		State (that is, country) of residence: US	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)			
State (that is, country) of nationality:		State (that is, country) of residence:	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)			
State (that is, country) of nationality:		State (that is, country) of residence:	
☐ Further applicants are indicated on a continuation sheet.			

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

REISTER, Andrea G.
 Covington & Burling
 1201 Pennsylvania Avenue, N.W.
 Washington, DC 20004-2401
 United States of America

Telephone No.:

(202) 662-5141

Facsimile No.:

(202) 778-5141

Teleprinter No.:

Agent's registration No. with the Office

36,253

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION

Statement concerning amendments:*

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filed

the description

☐

as originally filed

☐

as amended under Article 34

the claims

☐

as originally filed

☐

as amended under Article 19 (together with any accompanying statement)

☐

as amended under Article 34

the drawings

☐

as originally filed

☐

as amended under Article 34

2. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

• Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English

☒

which is the language in which the international application was filed.

☐

which is the language of a translation furnished for the purposes of international search

☐

which is the language of publication of the international application

☐

which is the language of the translation (to be) furnished for the purposes of international preliminary examination.

Box No. V ELECTION OF STATES

The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)* excluding the following States which the applicant wishes not to elect:

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | | | |
|----|--|---|--|--------|
| 1. | translation of international application | : | | sheets |
| 2. | amendments under Article 34 | : | | sheets |
| 3. | copy (or, where required, translation of amendments under Article 19 | : | | sheets |
| 4. | copy (or, where required, translation of statement under Article 19 | : | | sheets |
| 5. | letter | : | | sheets |
| 6. | other (specify): | : | | sheets |

For International Preliminary Examining Authority use only

received not received

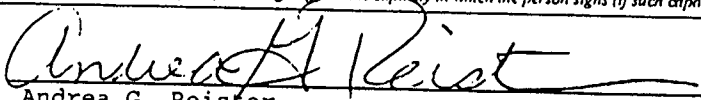
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐

The demand is also accompanied by the item(s) marked below:

- | | |
|--|---|
| 1. ☒ fee calculation sheet | 5. ☐ statement explaining lack of signature |
| 2. ☐ original separate power of attorney | 6. ☐ sequence listing in computer readable form |
| 3. ☐ original general power of attorney | 7. ☒ other |
| 4. ☐ copy of general power of attorney; reference number, if any: | (specify): Transmittal Letter to IPEA/US; Check in the amount of \$896.00 |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).


Andrea G. Reister
Covington & Burling

For International Preliminary Examining Authority use only

- Date of actual receipt of DEMAND:
- Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):
- ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply. ☐ The applicant has been informed accordingly.
- ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.
- ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

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CHAPTER II

PCT
FEE CALCULATION SHEET
Annex to the Demand

International application No. PCT/US02/01284	For International Preliminary Examining Authority use only	
Applicant's or agent's file reference 16762.0217-WO	Date stamp of the IPEA	
Applicant BANK OF AMERICA CORPORATION		
CALCULATION OF PRESCRIBED FEES		
1. Preliminary examination fee	750.00	P
2. Handling fee (<i>Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.</i>)	146.00	H
3. Total of prescribed fees add the amounts entered at P and H and enter total in the TOTAL box	\$ 896.00	
	TOTAL	
MODE OF PAYMENT		
☐ authorization to charge deposit account with the IPEA (see below)	☐ cash	
☒ cheque	☐ revenue stamps	
☐ postal money order	☐ coupons	
☐ bank draft	☐ other (specify):	
AUTHORIZATION TO CHARGE (OR CREDIT) DEPOSIT ACCOUNT (This mode of payment may not be available at all IPEAs)		
☐ Authorization to charge the total fees indicated above.	IPEA/ <u>US</u>	
☒ This check-box may be marked only if the conditions for deposit accounts of the IPEA so permit) Authorization to charge any deficiency or credit any overpayment in the total fees indicated above.	Deposit Account No.: <u>50-0740</u>	
	Date: <u>22 August 2002</u>	
	Name: <u>Andrea G. Reister</u>	
	Signature: <u>Andrea G. Reister</u>	

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JANUARY 17, 2002

PTAS

Under Secretary of Commerce For Intellectual Property and
Director of the United States Patent and Trademark Office
Washington, DC 20231
www.uspto.gov

COVINGTON & BURLING
ANDREA G. REISTER
1201 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, DC 20004-2401



101901044A

UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 11/19/2001

REEL/FRAME: 012314/0256
NUMBER OF PAGES: 17

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:
PENTZ, JAMILY

DOC DATE: 10/26/2001

ASSIGNOR:
BURNS, EMMET

DOC DATE: 08/20/2001

ASSIGNOR:
COLLINS, RICHARD J.

DOC DATE: 10/25/2001

ASSIGNOR:
MONTGOMERY, R.B.

DOC DATE: 10/31/2001

ASSIGNOR:
KENDLE, A.A.

DOC DATE: 09/18/2001

ASSIGNEE:
BANK OF AMERICA CORPORATION
100 NORTH TRYON STREET
CHARLOTTE, NORTH CAROLINA 28255

012314/0256 PAGE 2

SERIAL NUMBER: 09988151
PATENT NUMBER:

FILING DATE: 11/19/2001
ISSUE DATE:

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SHARON BROOKS, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS

MA

ASSIGNMENT BY INVENTORS

THIS ASSIGNMENT, made this _____ day of _____, _____ by
10/26/01, 08/20/01, 10/25/01,
10/31/01, and 09/18/01

Jamilly Pentz; Emmet Burns; Richard J. Collins; R. B. Montgomery; and A. A. Kendle
(hereinafter referred to as Assignors), residing at 4114 Marquesas Avenue, Tega Cay, South
Carolina 29708; 4108 Pima Cotton Drive, Charlotte, North Carolina 28226; 148 Whistler
Road, Highland Park, Illinois 60035; 10207 Wildbracken Court, Charlotte, North Carolina
28210; and 2400 Valencia Terrace, North Carolina, 28226, respectively;

WHEREAS, Assignors have invented certain new and useful improvements in
DATA CARD, set forth in a Patent application for Letters Patent of the United States, filed
herewith; and

WHEREAS, Bank of America Corporation, a corporation organized under and
pursuant to the laws of having its principal place of business at 100 North Tryon Street,
Charlotte, North Carolina 28255 (hereinafter referred to as Assignee), is desirous of acquiring
the entire right, title and interest in and to said inventions and said Application for Letters
Patent of the United States, and in and to any Letters Patent of the United States to be obtained
therefor and thereon.

NOW, THEREFORE, in consideration of One Dollar (\$1.00) and other good and
sufficient consideration, the receipt of which is hereby acknowledged, Assignors have sold,
assigned, transferred and set over, and by these presents do sell, assign, transfer and set over,
unto Assignee, its successors, legal representatives and assigns, the entire right, title and
interest in and to the above-mentioned inventions and application for Letters Patent, and in and
to any and all direct and indirect divisions, continuations and continuations-in-part of said
application, and any and all Letters Patent in the United States and all foreign countries which
may be granted therefor and thereon, and reissues, reexaminations and extensions of said
Letters Patent, and all rights under the International Convention for the Protection of Industrial
Property, the same to be held and enjoyed by Assignee, for its own use and benefit and the use
and benefit of its successors, legal representatives and assigns, to the full end of the term or
terms for which Letters Patent may be granted and/or extended, as fully and entirely as the

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same would have been held and enjoyed by Assignors, had this sale and assignment not been made.

AND for the same consideration, Assignors hereby represent and warrant to Assignee, its successors, legal representatives and assigns, that, at the time of execution and delivery of these presents, except for any rights, titles and/or interests that have arisen to Assignee under law or that have already been transferred to Assignee, Assignors are the sole and lawful owners of the entire right, title and interest in and to the said inventions and application for Letters Patent above-mentioned, and that the same are unencumbered and that Assignors have good and full right and lawful authority to sell and convey the same in the manner herein set forth.

AND for the same consideration, Assignors hereby covenant and agree to and with Assignee, its successors, legal representatives and assigns, that Assignors will sign all papers and documents, take all lawful oaths and do all acts necessary or required to be done for the procurement, maintenance, enforcement and defense of any Letters Patent and applications for Letters Patent for said inventions, without charge to Assignee, its successors, legal representatives and assigns, whenever counsel of Assignee, or counsel of its successors, legal representatives and assigns, shall advise: that any proceeding in connection with said inventions, or said Patent application for Letters Patent, or any proceeding in connection with any Letters Patent or applications for Letters Patent for said inventions in any country, including but not limited to interference proceedings, is lawful and desirable; or, that any division, continuation or continuation-in-part of any application for Letters Patent, or any reissue, reexamination or extension of any Letters Patent, to be obtained thereon, is lawful and desirable.

AND Assignors hereby request the Commissioner of Patent and Trademarks to issue said Letters Patent of the United States to Assignee, as Assignee of said inventions and the Letters Patent to be issued thereon, for the sole use and benefit of Assignee, its successors, legal representatives and assigns.

AND Assignors hereby grant the following individuals the power to insert on this Assignment any further identification which may be necessary or desirable in order to comply

with the rules of the United States Patent and Trademark Office for recordation of this document:

1A3

COVINGTON & BURLING

Paul J. Berman	36,744	Jeannie M. Perron	31,180	Lee J. Tiedrich	42,184
Richard P. Dulik	40,598	C. Edward Polk	45,830	Henry P. Ting	46,278
Thomas W. Krause	40,335	Andrea G. Reister	36,253	Grady L. White	40,874
Scott B. Markow	46,899	David P. Ruschke	40,151	Anthony S. Yoo	45,540
Ann O. McGeehan	45,839	Christopher N. Sipes	39,837	Michael A. Springs	41,322

AND Assignors acknowledge an obligation of assignment of this invention to Assignee at the time the invention was made.



101901044

PATENTS ONLY

U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

101901044
09/19/01
11/19/01

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof

1. Name of conveying party(ies):

(1) Jamily Pentz; (2) Emmet Burns; (3) Richard J. Collins; (4) R. B. Montgomery; and (5) A. A. Kendle

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

3. Nature of Conveyance:

☒ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other

Execution Date: (1) 10/26/01; (2) 08/20/01;
(3) 10/25/01; (4) 10/31/01;
(5) 09/18/01

2. Name and address of receiving party(ies)

Name: Bank of America Corporation

Internal Address:

Street Address:
100 North Tryon Street

City: Charlotte

State: NC

Zip: 28255

Additional name(s) & ☐ Yes ☒ No
address(es) attached:

09/988151

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4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the new application is: (1) 10/26/01; (2) 08/20/01; (3) 10/25/01;
(4) 10/31/01; (5) 09/18/01

A. Patent Application No.(s):

B. Patent No.(s):

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Andrea G. Reister
COVINGTON & BURLING

Internal Address: Atty. Dkt.: 016762.0217-US01

Street Address: 1201 Pennsylvania Avenue, N.W.

City:
Washington

State: DC Zip: 20004-2401

6. Total number of applications and patents involved:

1

7. Total fee (37 CFR 3.41)

\$ 40.00

☒ Enclosed

☐ Authorized to be charged to deposit account

8. Deposit account number:

50-0740

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Andrea G. Reister

Name of Person Signing

Signature

November 19, 2001

Date

Total number of pages including cover sheet, attachments, and documents:

9



101901044

PATENTS ONLY

U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

10978 U.S. PTO
09/988151
11/11/01

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof

1. Name of conveying party(ies):

(1) Jamilly Pentz; (2) Emmet Burns; (3) Richard J. Collins; (4) R. B. Montgomery; and (5) A. A. Kendle

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

3. Nature of Conveyance:

☒ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other

Execution Date: (1) 10/26/01; (2) 08/20/01;
(3) 10/25/01; (4) 10/31/01;
(5) 09/18/01

2. Name and address of receiving party(ies)

Name: Bank of America Corporation

Internal Address: _____

Street Address: 100 North Tryon Street

City: Charlotte

State: NC

Zip: 28255

Additional name(s) & address(es) attached: ☐ Yes ☒ No

09/988151

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4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the new application is: (1) 10/26/01; (2) 08/20/01; (3) 10/25/01; (4) 10/31/01; (5) 09/18/01

A. Patent Application No.(s):

B. Patent No.(s):

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Andrea G. Reister
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State: DC Zip: 20004-2401

6. Total number of applications and patents involved:

1

7. Total fee (37 CFR 3.41)

\$ 40.00

☒ Enclosed

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8. Deposit account number:

50-0740

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Andrea G. Reister

Name of Person Signing

Signature

November 19, 2001

Date

Total number of pages including cover sheet, attachments, and documents:

9

146

ASSIGNMENT BY INVENTORS

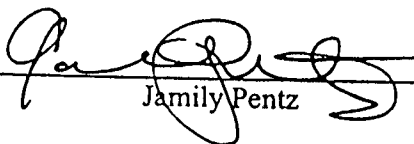
THIS ASSIGNMENT, made this _____ day of _____, _____ by
10/26/01, 08/20/01, 10/25/01,
10/31/01, and 09/18/01
Jamily Pentz; Emmet Burns; Richard J. Collins; R. B. Montgomery; and A. A. Kendle
(hereinafter referred to as Assignors), residing at 4114 Marquesas Avenue, Tega Cay, South
Carolina 29708; 4108 Pima Cotton Drive, Charlotte, North Carolina 28226; 148 Whistler
Road, Highland Park, Illinois 60035; 10207 Wildbracken Court, Charlotte, North Carolina
28210; and 2400 Valencia Terrace, North Carolina, 28226, respectively;

WHEREAS, Assignors have invented certain new and useful improvements in
DATA CARD, set forth in a Patent application for Letters Patent of the United States, filed
herewith; and

WHEREAS, Bank of America Corporation, a corporation organized under and
pursuant to the laws of having its principal place of business at 100 North Tryon Street;
Charlotte, North Carolina 28255 (hereinafter referred to as Assignee), is desirous of acquiring
the entire right, title and interest in and to said inventions and said Application for Letters
Patent of the United States, and in and to any Letters Patent of the United States to be obtained
therefor and thereon.

