A transaction card assembly that includes a transaction card having a contactless integrated circuit that communicates with a card reader, and a sheet surrounding a transaction card and substantially coplanar with the card. The transaction card is detached from the sheet by pressing on at least a portion of the card in a direction substantially perpendicular to the sheet. Also, a punchout transaction card that includes a contactless integrated circuit that communicates with a card reader. At least a portion of an edge of the card was attached to a substantially coplanar sheet surrounding the card, and the card was detached from the sheet by pressing on at least a portion of the attached card that was substantially perpendicular to the sheet.
200

Provide Blank Sheet

Add Indicia to Sheet

Form Apertures in Sheet

Form Transaction Card In Sheet

Add Contactless Electronics to Transaction Card

Fig. 2
Form Contactless Electronics in Sheet

Form Transaction Card In Sheet

Form Apertures in Sheet

Add Indicia to Sheet

Fig. 3
PUNCHOUT CONTACTLESS TRANSACTION CARD

BACKGROUND OF THE INVENTION

[0001] The invention relates generally to assemblies for contactless transaction cards having non-standard sizes or ships. Specifically, the invention relates to punchout transaction card assemblies that hold and display the contactless transaction card until it is broken out.

[0002] Transaction cards, such as credit cards, debit cards, ATM cards, bank cards, etc., are increasingly replacing other types of tender in consumer transactions. In addition, vendors and merchants are issuing ever more types of transaction cards, such as loyalty cards, gift cards, stored value cards, etc., for sales promotions and the cultivation of customer loyalty. As a result, consumers are struggling to find more room in their wallets and carrying cases to store an expanding assortment of transaction cards.

[0003] While consumers juggle increasing numbers of transaction cards, they still generally rely on a small subset of cards for most of their purchases. For example, a consumer may use a favorite credit card for most purchases, and rarely use other credit cards, debit cards, stored value cards, etc. For this subset of frequently used cards, consumers desire fast and easy card accessibility relative to the rest of the cards they carry.

[0004] 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. Another benefit is that frequently used cards stored on a key-chain or like device are less likely to be lost. This is because a single card is much more easily misplaced than a card attached to a key-chain.

[0005] 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 should 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.

[0006] For conventional contact transaction cards, the degree to which the card may be reduced in size or changed in shape is limited by the requirements of the contact interface. For example, many conventional transaction cards having a magnetic stripe that contacts a stripe reader on a point-of-sale ("POS") terminal when a 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. Conforming to the standard requires significant restrictions on the size and shape of the transaction card.

[0007] Transaction cards with non-standard shapes and sizes also present difficulties for merchants and service providers trying to attract the attention of consumers in a crowded and competitive market for such cards. Small sized cards, for example, are difficult to see at a distance, and have a more limited surface space for branding and advertisements. Cards with odd shapes can be difficult to package and display. Thus, there is a need for a transaction card solution that permits the cards to have a wide range of forms (including forms that do not conform to the ISO/IEC 7811 standard) while also being easy for merchants, vendors, service providers, etc., to package and display.

BRIEF SUMMARY OF THE INVENTION

[0008] Embodiments of the invention include a transaction card assembly that includes a transaction card having a contactless integrated circuit that communicates with a card reader. The assembly also includes a sheet surrounding at least a portion of the transaction card and substantially coplanar with the card. The transaction card may be detached from the sheet by pressing on at least a portion of the card in a direction substantially perpendicular to the sheet.

[0009] Embodiments of the invention also include a punchout transaction card that includes a contactless integrated circuit that communicates with a card reader, where at least a portion of an edge of the card was attached to a substantially coplanar sheet surrounding the card. The card was detached from the sheet by pressing on at least a portion of the attached card that was substantially perpendicular to the sheet.

[0010] Embodiments of the invention further include a transaction card assembly that has a substantially planar member having a first edge; and a transaction card having a second edge. The member and the transaction card are reversibly attached along at least a portion of the first and second edge, and the transaction card includes a contactless integrated circuit that communicates with a card reader.