NOW, THEREFORE, in consideration of One Dollar (\$1.00) and other good and
sufficient consideration, the receipt of which is hereby acknowledged, Assignors have sold,
assigned, transferred and set over, and by these presents do sell, assign, transfer and set over,
unto Assignee, its successors, legal representatives and assigns, the entire right, title and
interest in and to the above-mentioned inventions and application for Letters Patent, and in and
to any and all direct and indirect divisions, continuations and continuations-in-part of said
application, and any and all Letters Patent in the United States and all foreign countries which
may be granted therefor and thereon, and reissues, reexaminations and extensions of said
Letters Patent, and all rights under the International Convention for the Protection of Industrial
Property, the same to be held and enjoyed by Assignee, for its own use and benefit and the use
and benefit of its successors, legal representatives and assigns, to the full end of the term or
terms for which Letters Patent may be granted and/or extended, as fully and entirely as the

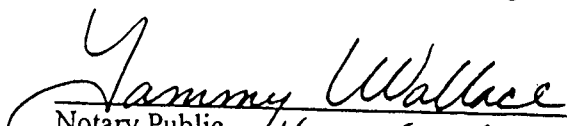
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Family Pentz

Date: 10/26/2001

United States of America)
State of NORTH CAROLINA) ss.:
County of MECKLENBURG)

On this 26th day of OCTOBER, 2001, before me
personally came Family Pentz, to me known to be the individual
described in and who executed the foregoing Assignment By Inventors, and acknowledged
execution of the same.


Notary Public - NORTH CAROLINA
My Commission Expires April 04, 2008

148

Emmet Burns
Emmet Burns

Date: August 20, 2001

United States of America)
State of NORTH CAROLINA) ss.:
County of MECKLENBURG)

On this 20th day of August, 2001, before me
personally came Emmet Burns, to me known to be the individual
described in and who executed the foregoing Assignment By Inventors, and acknowledged
execution of the same.

Yammy Wallace
Notary Public - NORTH CAROLINA
My Commission Expires April 04, 2008

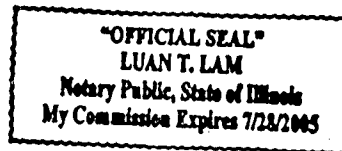
149

Richard J. Collins

Richard J. Collins

Date: 10/25/01

United States of America)
State of Illinois) ss.:
County of Cook)



On this 25th day of October, 2001, before me personally came Richard J. Collins, to me known to be the individual described in and who executed the foregoing Assignment By Inventors, and acknowledged execution of the same.

Luan T Lam

Notary Public

150

R. B. Montgomery
R. B. Montgomery

Date: 10/31/01

United States of America)
State of NORTH CAROLINA) ss.:
County of MECKLENBURG)

On this 31ST day of OCTOBER, 2001, before me
personally came R. B. Montgomery, to me known to be the individual
described in and who executed the foregoing Assignment By Inventors, and acknowledged
execution of the same.

Sammy Wallace
Notary Public — NORTH CAROLINA
My Commission Expires April 04, 2008

151

A. A. Kendle
A. A. Kendle

Date: 9-18-01

United States of America)
State of North Carolina) ss.:
County of Mecklenburg)

On this 18th day of September, 2001, _____, before me
personally came A. A. Kendle, to me known to be the individual
described in and who executed the foregoing Assignment By Inventors, and acknowledged
execution of the same.

John A. L. Green
Notary Public



US006471127B2

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

(10) Patent No.: **US 6,471,127 B2**
(45) Date of Patent: **Oct. 29, 2002**

(54) **DATA CARD**

(75) Inventors: **Jamilly Pentz**, Tega Cay, SC (US);
Emmet Burns, Charlotte, NC (US);
Richard J. Collins, Highland Park, IL
(US); **R. Bruce Montgomery**,
Charlotte, NC (US); **A. Allen Kendle**,
Charlotte, NC (US)

(73) Assignee: **Bank of America Corporation**,
Charlotte, NC (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/988,151**

(22) Filed: **Nov. 19, 2001**

(65) **Prior Publication Data**

US 2002/0092914 A1 Jul. 18, 2002

Related U.S. Application Data

(63) Continuation of application No. 09/611,320, filed on Jul. 6, 2000, and a continuation of application No. 29/141,685, filed on May 11, 2001, now Pat. No. Des. 453,338, and a continuation of application No. 29/141,652, filed on May 11, 2001, now Pat. No. Des. 453,337, and a continuation of application No. 29/141,645, filed on May 11, 2001, now Pat. No. Des. 453,160, and a continuation of application No. 29/141,642, filed on May 11, 2001, now Pat. No. Des. 453,336, and a continuation of application No. 29/141,688, filed on May 11, 2001, now Pat. No. Des. 453,161, and a continuation of application No. 29/141,704, filed on May 11, 2001, now Pat. No. Des. 460,455, and a continuation of application No. 29/141,703, filed on May 11, 2001, now Pat. No. Des. 453,517, and a continuation of application No. 29/141,691, filed on May 11, 2001, now Pat. No. Des. 453,516, and a continuation of application No. 29/141,702, filed on May 11, 2001, now Pat. No. Des. 455,339, and a continuation of application No. 29/141,692, filed on May 11, 2001, and a continuation of application No. 29/141,701, filed on May 11, 2001, and a continuation of application No. 29/141,700, filed on May 11, 2001, now Pat. No. Des. 456,814, and a continuation of application No. 29/141,693, filed on May 11, 2001, and a continuation of application No. 29/141,699, filed on May 11, 2001, now Pat. No. Des. 460,454, and a continuation of application No. 29/142,203, filed on May 22, 2001.

(60) Provisional application No. 60/263,756, filed on Jan. 25, 2001.

(51) Int. Cl.⁷ **G06K 19/00**

(52) U.S. Cl. **235/487; 235/493**

(58) Field of Search **235/493, 492,**
235/487

(56)

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Identification cards—Recording technique—Part 2: Magnetic Stripe—Low coercivity, ISO/IEC, 7811-2: 2001(E).

(List continued on next page.)

Primary Examiner—Karl D. Frech

Assistant Examiner—Lisa M. Caputo

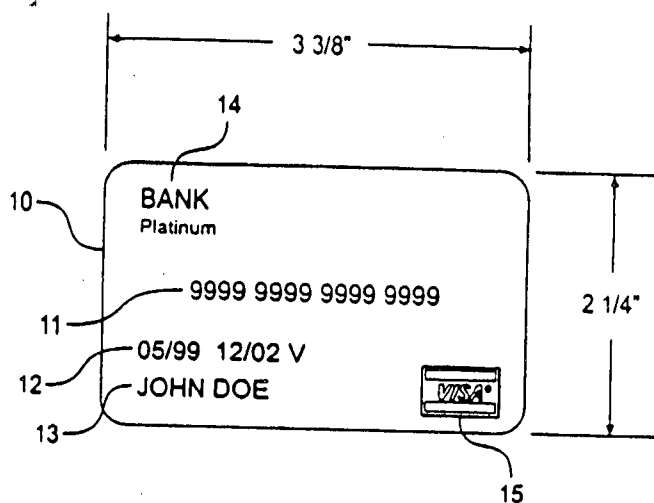
(74) *Attorney, Agent, or Firm*—Michael A. Springs:
Covington & Burling

(57)

ABSTRACT

A data card is reduced in size from the conventional standard size credit card. Accessibility of the card is enhanced because the card may be stored in a separate location from conventionally sized cards, such as on a key-chain or similar device. The card of the present invention has a means for storing information, such as a magnetic stripe or computer chip.

57 Claims, 10 Drawing Sheets



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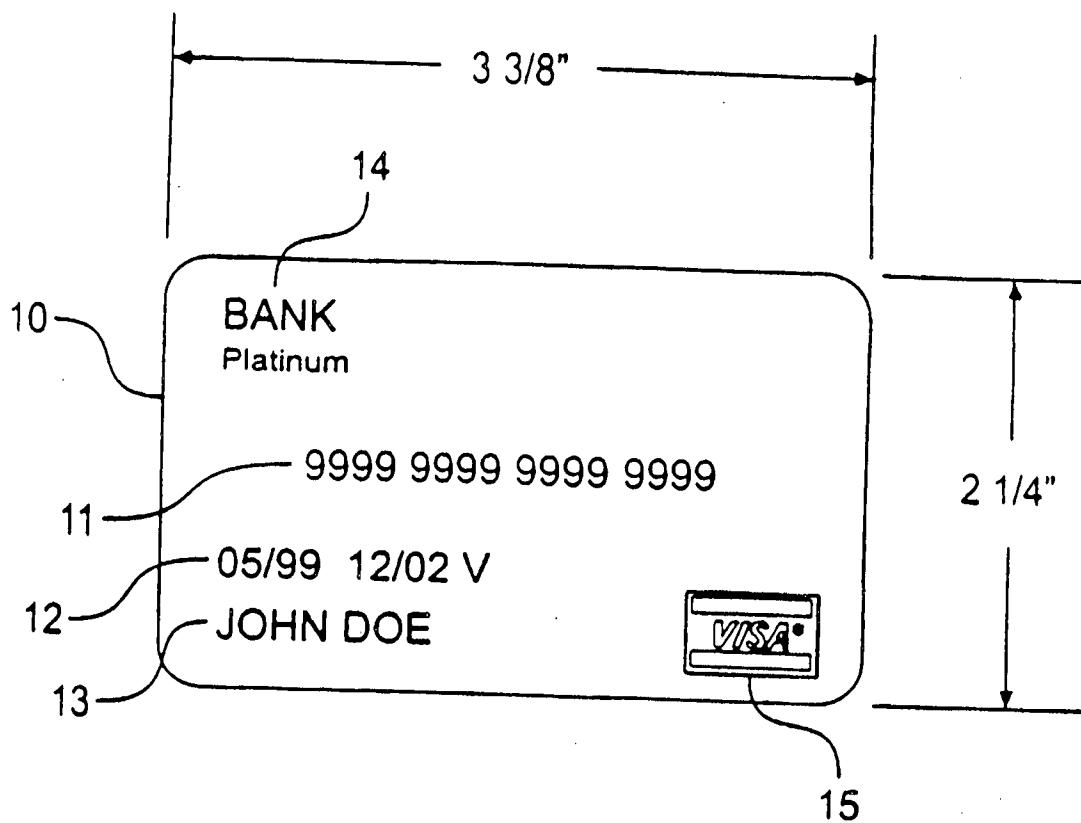


FIG. 1A

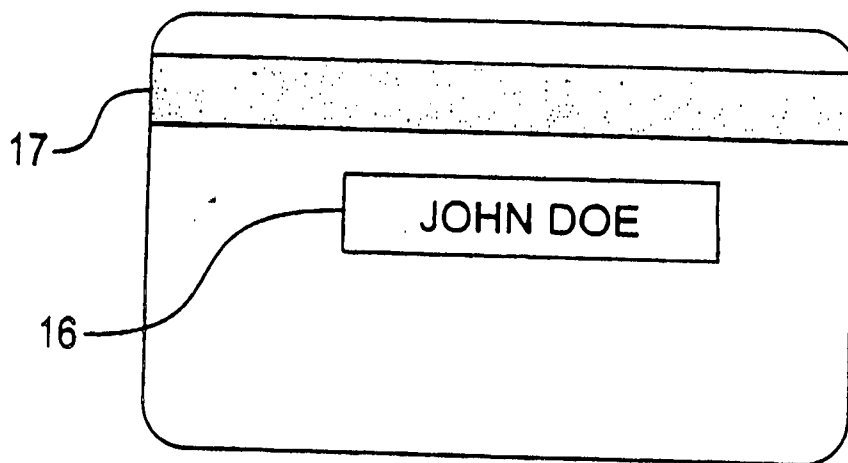


FIG. 1B

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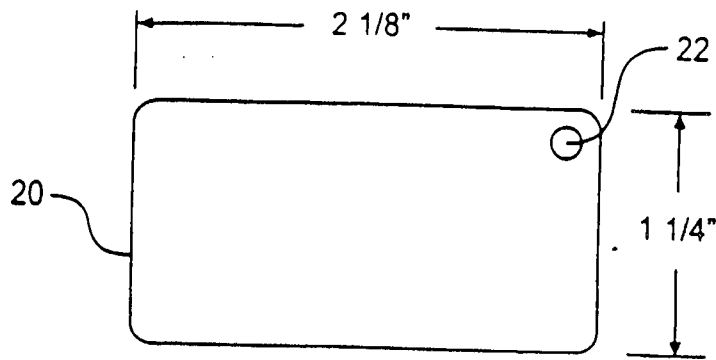


FIG. 2A

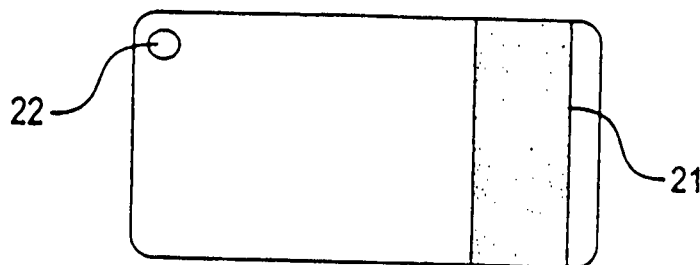


FIG. 2B

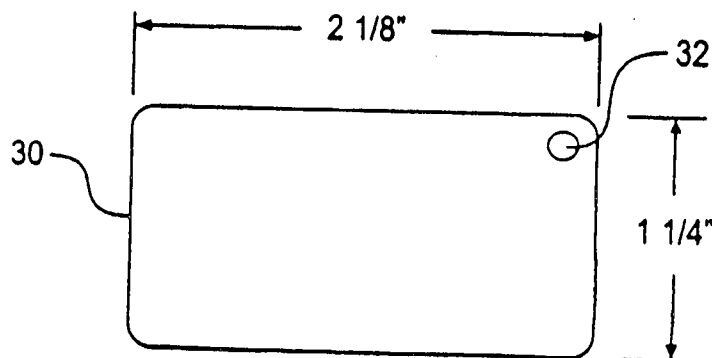


FIG. 3A

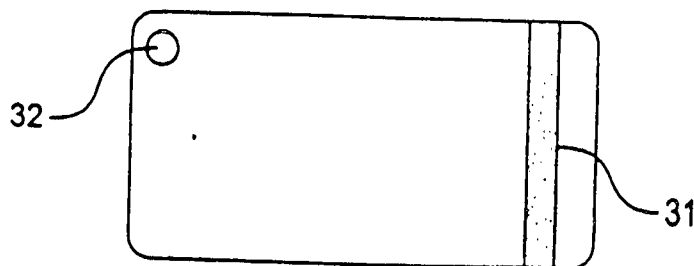
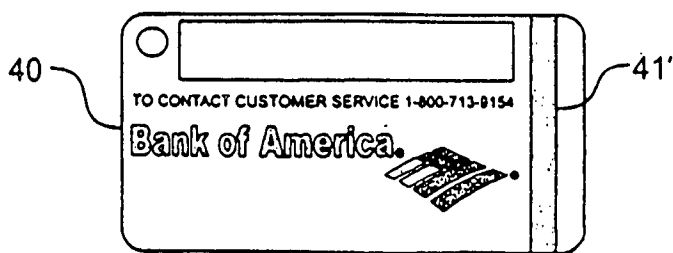
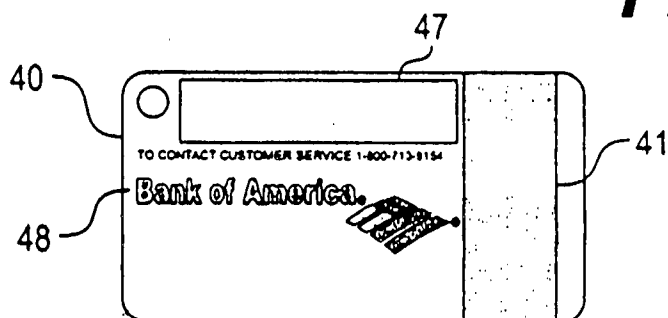
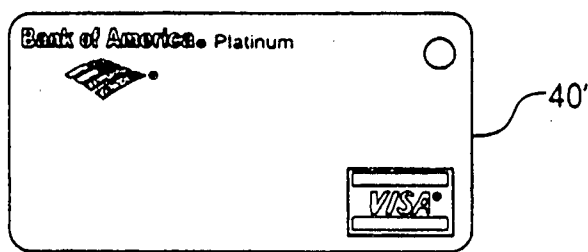
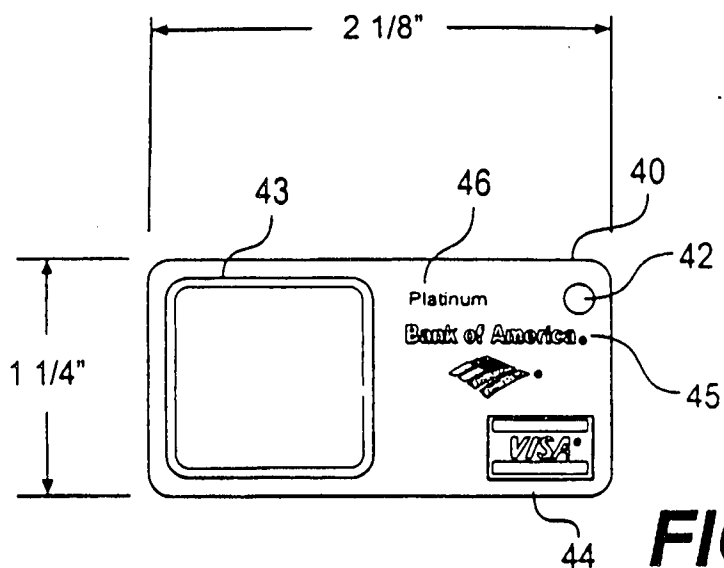


FIG. 3B

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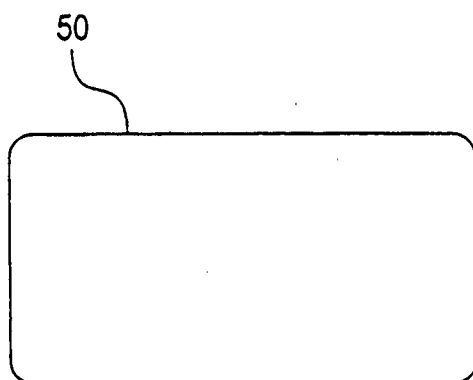


FIG. 5A

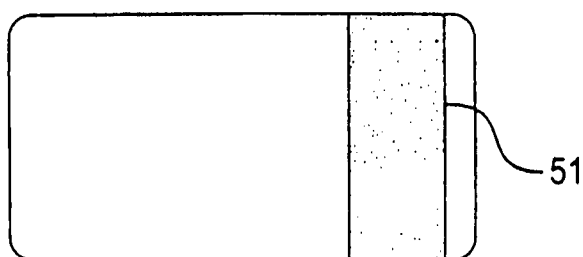


FIG. 5B

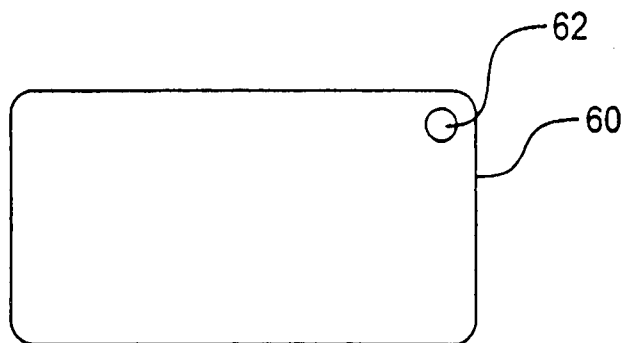


FIG. 6A

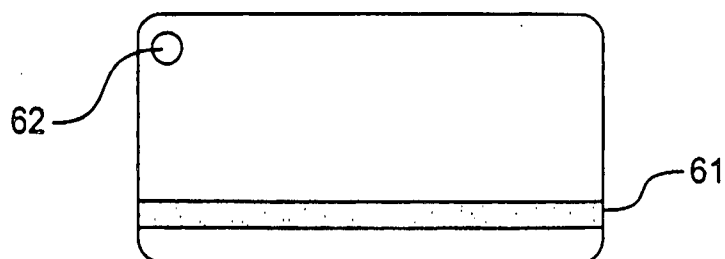


FIG. 6B

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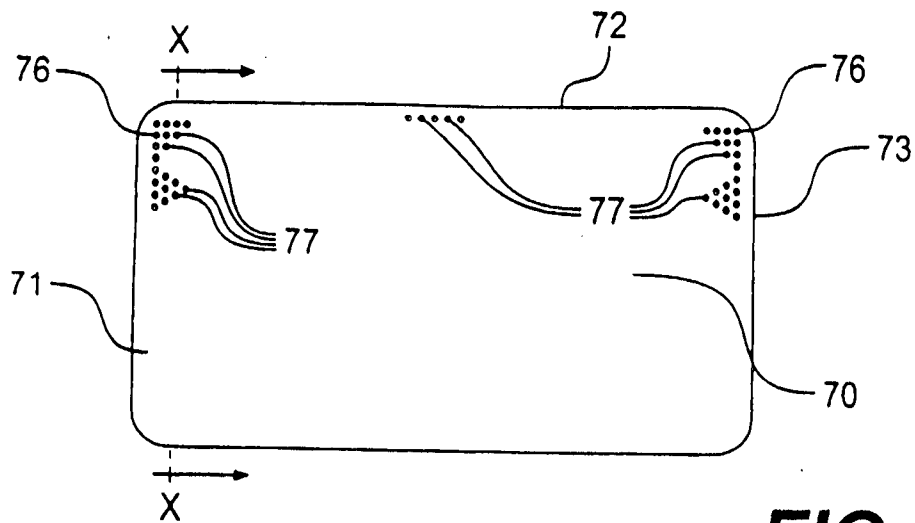


FIG. 7A

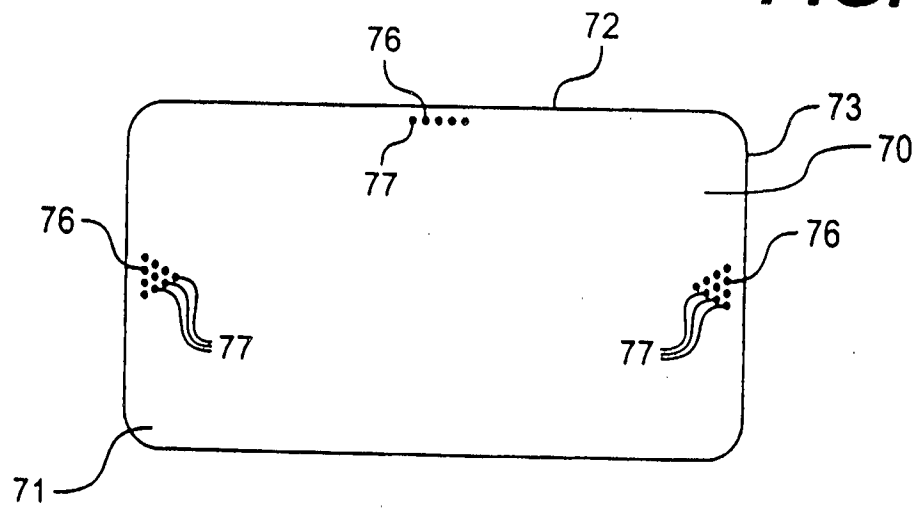


FIG. 7B

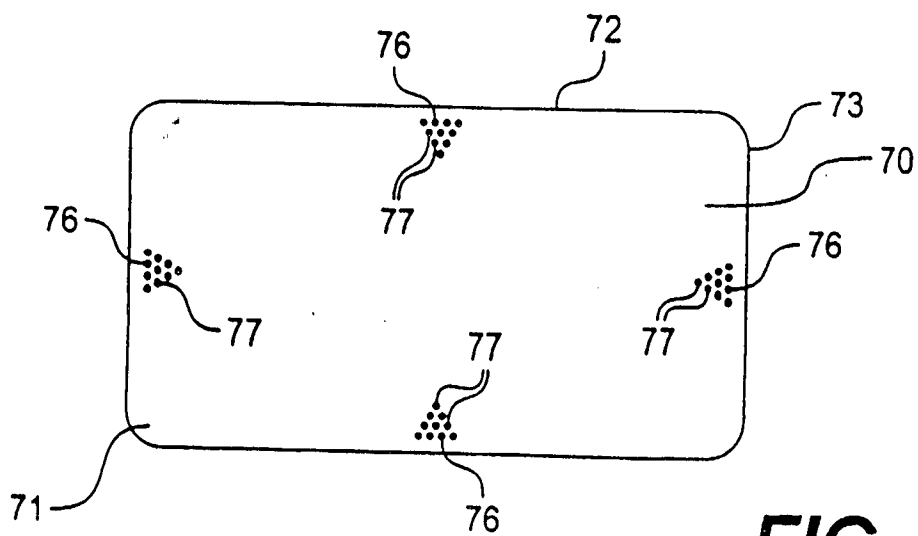


FIG. 7C

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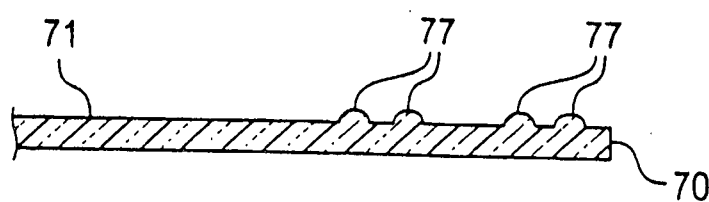