[0011] Embodiments of the invention still further include methods of making a transaction card assembly. The methods may include the steps of providing a sheet, and forming a transaction card in the sheet. The transaction card has a contactless integrated circuit that communicates with a card reader, and at least a portion of an edge of the transaction card is reversibly attached to the sheet.

[0012] Additional embodiments and features are set forth in part in the description that follows, and in part will become apparent to those skilled in the art upon examination of the specification or may be learned by the practice of the invention. The features and advantages of the invention may be realized and attained by means of the instrumentalities, combinations, and methods described in the specification.
BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1A-1F show plan views of transaction card assemblies according to embodiments of the invention;

FIG. 2 shows a flowchart illustrating a method of making a transaction card assembly according to embodiments of the invention; and

FIG. 3 shows a flowchart illustrating another method of making a transaction card assembly according to embodiments of the invention.

DETAILED DESCRIPTION OF THE INVENTION

The invention includes transaction card assembly that includes a transaction card which is detachable from a surrounding sheet. The sheet may have a size and shape that is easy to package and display, as well as one or more surfaces on which branding and advertising may be prominently displayed. The transaction card may have a standard or non-standard shape and size, and includes a contactless integrated circuit that allows transactions to be conducted without physical contact between the card and transaction processing device at the point of sale. Because the transaction card may be contactless, the transaction card does not have to be limited only to shapes and sizes dictated by the ISO/IEC 7811 standard for contact transaction cards.

FIGS. 1A-1D show embodiments of transaction card assemblies according to embodiments of the invention. FIG. 1A shows a transaction card assembly 100 that includes a sheet 102 surrounding and attached to a transaction card 104. The sheet 102 and transaction card 104 are coupled by connecting tabs 106 that may be formed by punching, scoring, ablating, etc. portions of the sheet 102 around the transaction card 104. The tabs 106 can be manually broken to detach the card 104 from the sheet 102. For example, flexural forces may be applied to the card 104 in order to weaken and ultimately break the connecting tabs 106.

The sheet 102 may be made out of the same material as the transaction card 104, and may include conventional transaction card materials such as plastics, polymers, paper, and the like. The shape of the sheet 102 may be selected for easy packaging and display.

Sheet 102 may be formed with an integrated holder such as one or more apertures like aperture 107 for suspending the sheet from a display hook (e.g., a 3-peg holder mounted on a wall or countertop display or some other type of display rack or suspension system). In some embodiments, the sheet 102 may include a pair of collinearly positioned 3-peg apertures (not shown), spaced apart to accept a dual-pronged display hook. As shown in FIGS. 1A-1D, the apertures may have a variety of shapes and sizes such as round, triangular, square, rectangular, diamond shaped, etc.

The transaction card 104 may also include an aperture 109. Transaction cards may have a single aperture, like transaction card 104, or a plurality of apertures with the same or different shapes. The shape of the apertures may be circular, elliptical, hemispherical, square, rectangular, triangular, polygonal, etc. The inside edge of the aperture may also be reinforced to reduce the chance of the aperture tearing or splitting, for example when the aperture is linked to a keychain ring. Reinforcement of the aperture may be provided by metal or hard plastic collar (not shown) secured to the inside edge of the aperture.

The aperture 109 may also be designed for coupling the transaction card 104 to a protective cover or carrying case (not shown). For example, the aperture 109 may be designed to accept a fastener, such as a pin, that secures the card to the cover. The card may be swung in and out of the holder in a jack-knife motion where the card does not completely detach from the holder.

The apertures in the transaction cards may have an aesthetic function. For example, a plurality of apertures in the card may be arranged into a distinctive pattern that serves as a way to brand the card, or a merchant, vendor, service provider, etc. associated with the card. Whether apertures are functional, aesthetic, or a combination of both, they may be spaced a distance from the contactless integrated circuit or card identifying media so as not to interfere with the function of those elements. For example, an aperture formed in the card may be spaced about ¼ of an inch or more from these elements.