FIG. 8A

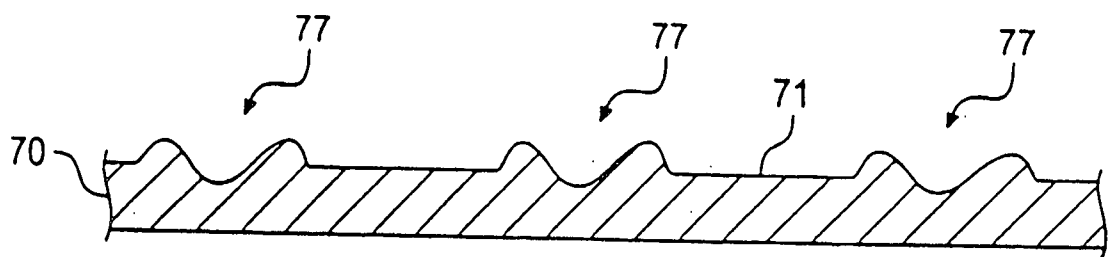


FIG. 8B

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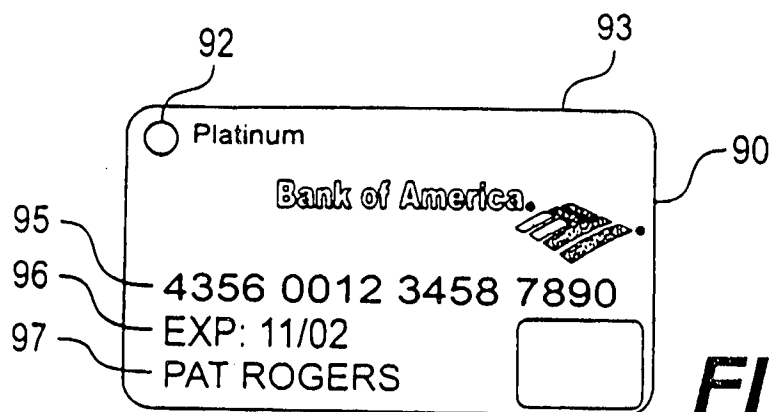


FIG. 9A

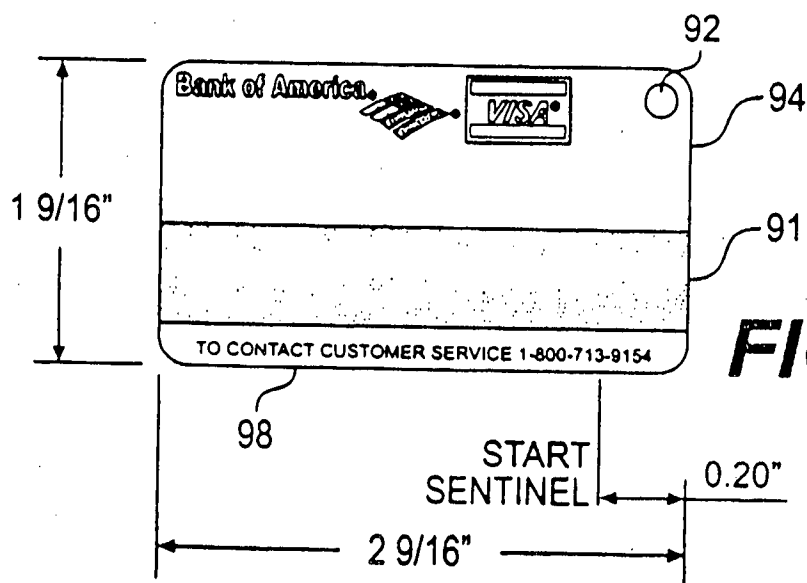


FIG. 9B

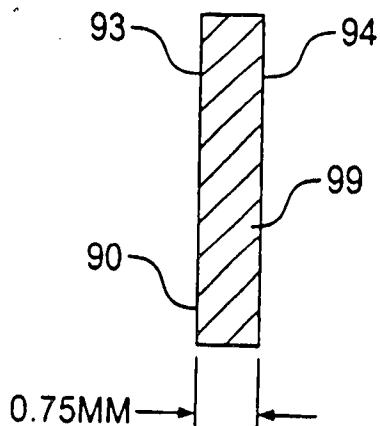


FIG. 9C

161

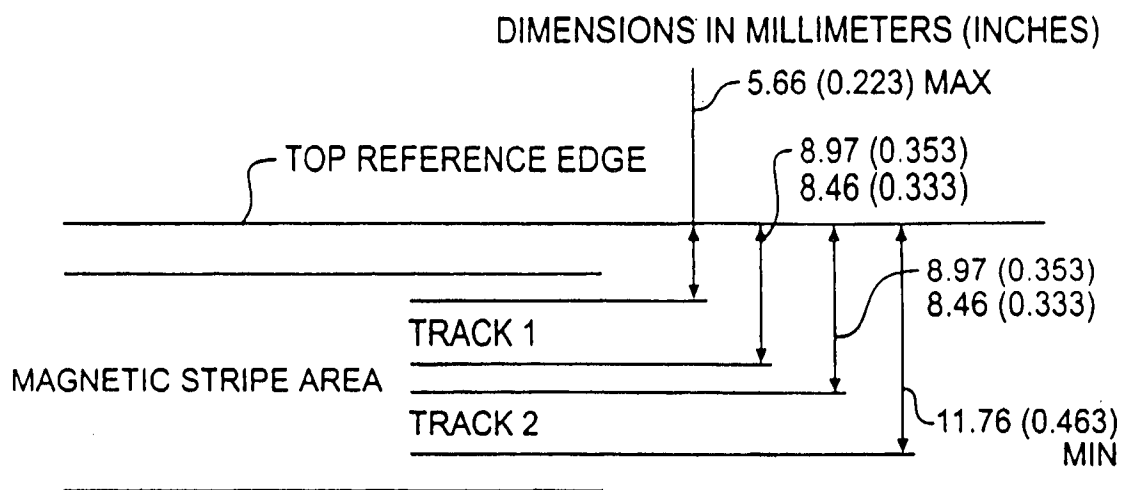


FIG. 10

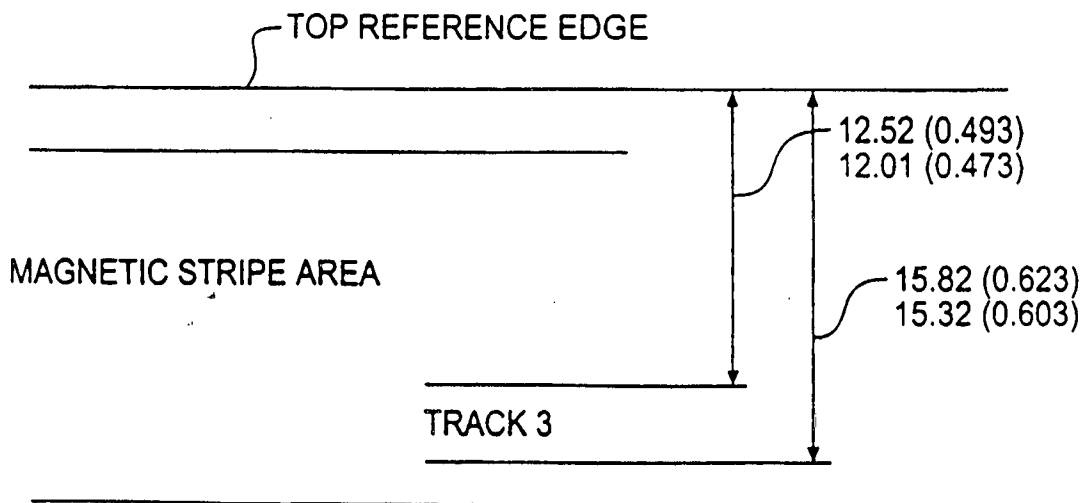
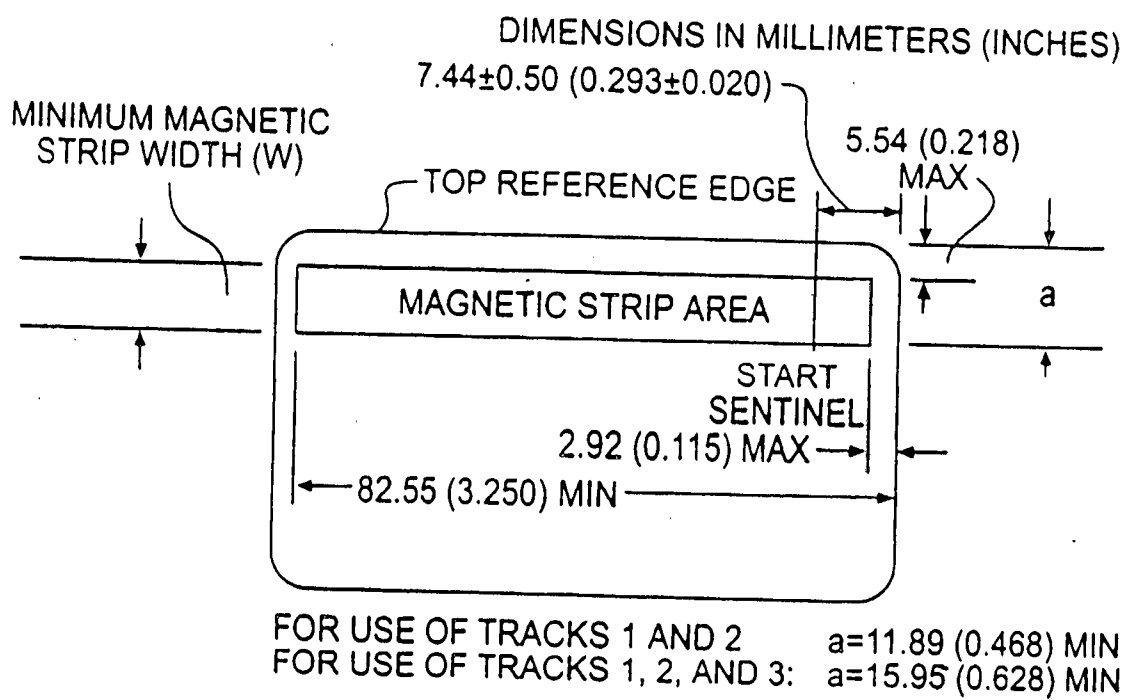


FIG. 11

**FIG. 12**

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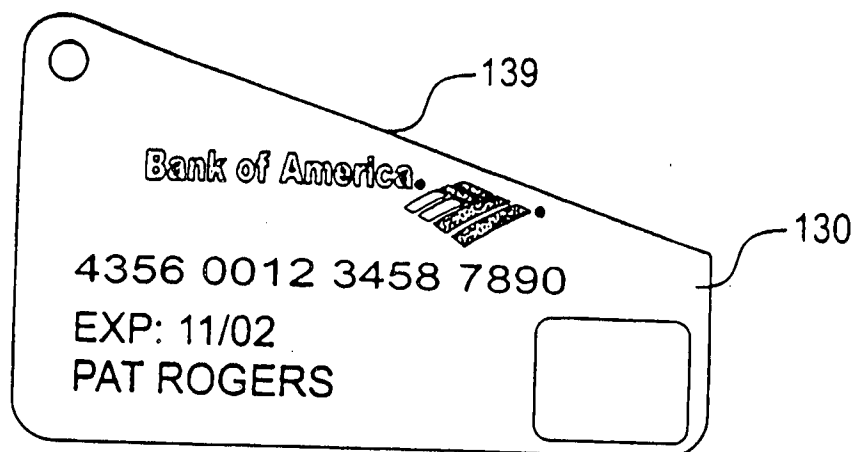


FIG. 13A

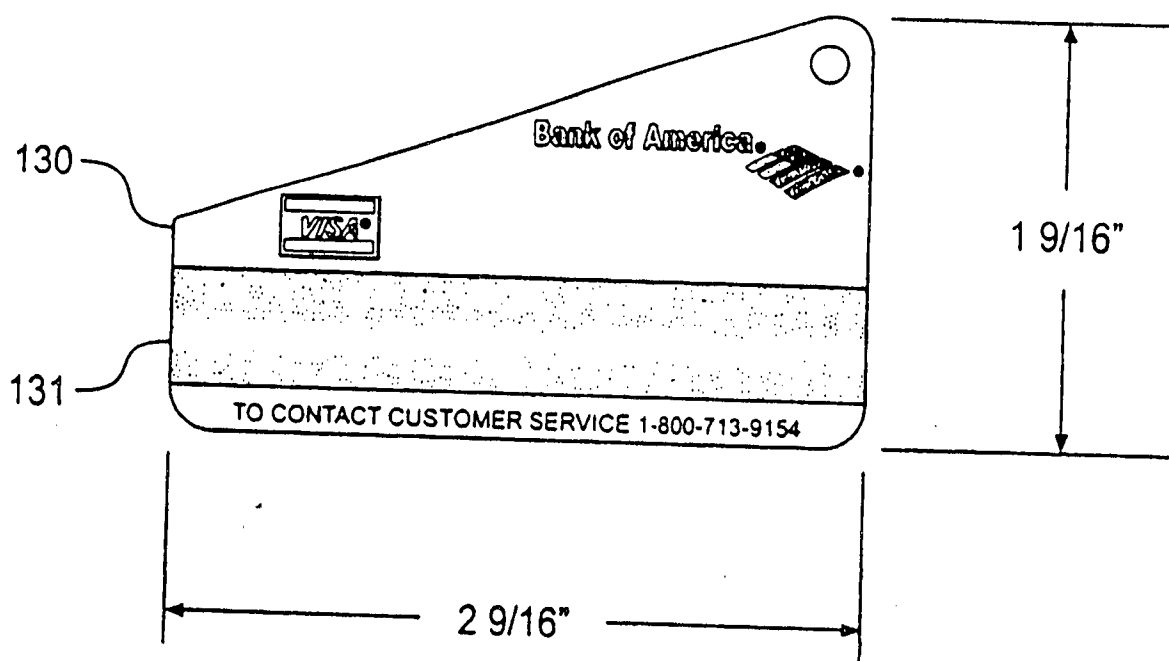


FIG. 13B

1
DATA CARD

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority under 35 U.S.C. 0119(e) to U.S. Provisional Application No. 60/263,756, filed Jan. 25, 2001 and claims priority under 35 U.S.C. 0120 to U.S. patent application No. 09/611,320, filed Jul. 6, 2000, and to Design Application Nos. 29/141,685, now U.S. Pat. D.453,338, 29/141,652, now U.S. Pat. D.453,337, 29/141,645, now U.S. Pat. D.453,160, 29/141,642, now U.S. Pat. D.456,336, 29/141,688, now U.S. Pat. D.453,161, 29/141,704, now U.S. Pat. D.460,455, 29/141,703, now U.S. Pat. D.453,517, 29/141,691, now U.S. Pat. D.453,516, 29/141,702, now U.S. Pat. D.453,339, 29/141,700, now U.S. Pat. D.456,814, 29/141,699, now U.S. Pat. D.460,454, 29/141,692, 29/141,701, 29/141,693, filed May 11, 2001, and 29/142,203, filed May 22, 2001, the entirety of each of the foregoing applications being incorporated herein by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable

REFERENCE TO A MICROFICHE APPENDIX

Not Applicable

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to data cards, such as credit cards, that contain a magnetic stripe or other means of storing information. More particularly, this invention relates to such cards that are small in size.

2. Related Art

Cards of various kinds have become ubiquitous in modern society. People often carry a number of cards in their wallet or carrying case, including credit cards, ATM or bank cards, debit cards, "smart cards," insurance cards, a driver's license, identification cards, telephone calling cards, transit cards, library cards, and card-entry hotel keys. An increasing number of consumer transactions require use of these cards, for example, as the form of payment, or as identification necessary for another form of payment or admission. Quick and accurate access to certain individual cards is useful and desirable for both the consumer and the vendor of goods or services.

Typically, consumers store credit cards and other types of cards in a wallet or carrying case. These wallets and carrying cases are frequently equipped with sleeves or slots for holding one or more cards in an arrangement selected by the user. Because of the proliferation of the types and numbers of cards carried by consumers, cards are often held very tightly within these sleeves or slots, making retrieval of a particular card difficult. Difficulty in removing a single selected card increases the time necessary for the transaction, causes stored cards to be frequently reshuffled and potentially disorganized, and increases the likelihood that cards will be dropped or lost.

While the number of cards typically carried by consumers is increasing, most consumers use certain types of cards much more frequently than others. For example, some consumers may use a credit card for nearly every sales transaction, but only rarely, if ever, use calling cards, library cards, or insurance cards. Because a subset of the total

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number of cards carried by consumers must be accessed repeatedly, it is particularly desirable to improve the accessibility of these types of cards.

One way to improve accessibility of frequently used cards is by allowing them to be stored in a separate location from the traditional wallet or carrying case. Such cards could be stored on key-chains, lanyards, hooks, or other similar devices that are easily retrieved from a bag or pocket. Thus, when a consumer needs to use the card during a transaction, the card may be quickly retrieved and given to the merchant. This provides an added level of convenience to the consumer by making the payment process quicker and simpler. Additionally, the merchant is able to move customers through the line more quickly, improving customer satisfaction. An additional benefit of storing frequently used cards on a key-chain or like device is that the possibility that the card will be lost is decreased. This is because a single card is much more easily misplaced than a card attached to a key-chain.

Conventionally sized cards, however, are too large and cumbersome to be conveniently stored on a key-chain or like device. The individual items on a key chain must be small and compact so that the key-chain can accommodate numerous items. Further, key-chains and the like are often placed in the pockets of clothing, which may be small. Finally, larger items, such as conventional credit cards, could be bent or otherwise damaged when stored on a device such as a key-chain. Thus, for a card to be effectively carried on a key-chain, its size must be significantly reduced.

The degree to which conventional cards may be reduced in size, however, is limited by the requirements of standard magnetic stripe card readers, such as point-of-sale ("POS") terminals through which the user "swipes" the card to make a purchase or payment. In order to ensure interoperability between the magnetic stripe readers and cards bearing magnetic stripes, the parameters defining the magnetic stripe are governed by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). ISO/IEC 7811 provides standards for the physical characteristics of the magnetic stripe including the location of the stripe on the card, the surface profile of the stripe, and the height of the stripe above the card surface. It would be advantageous for a reduced-size card to comply with ISO/IEC 7811, or otherwise be compatible with existing card readers and POS terminals.

Proper functioning of the magnetic stripe is very important. On conventional cards, such as credit cards, magnetic stripes contain encoded information that electronic readers can read to perform a function or confirm identification. For example, on credit and debit cards, the magnetic stripe is usually encoded with specific account information such as the credit card number, cardholder's name, the card expiration date, and a personal identification code. If the electronic device for reading the encoded information cannot properly read the magnetic stripe, the vendor must enter the information manually, using a keypad, telephone, or other similar device. Manually entering the encoded information adds both indirect and direct costs to the vendor. For example, the additional time necessary to enter the information manually may increase needs for register operators and decrease the vendor's ability to attend to other customer matters. In addition, vendors are frequently charged increased transaction fees by the card issuer for a manually entered transaction.

Thus, a need exists for providing cards, such as credit cards, that are reduced in size from currently used cards, and

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yet still are operable with currently used readers. Such a card would greatly enhance the efficiency of frequent transactions, including sales transactions, by allowing regularly used cards to be readily and easily retrieved. Further, because such a card could be readily stored on a key-chain or like device, the probability that the card would be lost or misplaced is reduced. Finally, because such a card would be compatible with currently used readers, no redesign of existing card reader technology would be required.

BRIEF SUMMARY OF THE INVENTION

In one aspect, the present invention provides a data card that is reduced in size from conventional credit-card-sized cards, and contains an information storage medium, such as a magnetic stripe or a computer chip, that can be read by existing card reader technology.

In another aspect, a reduced-size data card is provided with a magnetic stripe, which is located near an edge of the card, on which data is encoded. Such a magnetic stripe is reduced in size from the magnetic stripes found on conventionally sized cards, and contains data encoded at a higher bit density than on conventionally sized cards. The magnetic stripe is compatible with existing card reader technology.

In yet another aspect, a reduced-size data card is provided with a hole to allow key-chain storage, and the core may be composed, at least in part, of polyester. Additionally, the surface of a data card of the present invention may also be provided with raised dimples or craters to enhance gripability of the card. Further, information may be printed on the surface of the card, in order to reduce or eliminate the need to emboss the card with raised lettering or embossing.

In still another aspect, a reduced-size data card of the present invention may have an angled edge.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is an illustration of the front view of a conventional credit card.

FIG. 1B is an illustration of the back view of a conventional credit card.

FIG. 2A is an illustration of the front view of one preferred embodiment of the reduced-size data card of the present invention.

FIG. 2B is an illustration of the back view of the embodiment shown in FIG. 2A.

FIG. 3A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 3B is an illustration of the back view of the embodiment shown in FIG. 3A.

FIG. 4A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 4B is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 4C is an illustration of the back view of the embodiment shown in FIG. 4A.

FIG. 4D is an illustration of an alternate back view of the embodiment shown in FIG. 4A.

FIG. 5A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 5B is an illustration of the back view of the embodiment shown in FIG. 5A.

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FIG. 6A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 6B is an illustration of the back view of the embodiment shown in FIG. 6A.

FIG. 7A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 7B is an illustration of the front view of another preferred embodiment of the reduced data card of the present invention.

FIG. 7C is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 8A is a partial sectional view of another preferred embodiment of the reduced-size data card of the present invention taken through the tread where the tread includes raised dimples.

FIG. 8B is a partial sectional view of another preferred embodiment of the reduced-size data card of the present invention taken through the tread where the tread includes craters.

FIG. 9A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 9B is an illustration of the back view of the embodiment shown in FIG. 9A.

FIG. 9C is an illustration of a side view of the embodiment shown in FIG. 9A.

FIG. 10 is an illustration of the ISO/IEC 7811 standards for location and width of magnetic stripe data tracks 1 and 2.

FIG. 11 is an illustration of the ISO/IEC 7811 standards for location and width of magnetic stripe data track 3.

FIG. 12 is an illustration of the ISO/IEC 7811 standards for magnetic stripe location and size.

FIG. 13A is an illustration of the front view of another preferred embodiment of the reduced-size data card of the present invention.

FIG. 13B is an illustration of the back view of the embodiment shown in FIG. 13A.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made to the present preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings.

FIGS. 1A-B illustrate one embodiment of a conventional credit card. FIG. 1A shows the front side of a conventional standard size credit card 10, which is typically embossed using raised lettering with a credit card number 11, an expiration date 12, and the name of the card-holder 13. Such a card also usually contains the name of the issuing bank 14, and the credit card company, such as American Express®, MasterCard®, or VISA®, 15. It may also contain other information, such as sponsor logos and/or a "platinum" or similar indication. Additionally, the credit card may contain an identification photograph of the card-holder for security purposes. The back side of conventional card 10, shown in FIG. 1B, typically contains a box 16 that can be signed by the card holder, which is used for verification purposes when a purchase is made. Additionally, the back side of card 10 contains a magnetic stripe 17, which runs parallel to the card's largest dimension. Magnetic stripe 17 stores

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information, such as credit card number, that can be read by conventional point of sale ("POS") terminals. A standard credit card is approximately $3\frac{1}{4}$ in. long by $2\frac{1}{4}$ in. high, for an aspect ratio (length/height) of approximately 1.5, and has a thickness of approximately 0.75 mm.

The card of the present invention includes an information storage medium. By "information storage medium," is meant a medium that is added to the card that stores information in a magnetic, electronic, or electromagnetic manner. This term does not include printed information either affixed to or printed directly on the card. Exemplary information storage media suitable for use with the present invention include, but are not limited to, magnetic stripes and computer chips.

FIGS. 2A-B depict a preferred embodiment of the present invention, including a generally rectangular card 20, a magnetic stripe 21, and a hole 22. The dimensions of card 20 are approximately $2\frac{1}{4}$ in. long by $1\frac{1}{4}$ in. high, for an aspect ratio (length/height) of approximately 1.7, and a thickness of approximately 0.75 mm. This is a significant reduction from the dimensions of a standard credit card. As would be appreciated by one skilled in the art, the foregoing specific dimensions are representative only, and the present invention is not limited to any particular dimensions. Preferably, the present invention is carried out using cards with dimensions ranging in length from approximately 1 in. to 3 in., and ranging in height from approximately 1 in. to $1\frac{1}{4}$ in. Thus, the aspect ratio (length/height) could range from approximately 0.53 ($1/1.875$) to 3 ($3/1$).