The transaction card 104 also includes a contactless integrated circuit chip 108, which may include a wireless transmitter and/or receiver for exchanging information with a transaction card reader. The chip 108 may include an antenna for transmitting and receiving information associated with the transaction or a modulated RF carrier signal. The contactless IC chip 108 may be designed to conform to ISO/IEC standards for contactless integrated circuit cards and proximity cards, including the ISO/IEC 14443 standard, and/or the ISO/IEC 15693 standard, among others.

A transaction may be conducted by positioning the transaction card 104 a proximate distance from the point of sale device capable of receiving a signal from the card. Embodiments also include having the point of sale device transmit a signal to the card, such as a handshake signal instructing the card to start transmitting data that can be used to process the transaction. The POS device may also transmit signals with information about the transaction or debit account associated with the card for storage on the card. For example, when the transaction card 104 conforms to the ISO/IEC 14443 standard, a POS device (not shown) may send and receive messages about the transaction via a modulated RF field that has a carrier frequency of 13.56 MHz.

FIGS. 1B-D show additional embodiments of transaction card assemblies according to the invention. FIG. 1B shows a triangular shaped transaction card assembly 120 having three apertures 127A-C positioned near the three corners of the sheet 122. A circular shaped transaction card 124 is attached to the sheet 122 by tab 126. The circular transaction card 124 has a contactless IC chip 128, and may also include a star-shaped aperture 129 for coupling the card 124 to another object (e.g., a keychain).

FIG. 1C shows another embodiment of a transaction card assembly 130, which includes a star-shaped transaction card 134 attached to sheet 132. The transaction card 134 may be attached to the sheet 132 by tabs 136 located at each point of the star. The card 134 includes a contactless IC chip 138 to permit contactless transactions and an aperture 139. The sheet 132 also includes a star-shaped aperture 137.
FIG. 1D shows still another embodiment of a transaction card assembly 140, which includes an arrow-shaped transaction card 144 attached to sheet 142 by tabs 145 and 146. The card 144 includes a contactless IC chip 148 and a circular aperture 149. The sheet 142 also includes a square aperture 147.

FIG. 1E shows another embodiment of a transaction card assembly 150, where less that the entire transaction card 154 is surrounded by sheet 152. In the embodiment shown, the transaction card 154 is coupled to the sheet 152 along perforation 156. The card 154 may be detached by bending along perforation 156 until the card 154 separates from the top portion of the sheet. The transaction card 154 includes a contactless IC chip 158 to permit contactless transactions and an aperture 159. The sheet 152 also includes a rectangular-shaped aperture 157.

FIG. 1F shows yet another embodiment of a transaction card assembly 160, also having less than the entire transaction card 164 being surrounded by the sheet 162. The transaction card 164 is coupled to the sheet 162 along the perforation 166. The card 164 may be detached by pressing on the card to break it away from the sheet 162 along the perforation 166. The transaction card 164 includes a contactless IC chip 168 to permit contactless transactions and an aperture 169. The sheet 162 also includes a hemispherical-shaped aperture 167.

It will be appreciated that the data card may comprise a variety of other shapes not illustrated in FIGS. 1A-1F. The transaction card, for example, may have any rectangular, circular, semi-circular, elliptical, polygonal, etc., shape. The shape of the card may also be indicative of the business of a merchant, service provider, organization, etc. associated with transactions made with the card. For example, the card may have the shape of a store or restaurant front, houses, shoes, athletic equipment (e.g., football, baseball, tennis racket, hockey stick, etc.), food products (e.g., fruits, vegetables, pizza, donuts, hamburgers, etc.) beverage products, cars, animals (e.g., pets, livestock, etc.), cartoon characters, and consumer goods, among other shapes.