Magnetic stripe 21 is located on the back side of card 20, as shown in FIG. 2B, and is oriented perpendicularly to the card's largest dimension. Alternatively, the magnetic stripe could be located on the front side of card 20. In one embodiment of the present invention, magnetic stripe 21 is approximately 0.41 in. in width. In another embodiment, shown for example in FIGS. 3A-B, magnetic stripe 31 is approximately 0.25 in. in width.

ISO/IEC 7811 provides standards for the location of the stripe on the card, the surface profile of the stripe, and the height of the stripe above the card surface. Generally, designers of cards attempt to comply with these standards to ensure compatibility with existing POS terminals. Unexpectedly, the card of the present invention is compatible with existing point of sale terminals without complying with several aspects of the ISO/IEC standards, as explained in more detail below.

Finally, hole 22 is shown as located in a corner of card 20, and allows the card to be readily carried on a key-chain or like device. It should be apparent to one skilled in the art that hole 20 can be located anywhere on the card that allows the card to be carried by a key-chain or similar device and does not interfere with the magnetic stripe.

FIGS. 3A-B show an alternate preferred embodiment. Like the previous embodiment, this embodiment includes a generally rectangular card 30, a magnetic stripe 31, that is oriented perpendicularly to the card's largest dimension, and a hole 32. Here, however, magnetic stripe 31 is narrower in width than magnetic stripe 21 of FIG. 2B. A narrower magnetic stripe may be utilized when less information is needed to be stored by the magnetic stripe or when encoding techniques allow more information to be stored in a reduced space.

FIGS. 4A-D show alternate preferred embodiments. FIG. 4A shows a generally rectangular shaped card 40 with a hole 42. Card dimensions ($2\frac{1}{4}$ in. by $1\frac{1}{4}$ in.) are shown on FIG. 4A and are significantly reduced from the standard size credit

card. Additionally, card 40 contains an identification photograph 43, various logos 44 and 45, and additional information 46. Further, embossed information, such as credit card number or expiration date (not shown) could be included.

Other arrangements of logos, and information should be apparent to one of ordinary skill in the art from this description or from practice. For example, FIG. 4B shows card 40', which is similar to card 40 (FIG. 4A) but without the identification photograph, and with a different arrangement of logos and other information.

FIG. 4C shows the back side of card 40, depicted in FIG. 4A, which includes magnetic stripe 41 oriented perpendicularly to the card's largest dimension. Additionally, FIG. 4C includes signature block 47. Signature block 47 is to be signed by the card holder, and is used for signature verification when a purchase is made. Finally, the back side of card 40 may contain logos 48 and other information, as would be apparent to one of ordinary skill in the art.

FIG. 4D shows an alternate arrangement of the back side of card 40. It shows magnetic stripe 41' which is narrower than magnetic stripe 41 of FIG. 4C. Narrower magnetic stripes may be utilized when less information is required to be stored by the magnetic stripe, or when encoding techniques allow more information to be stored in less space.

FIGS. 5A-B show an alternate preferred embodiment, including a generally rectangular shaped card 50 and a magnetic stripe 51, oriented perpendicularly to the card's largest dimension. Unlike previous embodiments, the present embodiment does not contain a hole. While a hole is a helpful way to attach a card of the present invention to a key-chain or like device, such a hole is not required. Thus, the card can be attached to the key-chain by a clip or similar device. Additionally, the card of the present invention is not required to be stored on a key-chain or like device and could be stored in any fashion chosen by the consumer, such as directly in the consumer's pocket or bag. It should be readily apparent to one skilled in the art that any of the embodiments described herein could be modified such that the hole is removed.

FIGS. 6A-B show still another alternate preferred embodiment, including a generally rectangular shaped card 60, a magnetic stripe 61, and a hole 62. Magnetic stripe 61 is oriented parallel to the card's largest dimension. As described above, magnetic stripe 61 is preferably compatible with existing magnetic stripe readers. Magnetic stripe 61 may be either narrow or wide, depending on the amount of data required to be stored and the degree of data compression. Because magnetic stripe 61 is oriented parallel to the card's longest dimension, it may be capable of storing a greater amount of information at a given width than magnetic stripe 21 of FIG. 2B which is oriented perpendicularly to the card's largest dimension. Thus, the present embodiment may be more easily implemented when greater amounts of information storage is required. It should be readily apparent to one of ordinary skill in the art that any of the embodiments described herein could be modified such that the magnetic stripe is oriented parallel to the card's largest dimension.

Conventional credit cards and the like have been generally rectangular in shape. However, the card of the present invention may take on other shapes. For example, the card could be any number of geometric shapes such as triangular or trapezoidal. Additionally, the card could take on the shape of naturally occurring or human-made objects, such as pine trees or airplanes. Such shapes could be related to the card issuer or sponsor. Thus, a credit card that a consumer can use

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to accrue frequent flier miles could be in the shape of an airplane. The dimensions of such cards generally comport with the size guidelines suggested herein. Because such cards are not rectangular, the magnetic stripe would not necessarily be oriented as described above (either parallel to or perpendicular to the card's largest dimension). Thus, the magnetic stripe could be oriented in any number of ways, depending on the shape of the card.

Additionally, any of the embodiments described herein could be provided with a tread to increase the gripability of the card. Such treads are described in detail in U.S. patent application Ser. No. 09/611,320 filed on Jul. 6, 2000, the entirety of which is hereby incorporated by reference.

These treads could take the form of a plurality raised dimples disposed on a surface of the card. The treads are preferably disposed on the surface or face of the card that comes into contact with the user to increase gripability. FIGS. 7A-C show three alternate preferred embodiments of the present invention in which the surface of the card is provided with treads. In each a number of dimples 77 is arranged to form a plurality of treads 76 on the front face 71 of card 70. In FIG. 7A, the dimples 77 are arranged to form treads 76 in either a triangular pattern or a line. The dimples 77, however, can also be arranged in any number of patterns. As depicted in FIGS. 7A-7C, the treads 76 are located near an edge 73 of card 70, and in each preferred embodiment depicted in FIGS. 7A-7C, a tread 76 is located near the top edge 72 of the card 70. Other arrangements of dimples 77 forming treads 76 should be apparent to one of skill in the art from this description of from practice of the invention depending on the intended or experienced use of the card.

FIG. 8A shows a sectional view of a preferred embodiment of card 70 of the present invention taken along the line X-X of FIG. 7A, in which the dimples 77 are raised from the front face 71 of the card 70. In such an embodiment, the height of each dimple should be selected so as not to interfere with the proper operation of POS terminals or other devices that require the card to be swiped by or through the device.

FIG. 8B shows a sectional view of an alternate preferred embodiment of card 70 of the present invention. In this embodiment, the dimples are created in such a manner as to create individual craters 77 in which the lip of the crater is raised slightly above the front surface 71 of the card 70, while the center of the crater is slightly below the surface of the card.

While the specific embodiments described herein are cards having magnetic stripes such as credit cards, debit cards, and bank cards, this is by way of example, and the invention is not limited to these types of cards. Thus, the present invention can be implemented for many different types of data cards including Smart Cards (i.e. cards containing computer chips that store information), stored value cards, proximity chip cards, and other cards that are capable of storing information. A detailed discussion of data cards containing embedded computer chips may be found in U.S. Pat. No. 4,443,027 to McNeely et al., the entirety of which is hereby incorporated by reference. As described in McNeely et al. information for identifying the authorized credit-card user or providing credit authorization comprises a microprocessor, computer or integrated circuit chip embedded in the card. McNeely et al., col. 3, lines 30-34.

Another preferred embodiment of the present invention will now be described in greater detail. This preferred embodiment, shown in FIGS. 9A-C, includes a generally rectangular card 90, a magnetic stripe 91, and a hole 92. The

front face 93 of card 90 is shown in FIG. 9A; the rear face 94 of card 90 is shown in FIG. 9B. Approximate dimensions of card 90, as indicated on FIG. 9B, are $1\frac{1}{16}$ inches (height) by $2\frac{1}{16}$ inches (length). The width of the card, shown in FIG. 9C (not to scale), is approximately 0.75 mm. These height and length dimensions are reduced from conventionally-sized credit card dimensions, which are approximately $2\frac{1}{4}$ inches (height) by $3\frac{1}{8}$ inches (length).

Once again, the specific dimensions of card 90 are representative only, and the present invention is not limited to any particular dimensions. Nevertheless, the present invention is preferably carried out using cards with dimensions ranging from approximately 1 inch by 1 inch to approximately $1\frac{1}{2}$ inches to 3 inches.

The front face 93 of card 90 contains various information such as card number 95, expiration date 96, and card-holder name 97. This information may be embossed on the card. In a preferred embodiment, the card is free from or devoid of embossing or other raised lettering. In such an embodiment, the information may be printed on the card using laser printing techniques, as are known in the art.

Between front and rear faces 93 and 94 of card 90 is a core 99, as shown in FIG. 9C. This core may be composed of, at least in part, polyester. In one embodiment, the core is composed of 80% polyester and 20% polyvinyl chloride (PVC). The use of polyester in the core is advantageous because it increases the durability of the card. As would be apparent to one skilled in the art, various percentages of polyester and other materials may be used for the card core.

In the embodiment shown in FIGS. 9A-C, magnetic stripe 91 is positioned parallel to the bottom edge 98 of card 90. The bottom edge, of course, is defined with respect to the particular card orientation shown in FIG. 9B. As would be readily apparent to one skilled in the art, rotation of card 90 could cause "bottom" edge 98 to appear as if it is a right, left, or top edge. Magnetic stripe 91 is used to store encoded data such as the name of the card-holder, a credit card or other account number, card expiration date, and a personal identification code or other security information. The lengthwise dimension of magnetic stripe 91 is approximately $2\frac{1}{16}$ inches. As defined herein, the lengthwise dimension of a magnetic stripe is the largest dimension of the magnetic stripe. However, as described above, the present invention is not limited to any particular dimensions. Preferably, the lengthwise dimension of the magnetic stripe ranges from approximately 1 inch to approximately 3 inches.

The requirements of ISO/IEC 7811, which specifies the international standards for magnetic stripes will now be discussed, and then compared to the characteristics of magnetic stripe 91 of the present invention. Designers of cards bearing magnetic stripes attempt to comply with the standards set forth in ISO/IEC 7811 in order to ensure compatibility and interoperability with current magnetic stripe readers and POS terminals.

ISO/IEC 7811 specifies that a magnetic stripe may contain up to three tracks of encoded information. As will be appreciated by one skilled in the art, each track is essentially a strip of specified width and location running the length of the magnetic stripe, on which data is encoded. According to ISO/IEC 7811, track 1 is located closest to the edge of the card and contains data encoded at 210 bits per inch (bpi). Track 2 is adjacent to track 1 and contains data encoded at 75 bpi. FIG. 10 shows the width and location of tracks 1 and 2 as specified by ISO/IEC 7811-4, the entirety of which is hereby incorporated by reference. Track 3 is the furthest from the edge of the card and contains data encoded at 210

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bpi. FIG. 11 shows the width and location of track 3 as specified by ISO/IEC 7811-5, the entirety of which is hereby incorporated by reference.

In all cases, data is encoded on the tracks using two-frequency encoding, as specified in ISO/IEC 7811. As will be understood by one skilled in the art, two-frequency encoding involves the use of flux transitions to encode data. The encoding comprises data and clocking transitions together. The presence of a flux transition between clocking transitions signifies that the bit is a "one;" the absence of a flux transition signifies a "zero." Additional detailed discussion of two-frequency encoding may be found in ISO/IEC 7811-2 and 7811-6, the entirety of which is incorporated herein by reference.

Each track of data contains a "start sentinel." The start sentinel is the first data bit, and indicates the beginning of the encoded data on each track. As shown in FIG. 12, ISO/IEC 7811 specifies that the location of the start sentinel is approximately 0.293 inches from the right side of the card for all tracks.

FIG. 12 shows additional physical characteristics for magnetic stripes, as specified by ISO/IEC 7811. The minimum length of the magnetic stripe is specified as 3.135 inches (3.250 inches minimum from the right edge of the card to the left edge of the stripe minus the 0.115 inches maximum from the right edge of the card to the right edge of the stripe). The minimum width of the magnetic stripe is 0.25 inches for cards using tracks 1 and 2, and 0.41 inches for cards using all three tracks.

Magnetic stripe 91 (FIG. 9B) is different in several respects from the magnetic stripes specified by ISO/IEC 7811. First, the length of magnetic stripe 91 is approximately $2\frac{1}{16}$ inches, significantly shorter than the 3.135 inch minimum length specified by ISO/IEC 7811.

Second, the data on magnetic stripe 91 is encoded at bit densities higher than those prescribed in ISO/IEC 7811. Magnetic stripe 91 contains data encoded on tracks 1 and 2. In order to ensure that sufficient data is encoded in the smaller magnetic stripe area, data is encoded on track 1 at 260 bpi and on track 2 at 100 bpi. Both of these bit densities are significantly higher than those specified in ISO/IEC 7811 for tracks 1 and 2 (210 bpi and 75 bpi, respectively). As should be appreciated by one skilled in the art, data could also be encoded on track 3 if necessary or desirable in a particular circumstance. It should also be noted that the present invention is not limited by these specific bit densities, and other bit densities could be selected that ensure the storage of the appropriate amount of information in the available space.

Also, as shown in FIG. 9B, the start sentinel of magnetic stripe 91 is located 0.200 inches from the right edge of card 90. This start sentinel location is significantly different from that specified in ISO/IEC 7811, which specifies that the start sentinel must be located 0.293 inches from the right edge of the card.

Preferably, the data on tracks 1 and 2 of magnetic stripe 91 is encoded using standard two-frequency encoding. However, it should be understood by one skilled in the art that the present invention is not limited to a particular encoding technique. Preferably, the width of each track and the distance of each track from the bottom edge 98 of card 90 complies with the requirements of ISO/IEC 7811, as described above and shown in FIG. 10.

The dimensions of card 90 itself are different from the dimensions specified in ISO/IEC 7810, the entirety of which is hereby incorporated by reference, which generally speci-

fies physical parameters of identification cards. Notably, ISO/IEC 7810 establishes minimum dimensions for identification cards at 2.125 inches by 3.370 inches. The dimensions of card 90 are approximately $1\frac{1}{16}$ inches by $2\frac{1}{16}$ inches.

Given that card 90 of the present invention does not comply with numerous standards and specifications set forth in ISO/IEC 7810 and 7811, it would be expected by those skilled in the art that the card would not be operable with standard magnetic stripe readers and POS terminals. However, tests performed on prototype cards indicate that the data cards of the present invention are compatible with standard equipment.

In order to test the prototype cards, twenty-five cards, substantially similar to that shown in FIGS. 9A and 9B and described above, were assembled and encoded with twenty-five different accounts. These twenty-five cards were then tested using five different POS terminals. The five POS terminals were standard merchant POS terminals manufactured by VeriFone Inc. A number of the twenty-five cards were tested on each of the five POS terminals. In order to ensure proper reading of the card, two tests were performed. First, after swiping each test card through the terminal, the terminal attempted to print a receipt showing, among other things, the name associated with the account encoded on each card. Second, the terminal used the data obtained from the card, and attempted to access the interchange system and obtain authorization for a transaction. All tested cards passed both tests. This testing indicates that the data card of the present invention is unexpectedly compatible with POS terminals, despite the non-compliance with numerous aspects of ISO/IEC 7810 and 7811.

Additional testing was carried out using cards similar to card 130, shown in FIGS. 13A and 13B. Card 130 differs from card 90 only in that edge 139 of card 130 is angled. The same testing protocol described above was performed on twenty-five cards substantially similar to card 130 as shown in FIGS. 13A and B. The magnetic stripe 131 on card 130 is substantially the same as magnetic stripe 91 of card 90 (FIG. 9B). All cards tested passed both the receipt and authorization tests.

Thus, testing the prototype cards of various embodiments reveals that cards of the present invention are interoperable with magnetic card reader technology and POS terminals despite non-compliance with several of the relevant ISO/IEC standards.

Now will be described a method of use for a reduced-size data card of the present invention. As described above, such a card may be stored on a key-chain, lanyard, hook or similar device. Alternatively, the card may simply be placed in the pocket or bag of a consumer. When a consumer carrying a card of the present invention approaches a POS terminal or other card reader, such as when making sales transaction, the consumer may be required to produce the card to complete the transaction. Because of the convenience of storage, the consumer quickly and easily retrieves the card, and either gives the card to the merchant to "swipe" through the reader, or the consumer may be permitted to "swipe" the card him/herself. The POS terminal or other card reader then "reads" the encoded information on the card, such as card number, credit limit or the like, and the transaction is completed. The card may then be restored by the consumer until the next usage.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those

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skilled in the art, and consequently it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. A data card comprising a first face, a second face, and a magnetic stripe comprising stored encoded data, wherein the dimensions of the card are in the range of about 1 inch by about 1 inch to about 1 1/4 inches by about 3 inches, and the lengthwise dimension of the magnetic stripe is in the range of about 1 inch to about 3 inches, and wherein the encoded data can be read by a magnetic stripe reader configured to read magnetic stripes compliant with ISO/IEC 7811.
2. A data card as in claim 1, wherein the magnetic stripe is positioned parallel to an edge of the card.
3. A data card as in claim 1, wherein the magnetic stripe is positioned perpendicular to a largest dimension of the card.
4. A data card as in claim 1, wherein the magnetic stripe comprises two tracks for storing the encoded data.
5. A data card as in claim 4, wherein the encoded data on a first of the two tracks is encoded at greater than about 210 bits per inch.
6. A data card as in claim 5, wherein the encoded data on the first of the two tracks is encoded at about 260 bits per inch.
7. A data card as in claim 4, wherein the encoded data on a second of the two tracks is encoded at greater than about 75 bits per inch.
8. A data card as in claim 7, wherein the encoded data on the second of the two tracks is encoded at about 100 bits per inch.
9. A data card as in claim 1, wherein the encoded data is encoded using two-frequency encoding.
10. A data card as in claim 1, wherein the first and second faces define a hole therethrough.
11. A data card as in claim 1, further comprising a core disposed between said first and second faces, wherein said core comprises polyester.
12. A data card as in claim 11, wherein said core comprises about 80% polyester.
13. A data card as in claim 1, wherein the dimensions of the card are about 1 1/4 inches by about 2 1/4 inches.
14. A data card as in claim 1, wherein the first and second faces are devoid of raised lettering.
15. A data card as in claim 1, further comprising a computer chip.
16. A data card as in claim 1, further comprising an integrated circuit chip.
17. A data card as in claim 1, further comprising a microprocessor.
18. A data card as in claim 1, further comprising a tread comprising a plurality of raised dimples for improving the gripability of said card, wherein said plurality of raised dimples are disposed on one of said first and second faces, said one face coming into contact with a user to improve gripability.
19. A data card as in claim 1, further comprising a plurality of craters disposed on one of said first and second faces, each of said plurality of craters comprising: a lip and a center, and wherein the lip of each crater is raised slightly about said one face, and the center is indented slightly into said one face.
20. A data card comprising a first face, a second face, and a magnetic stripe comprising stored encoded data, wherein the largest dimension of the card is about 2 1/4 inches, and

the lengthwise dimension of the magnetic stripe is in the range of about 1 inch to about 2 1/4 inches, and wherein the encoded data can be read by a magnetic stripe reader configured to read magnetic stripes compliant with ISO/IEC 7811.

21. A data card as in claim 20, wherein the magnetic stripe is positioned parallel to an edge of the card.
22. A data card as in claim 20, wherein the magnetic stripe comprises two tracks for storing the encoded data.
23. A data card as in claim 22, wherein the encoded data on a first of the two tracks is encoded at greater than about 210 bits per inch.
24. A data card as in claim 23, wherein the encoded data on the first of the two tracks is encoded at about 260 bits per inch.
25. A data card as in claim 22, wherein the encoded data on a second of the two tracks is encoded at greater than about 75 bits per inch.
26. A data card as in claim 25, wherein the encoded data on the second of the two tracks is encoded at about 100 bits per inch.
27. A data card as in claim 20, wherein the encoded data is encoded using two-frequency encoding.
28. A data card as in claim 20, wherein the first and second faces define a hole therethrough.
29. A data card as in claim 20, further comprising a core disposed between said first and second faces, wherein said core comprises polyester.
30. A data card as in claim 29, wherein said core comprises about 80% polyester.
31. A data card as in claim 20, wherein the lengthwise dimension of the magnetic stripe is about 2 1/4 inches.
32. A data card as in claim 20, wherein the first and second faces are devoid of raised lettering.
33. A data card as in claim 20, further comprising a computer chip.
34. A data card as in claim 20, further comprising an integrated circuit chip.
35. A data card as in claim 20, further comprising a microprocessor.
36. A data card as in claim 20, further comprising a tread comprising a plurality of raised dimples for improving the gripability of said card, wherein said plurality of raised dimples are disposed on one of said first and second faces, said one face coming into contact with a user to improve gripability.
37. A data card as in claim 20, further comprising a plurality of craters disposed on one of said first and second faces, each of said plurality of craters comprising: a lip and a center, and wherein the lip of each crater is raised slightly about said one face, and the center is indented slightly into said one face.
38. A data card as in claim 20, further comprising an angled edge.
39. A data card comprising a first face, a second face, an angled edge, and a magnetic stripe comprising stored encoded data, wherein the largest dimension of the card is in the range of about 1 1/4 inches to about 3 inches, and the lengthwise dimension of the magnetic stripe is in the range of about 1 inch to about 3 inches, and wherein the encoded data can be read by a magnetic stripe reader configured to read magnetic stripes compliant with ISO/IEC 7811.
40. A data card as in claim 39, wherein the magnetic stripe is positioned parallel to an edge of the card.
41. A data card as in claim 39, wherein the magnetic stripe is positioned perpendicular to a largest dimension of the card.

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42. A data card as in claim 39, wherein the magnetic stripe comprises two tracks for storing the encoded data.

43. A data card as in claim 42, wherein the encoded data on a first of the two tracks is encoded at greater than about 210 bits per inch.

44. A data card as in claim 43, wherein the encoded data on the first of the two tracks is encoded at about 260 bits per inch.

45. A data card as in claim 42, wherein the encoded data on a second of the two tracks is encoded at greater than about 75 bits per inch.

46. A data card as in claim 45, wherein the encoded data on the second of the two tracks is encoded at about 100 bits per inch.

47. A data card as in claim 39, wherein the encoded data is encoded using two-frequency encoding.

48. A data card as in claim 39, wherein the first and second faces define a hole therethrough.

49. A data card as in claim 39, further comprising a core disposed between said first and second faces, wherein said core comprises polyester.

50. A data card as in claim 49, wherein said core comprises about 80% polyester.

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51. A data card as in claim 39, wherein the first and second faces are devoid of raised lettering.

52. A data card as in claim 39, further comprising a computer chip.

53. A data card as in claim 39, further comprising an integrated circuit chip.

54. A data card as in claim 39, further comprising a microprocessor.

55. A data card as in claim 39, further comprising a tread comprising a plurality of raised dimples for improving the gripability of said card, wherein said plurality of raised dimples are disposed on one of said first and second faces, said one face coming into contact with a user to improve gripability.

56. A data card as in claim 39, further comprising a plurality of craters disposed on one of said first and second faces, each of said plurality of craters comprising: a lip and a center, and wherein the lip of each crater is raised slightly about said one face, and the center is indented slightly into said one face.

57. A data card as in claim 39, wherein the magnetic stripe is positioned parallel to said angled edge.

* * * * *

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United States of America

Date of mailing (day/month/year)

28 November 2002 (28.11.02)

Applicant's or agent's file reference

16762.0217WO

IMPORTANT INFORMATION

International application No.

PCT/US02/01284

International filing date (day/month/year)

18 January 2002 (18.01.02)

Priority date (day/month/year)

25 January 2001 (25.01.01)

Applicant

BANK OF AMERICA CORPORATION

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR
National : AU, BG, CA, CN, DE, GB, IL, JP, KP, KR, MN, NO, PL, RO, RU, SK

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

AP : GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW
EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
OA : BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
National : AE, AG, AL, AM, AT, AZ, BA, BB, BR, BY, BZ, CH, CO, CR, CU, CZ, DK, DM, DZ, EC, EE,
ES, FI, GD, GE, GH, GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,
MK, MW, MX, MZ, NZ, OM, PH, PT, SD, SE, SG, SI, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU,
ZA, ZM, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:

Peter WIMMER (Fax 338 8970)

Telephone No. (41-22) 338.83.38

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

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For receiving Office use only	
International Application No.	
International Filing Date	
Name of receiving Office and "PCT International Application"	
Applicant's or agent's file reference (if desired) (12 characters maximum)	16762.0217WO

Box No. I TITLE OF INVENTION

MINIATURE DATA CARD

Box No. II APPLICANT ☐ This person is also inventor

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

BANK OF AMERICA CORPORATION
NC1-002-29-01
101 South Tryon Street
Charlotte, North Carolina 28255
United States of America

Telephone No. (704) 388-6952
Facsimile No. (704) 388-7343
Teleprinter No.
Applicant's registration No. with the Office

State (that is, country) of nationality: US
State (that is, country) of residence: US

This person is applicant for the purposes of: ☒ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

PENTZ, Jamily
4114 Marquesas Avenue
Tega Cay, South Carolina 29708
United States of America

This person is: ☐ applicant only ☐ applicant and inventor ☒ inventor only (If this check-box is marked, do not fill in below.)
Applicant's registration No. with the Office

State (i.e. country) of nationality:
State (i.e. country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

REISTER, Andrea G.
Covington & Burling
1201 Pennsylvania Avenue, N.W.
Washington, DC 20004-2401
United States of America

Telephone No. (202) 662-5141
Facsimile No. (202) 778-5141
Teleprinter No.
Agent's registration No. with the Office 36,253

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

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Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)	
<i>If none of the following sub-boxes is used, this sheet should not be included in the request.</i>	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i> BURNS, Emmet 201 N. Tryon Street Charlotte, North Carolina 28255 United States of America	This person is: ☐ Applicant only ☐ Applicant and inventor ☒ Inventor only <i>(If this check-box is marked, do not fill in below.)</i> Applicant's registration No. with the Office
State <i>(that is, country)</i> of nationality:	State <i>(that is, country)</i> of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i> COLLINS, Richard J. 148 Whistler Road Highland Park, Illinois 60035 United States of America	This person is: ☐ applicant only ☐ applicant and inventor ☒ inventor only <i>(If this check-box is marked, do not fill in below.)</i> Applicant's registration No. with the Office
State <i>(that is, country)</i> of nationality:	State <i>(that is, country)</i> of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i> MONTGOMERY, R. Bruce 10207 Wildbracken Court Charlotte, North Carolina 28210 United States of America	This person is: ☐ applicant only ☐ applicant and inventor ☒ inventor only <i>(If this check-box is marked, do not fill in below.)</i> Applicant's registration No. with the Office
State <i>(that is, country)</i> of nationality:	State <i>(that is, country)</i> of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i> KENDLE, A. Allen 2400 Valencia Terrace North Carolina, 28226 United States of America	This person is: ☐ applicant only ☐ applicant and inventor ☒ inventor only <i>(If this check-box is marked, do not fill in below.)</i> Applicant's registration No. with the Office
State <i>(that is, country)</i> of nationality:	State <i>(that is, country)</i> of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.	