The present transaction cards may include a variety of sizes, including but not limited to, standard sized credit cards such as the 3 3/8 inches by 2 1/8 inches by 0.03 inches thick conventional CR-80 type card. Embodiments, for example, include transaction cards with a conventional rectangular shape, and dimensions of less than 3 3/8 inches in width and less than 2 1/8 inches in height, such as a microcard. The assemblies may also contain larger than standard-sized cards, provided the cards have a size that is practical for being carried in a purse, wallet, pants pocket, etc.

The transaction cards of the present invention may also have additional elements for transaction processing. These may include indicia on the transaction card such as alpha-numeric characters that uniquely identify a transaction account associated with the card. They may also include a magnetic stripe to store card information such as a card number, which can be read by a magnetic card reader at a conventional POS terminal. The card may further include a bar code that has card information readable by a bar code scanner. In addition, the card may have a signature strip that can be signed by the cardholder.

The transaction card assemblies shown in FIGS. 1A-F may have advertising, branding, instructional information and other indicia. For example, the sheets may contain promotional information, trademarks, logos, graphics, website addresses, etc., associated with the vendors, merchants and/or service providers that sponsor or accept the transaction card. The indicia may be confined exclusively to the sheet portion of the transaction card assembly, or it may overlap the sheet and the transaction card. For example, a focal point of a graphic may be centered on the transaction card while background scenery spills over onto the surrounding sheet, providing a larger sized display of the graphic on the overall card assembly.

Indicia may also be presented on opposite sides of the transaction card assembly. For example, the assembly may have a display side for promotional graphics and logos, and an instruction side that is opposite the display side that has instructional information, terms and conditions, etc. for using the transaction card, as well as information on how to remove the card from the card assembly. The sheet portion of the instruction side may also contain identification indicia such as a set of alpha-numeric characters and/or a bar code that uniquely identifies the assembly. The indicia may be included as part of the information used to activate the transaction card.

FIG. 2 shows a flowchart illustrating a method of making a transaction card assembly 200 according to embodiments of the invention. The method 200 includes providing a blank sheet 202 on which the transaction card may be formed or attached. The blank sheet may be made from plastics, polymers, paper, etc., including the same materials used to make the transaction card.

Indicia may be added to the sheet 204, including promotional information, trademarks, logos, graphics, website addresses, etc. The indicia may be confined exclusively to the non-transaction card portion of the sheet, or it may overlap both the transaction card and the surrounding sheet. Indicia may be printed on a display side of the sheet that faces an observer looking at the display, and may also be printed on an opposite side of the sheet that may, for example, include instructional and identification information about the transaction card.

Apertures may be formed in the sheet 206 so that the sheet may be suspended from a display hook or other suspension mechanism (e.g., a detachable tab, line, etc.). Apertures may also be formed for aesthetic reasons to create a design in the sheet. In some embodiments, one or more of the apertures may be formed on a part of the sheet that becomes the transaction card.

The transaction card may be formed in the sheet in step 208. This step may include removing a portion of the sheet to form the perimeter of the transaction card. For example, the sheet may be mechanically stamped or laser cut to form the outline of the transaction card. Also, during this step or a subsequent step indicia may be formed on the transaction card for identification, branding, and/or instructional purposes. Security indicia, such as a holographic decal, may also be added to the transaction card.

The card may be formed in the sheet such that one or more notches are left that keep the card attached to the surrounding sheet. For example, a pair of notches may be formed on opposite sides of the card, allowing the card to be detached by pivoting the card in and out of the plane of the
surrounding sheet. Alternatively, a gap formed between the card and sheet may be large enough to allow a cutting instrument (e.g., knife blade, scissors, etc.) to cut or shear the notches. In some embodiments, hinge lines are formed in the sheet that allows the sheet to be separated into two or more sections by bending the sheet along the hinge lines. Once the sheet is separated or bent, the transaction card may be more easily detached from the surrounding sheet. In some more embodiments, the notches formed are weak enough to allow the card to be detached by applying sufficient manual force in a direction perpendicular to the display side of the sheet.