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Box No. V DESIGNATION OF STATES *Mark the applicable check-boxes; at least one must be marked.*

The following designations are hereby made under Rule 4.9(a):

Regional Patent

- ☒ **AP** ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, MZ Mozambique, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZM Zambia, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA** Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT.
- ☒ **EP** European Patent: AT Austria, BE Belgium, CH & LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, TR Turkey and any other State which is a Contracting State of the European Patent Convention and of the PCT.
- ☒ **OA** OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GQ Equatorial Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | | |
|---|--|--|
| ☒ AE United Arab Emirates | ☒ GM Gambia | ☒ NZ New Zealand |
| ☒ AG Antigua and Barbuda | ☒ HR Croatia | ☒ OM Oman |
| ☒ AL Albania | ☒ HU Hungary | ☒ PH Philippines |
| ☒ AM Armenia | ☒ ID Indonesia | ☒ PL Poland |
| ☒ AT Austria | ☒ IL Israel | ☒ PT Portugal |
| ☒ AU Australia | ☒ IN India | ☒ RO Romania |
| ☒ AZ Azerbaijan | ☒ IS Iceland | ☒ RU Russian Federation |
| ☒ BA Bosnia and Herzegovina | ☒ JP Japan | |
| ☒ BB Barbados | ☒ KE Kenya | ☒ SD Sudan |
| ☒ BG Bulgaria | ☒ KG Kyrgyzstan | ☒ SE Sweden |
| ☒ BR Brazil | ☒ KP Democratic People's Republic of Korea | ☒ SG Singapore |
| ☒ BY Belarus | ☒ KR Republic of Korea | ☒ SI Slovenia |
| ☒ BZ Belize | ☒ KZ Kazakhstan | ☒ SK Slovakia |
| ☒ CA Canada | ☒ LC Saint Lucia | ☒ SL Sierra Leone |
| ☒ CH & LI Switzerland and Liechtenstein | ☒ LK Sri Lanka | ☒ TJ Tajikistan |
| ☒ CN China | ☒ LR Liberia | ☒ TM Turkmenistan |
| ☒ CO Colombia | ☒ LS Lesotho | ☒ TN Tunisia |
| ☒ CR Costa Rica | ☒ LT Lithuania | ☒ TR Turkey |
| ☒ CU Cuba | ☒ LU Luxembourg | ☒ TT Trinidad and Tobago |
| ☒ CZ Czech Republic | ☒ LV Latvia | |
| ☒ DE Germany | ☒ MA Morocco | ☒ TZ United Republic of Tanzania |
| ☒ DK Denmark | ☒ MD Republic of Moldova | ☒ UA Ukraine |
| ☒ DM Dominica | ☒ MG Madagascar | ☒ UG Uganda |
| ☒ DZ Algeria | ☒ MK The former Yugoslav Republic of Macedonia | ☐ US United States of America |
| ☒ EC Ecuador | ☒ MN Mongolia | ☒ UZ Uzbekistan |
| ☒ EE Estonia | ☒ MW Malawi | ☒ VN Viet Nam |
| ☒ ES Spain | ☒ MX Mexico | ☒ YU Yugoslavia |
| ☒ FI Finland | ☒ MZ Mozambique | ☒ ZA South Africa |
| ☒ GB United Kingdom | ☒ NO Norway | ☒ ZM Zambia |
| ☒ GD Grenada | | ☒ ZW Zimbabwe |
| ☒ GE Georgia | | |
| ☒ GH Ghana | | |

Check-boxes below reserved for designating States which have become party to the PCT after issuance of this sheet:

☐	☐	☐
☐	☐	☐

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

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Box No. VI PRIORITY CLAIM

Priority of the following earlier application(s) is hereby claimed:

Filing Date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application country	regional application:* regional Office	international application receiving Office
item (1) 25 January 2001 (25.01.2001)	60/263,756	US		
item (2) 19 November 2001 (19.11.2001)	09/988,151	US		
item (3)				
item (4)				
item (5)				

☐ Further priority claims are indicated in the Supplemental Box.

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office) identified above as:

☒ all items ☐ item (1) ☐ item (2) ☐ item (3) ☐ item (4) ☐ item (5) ☐ other, see Supplemental Box

* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)).

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA/EP

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

Box No. VIII DECLARATIONS

The following declarations are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):

		Number of declarations
☐ Box No. VIII (i)	Declaration as to the identity of the inventor	:
☐ Box No. VIII (ii)	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	:
☐ Box No. VIII (iii)	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	:
☐ Box No. VIII (iv)	Declaration of inventorship (only for the purposes of the designation of the United States of America)	:
☐ Box No. VIII (v)	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	:

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Box No. IX CHECK LIST: LANGUAGE OF FILING

This international application contains:

(a) the following number of sheets in paper form:

Request (including declaration sheets : 5
description (excluding sequence listing part) : 14

claims : 6

abstract : 1

drawings : 11

Sub-total number of sheets : 37

sequence listing part of description (actual number of sheets if filed in paper form, whether or not also filed in computer readable form: see (b) below) : _____

Total number of sheets 37

(b) sequence listing part of description filed in computer readable form

(i) ☐ only (under Section 801(a)(i))(ii) ☐ in addition to being filed in paper form (under Section 801(a)(ii))

Type and number of carriers (diskette, CD-ROM, CD-R or other) on which the sequence listing part is contained (additional copies to be indicated under item 9(ii), in right column:)

Type: _____

Number: _____

This international application is accompanied by the item(s) marked below:

1. ☒ fee calculation sheet : 12. ☐ separate signed power of attorney : _____3. ☐ original general power of attorney : _____4. ☒ copy of general power of attorney; reference number, if any: : 15. ☐ statement explaining lack of signature : _____6. ☐ priority document(s) identified in Box No. VI as item(s): Item (1) and Item (2) : _____7. ☐ translation of international application into (language): : _____8. ☐ separate indications concerning deposited microorganisms or other biological material : _____9. ☐ sequence listing in computer readable form (indicate also type and number of carriers (diskette, CD-ROM, CD-R or other))i. ☐ copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international applicationii. ☐ (only where check-box (b)(i) or (b)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13teriii. ☐ together with relevant statement as to the identity of the copy or copies with the sequence listing part mentioned in left column10. ☒ other (specify): Transmittal Letter to RO/US; Check in the amount of \$2,046.00 : 1

Figure of the drawings which should accompany the abstract:

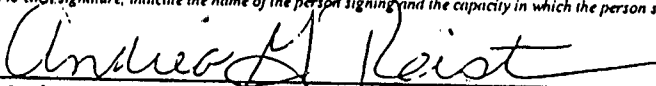
4D

Language of filing of the international application:

English

Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Andrea G. Reister
COVINGTON & BURLING

For receiving Office use only

1. Date of actual receipt of the purported international application:

3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:

4. Date of timely receipt of the required corrections under PCT Article 11(2):

5. International Searching Authority (if two or more are competent):

ISA /

6. ☐ Transmittal of search copy delayed until search fee is paid.

2. Drawings:

☐ received:☐ not received:

Date of receipt of the record copy by the International Bureau:

For International Bureau use only

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This sheet is not part of and does not count as a sheet of the international application.

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PCT

FEE CALCULATION SHEET Annex to the Request

International application No.

Date stamp of the receiving Office

Applicant's or agent's
file reference 16762.0217WO
Applicant BANK OF AMERICA CORPORATION

CALCULATION OF PRESCRIBED FEES

- TRANSMITTAL FEE 240.00 T
- SEARCH FEE 866.00 S

International search to be carried out by EP
(If two or more International Searching Authorities are competent in relation to the international search, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FEE

Basic Fee

Where item (b) of Box No. IX applies, enter Sub-total number of sheets

Where item (b) of Box No. IX does not apply, enter Total number of sheets

b1 first 30 sheets 407.00 b1

b2 7 x 9.00 = 63.00 b2

number of sheets in
excess of 30 fee per sheet

b3 Additional component (only if sequence listing part of description
is filed in computer readable form under Section 801(a)(i), or both
in that form and on paper, under Section 801(a)(ii)):

400 x fee per sheet b3

Add amounts entered at b1, b2 and b3 and enter total at B 470.00 B

Designation Fees

The international application contains 92 designations.

5 x 88.00 = 440.00 D
number of designation fees payable (maximum 5) amount of designation fee

Add amounts entered at B and D and enter total at I 910.00 I
(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)

4. FEE FOR PRIORITY DOCUMENT 30.00 P

5. TOTAL FEES PAYABLE \$ 2,046.00

Add amounts entered at T, S, I and P, and enter total in the TOTAL box

TOTAL

☐ The designation fees are not paid at this time.

MODE OF PAYMENT

- ☐ authorization to charge deposit account (see below) ☐ postal money order ☐ cash ☐ coupons
☒ cheque ☐ bank draft ☐ revenue stamps ☐ other (specify)

AUTHORIZATION TO CHARGE (OR CREDIT) DEPOSIT ACCOUNT

(This mode of payment may not be available at all IPEAs)

☐ Authorization to charge the total fees indicated above.

☒ This check-box may be marked only if the conditions for deposit accounts of the IPEA so permit) Authorized to charge any deficiency or credit any overpayment in the total fees indicated above.

☐ Authorization to charge the fee for priority document.

Receiving Office: RO/ US

Deposit Account No.: 50-0740

Date: 18 January 2002

Name: Andrea G. Reister

Signature: *Andrea G. Reister*

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 August 2002 (29.08.2002)

PCT

(10) International Publication Number
WO 02/067190 A2

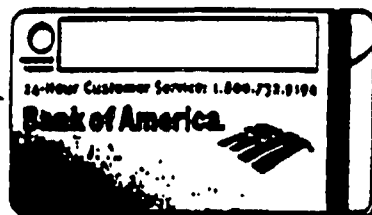
- (51) International Patent Classification⁷: G06K 19/00 (74) Agent: REISTER, Andrea, G.; Covington & Burling, 1201 Pennsylvania Avenue, N.W., Washington, DC 20004-2401 (US).
- (21) International Application Number: PCT/US02/01284
- (22) International Filing Date: 18 January 2002 (18.01.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/263,756 25 January 2001 (25.01.2001) US
09/988,151 19 November 2001 (19.11.2001) US
- (71) Applicant: BANK OF AMERICA CORPORATION [US/US]; NC1-002-29-01, 101 South Tryon Street, Charlotte, NC 28255 (US).
- (72) Inventors: PENTZ, Jamilly; 4114 Marquesas Avenue, Tega Cay, SC 29708 (US). BURNS, Emmet; 201 N. Tryon Street, Charlotte, NC 28255 (US). COLLINS, Richard, J.; 148 Whistler Road, Highland Park, IL 60035 (US). MONTGOMERY, R., Bruce; 10207 Wildbracken Court, Charlotte, NC 28210 (US). KENDLE, A., Allen; 2400 Valencia Terrace, Charlotte, NC 28210 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— without international search report and to be republished upon receipt of that report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



(54) Title: MINIATURE DATA CARD

WO 02/067190 A2

40



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(57) Abstract: A data card is reduced in size from the conventional standard size credit card. Accessibility of the card is enhanced because the card may be stored in a separate location from conventionally sized cards, such as on a key-chain or similar device. The card of the present invention has a means for storing information, such as a magnetic stripe or computer chip.