[0040] Electronics that permits contactless transactions is also added to the transaction card 210. The electronics may be an integrated circuit chip that includes an electromagnetic transmitter and/or receiver for wirelessly sending and/or receiving transaction information.

[0041] It should be appreciated that some of the steps in the method above may be performed in a different order than described above. For example, one of skill in the art would recognized that adding the contactless electronics to the transaction card 210 may be done before forming the apertures in the sheet 206. These alternate sequences of steps are also included in embodiments of the present method.

[0042] FIG. 3 shows a flowchart illustrating another method of making a transaction card assembly 300 according to embodiments of the invention. The method 300 starts with the formation of the contactless electronics in the sheet 302. The transaction card itself may also be formed or attached to the sheet 304. Before, during or after formation of the transaction card, apertures may also be formed in the sheet 306. Afterwards, indicia may be added to the sheet 308.

[0043] The addition of the indicia, 308, may be done at the same location as the other steps in the method 300, or the sheet may be transported to a different location where the indicia may be added. For example, a portion of the production of the transaction card assembly, such as the formation of the contactless electronics, transaction card, and apertures in the sheet, may be performed at a production facility, and the indicia may be added at a separate finishing facility.

[0044] Having described several embodiments, it will be recognized by those of skill in the art that various modifications, alternative constructions, and equivalents may be used without departing from the spirit of the invention. Additionally, a number of well known processes and elements have not been described in order to avoid unnecessarily obscuring the present invention. Accordingly, the above description should not be taken as limiting the scope of the invention.

[0045] Where a range of values is provided, it is understood that each intervening value, to the tenth of the unit of the lower limit unless the context clearly dictates otherwise, between the upper and lower limits of that range is also specifically disclosed. Each smaller range between any stated value or intervening value in a stated range and any other stated or intervening value in that stated range is encompassed within the invention. The upper and lower limits of these smaller ranges may independently be included or excluded in the range, and each range where either, neither or both limits are included in the smaller ranges is also encompassed within the invention, subject to any specifically excluded limit in the stated range. Where the stated range includes one or both of the limits, ranges excluding either or both of those included limits are also included in the invention.

[0046] As used herein and in the appended claims, the singular forms “a”, “an”, and “the” include plural referents unless the context clearly dictates otherwise. Thus, for example, reference to “a process” includes a plurality of such processes and reference to “the electrode” includes reference to one or more electrodes and equivalents thereof known to those skilled in the art, and so forth.

[0047] Also, the words “comprise,” “comprising,” “includes,” “including,” and “includes” when used in this specification and in the following claims are intended to specify the presence of stated features, integers, components, or steps, but they do not preclude the presence or addition of one or more other features, integers, components, steps, or groups.

What is claimed is:

1. A transaction card assembly comprising:
   a transaction card having a contactless integrated circuit that communicates with a card reader; and
   a sheet surrounding at least a portion of the transaction card and substantially coplanar with the card, wherein the transaction card is detached from the sheet by pressing on at least a portion of the card in a direction substantially perpendicular to the sheet.
2. The transaction card assembly of claim 1, wherein the sheet comprises an aperture for suspending the card assembly from a display hook.
3. The transaction card assembly of claim 1, wherein the transaction card comprises an aperture.
4. The transaction card assembly of claim 3, wherein the transaction card accepts a key chain.
5. The transaction card assembly of claim 1, wherein the transaction card comprises a signature strip.
6. The transaction card assembly of claim 1, wherein the transaction card has a shape selected from the group consisting of circular, oval, triangular, square, rectangular, and polygonal.
7. The transaction card assembly of claim 1, wherein the transaction card has a rectangular shape having dimensions that are about 2.125 inches by about 3.375 inches.
8. The transaction card assembly of claim 1, wherein the transaction card has a rectangular shape having dimensions that are about 1.5 inches by about 2.5 inches.
9. The transaction card assembly of claim 1, wherein the transaction card has a shape that is associated with a business of a transaction card issuer.
10. The transaction card assembly of claim 1, wherein the integrated circuit comprises an antenna for transmitting and receiving data at the card.
11. The transaction card assembly of claim 8, wherein the data is transmitted using radio frequency electromagnetic radiation.
12. The transaction card assembly of claim 1, wherein the transaction card is a contactless smartcard.
13. The transaction card assembly of claim 1, wherein the transaction card meets standards for a contactless smartcard as defined by ISO 14443 or ISO 15693.
14. The transaction card assembly of claim 1, wherein the transaction card is selected from the group consisting of a credit card, a debit card, a gift card, and a stored value card.
15. The transaction card assembly of claim 1, wherein the sheet comprises an advertisement.
16. The transaction card assembly of claim 12, wherein the advertisement comprises indicia identifying an issuer of the transaction card.
17. The transaction card assembly of claim 12, wherein the advertisement comprises indicia identifying a merchant that accepts the transaction card.
18. The transaction card assembly of claim 12, wherein the advertisement comprises indicia identifying a product or service that may be purchased using the transaction card.
19. The transaction card assembly of claim 1, wherein the sheet comprises indicia for a prepaid account balance associated with the transaction card.
20. The transaction card assembly of claim 1, wherein the transaction card comprises indicia identifying an account number associated with the card.
21. A punchout transaction card comprising a contactless integrated circuit that communicates with a card reader, wherein at least a portion of an edge of the card was attached to a substantially coplanar sheet surrounding the card, and the card was detached from the sheet by pressing on at least a portion of the attached card that was substantially perpendicular to the sheet.
22. The punchout transaction card of claim 21, wherein the transaction card is a contactless smartcard.
23. The punchout transaction card of claim 21, wherein the transaction card is selected from the group consisting of a credit card, a debit card, a gift card, and a stored value card.
24. The punchout transaction card of claim 21, wherein the transaction card has a shape selected from the group consisting of circular, oval, triangular, square, rectangular, and polygonal.
25. The punchout transaction card of claim 21, wherein the transaction card has a rectangular shape having dimensions that are about 2.125 inches by about 3.375 inches.
26. The punchout transaction card of claim 21, wherein the transaction card has a rectangular shape having dimensions that are about 1.5 inches by about 2.5 inches.
27. The punchout transaction card of claim 21, wherein the sheet comprises an advertisement.
28. The punchout transaction card of claim 21, wherein the sheet comprises an aperture for suspending the card assembly from a display hook.
29. A transaction card assembly comprising:
   a substantially planar member having a first edge; and
   a transaction card having a second edge, wherein the member and the transaction card are reversibly attached along at least a portion of the first and second edge, and wherein the transaction card comprises a contactless integrated circuit that communicates with a card reader.
30. The transaction card assembly of claim 29, wherein the transaction card has a rectangular shape having dimensions that are about 2.125 inches by about 3.375 inches.
31. The transaction card assembly of claim 29, wherein the transaction card has a rectangular shape having dimensions that are about 1.5 inches by about 2.5 inches.
32. The transaction card assembly of claim 29, wherein the transaction card is a contactless smartcard.
33. The transaction card assembly of claim 29, wherein the transaction card is selected from the group consisting of a credit card, a debit card, a gift card, and a stored value card.
34. The transaction card assembly of claim 29, wherein the member comprises an aperture for suspending the card assembly from a display hook.
35. The transaction card assembly of claim 29, wherein the member comprises an advertisement.
36. A method of making a transaction card assembly, the method comprising:
   providing a sheet; and
   forming a transaction card in the sheet, the transaction card comprising a contactless integrated circuit that communicates with a card reader, wherein at least a portion of an edge of the transaction card is reversibly attached to the sheet.
37. The method of claim 36, wherein the transaction card is formed in the sheet by laser cutting of the sheet.
38. The method of claim 36, wherein the transaction card is formed in the sheet by stamping the sheet.

* * * * *