

(19)



(11)

EP 2 550 071 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

11.11.2015 Bulletin 2015/46

(51) Int Cl.:

A63F 3/06 (2006.01)

(86) International application number:

PCT/IB2010/055511

(21) Application number: **10801274.1**

(22) Date of filing: **30.11.2010**

(87) International publication number:

WO 2011/117687 (29.09.2011 Gazette 2011/39)

(54) METHOD FOR PREVENTING AND DETECTING TAMPERING OF SCRATCH-OFF COATINGS ON SUBSTRATES, AND ASSOCIATED SUBSTRATES

VERFAHREN ZUR VERHINDERUNG UND DETEKTION VON MANIPULATIONEN VON
ABREIBBAREN BESCHICHTUNGEN AUF SUBSTRATEN, UND ZUGEHÖRIGE SUBSTRATE

PROCÉDÉ DE PRÉVENTION ET DE DÉTECTION DE LA MANIPULATION FRAUDULEUSE DE
COUCHES GRATTABLES SUR SUBSTRATS, ET SUBSTRATS ASSOCIÉS

(84) Designated Contracting States:

**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

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(43) Date of publication of application:

30.01.2013 Bulletin 2013/05

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Description

PRIORITY CLAIM

[0001] The present application claims priority to U.S. Provisional Application Serial No. 61/340,806, filed March 23, 2010.

FIELD OF THE INVENTION

[0002] The present disclosure relates in general to methodologies for securing scratch-off lottery tickets and commercial tickets/coupons against assisted and unassisted mechanical lifts and reapplication, as well as a method for protecting against the fraud of recycling losing tickets by the reprinting of a Scratch-Off-Coating (SOC). The proposed methodologies allow for enhanced security without any increase in cost as well as no significant impact on the consumer's play experience.

BACKGROUND OF THE INVENTION

[0003] Lottery scratch-off or instant games have become a time-honored method of raising revenue for state and federal governments the world over. Indeed, the concept of hiding indicia information under a Scratch-Off-Coating (SOC) has also been applied to numerous other products such as commercial contests, telephone card account numbers, etc. Literally, billions of scratch-off products are printed every year where the integrity of their Scratch-Off-Coatings (SOCs) is used to ensure that the product has not been previously used, played, or modified. Thus, the integrity of the SOC is paramount to ensure that a game or product is secure.

[0004] Unfortunately, there are known techniques that can mechanically "lift" the SOC and thereby compromise the integrity of scratch-off products. The term 'mechanical lift' refers to a process that uses a flat blade (e.g., X-Acto chisel blade #17) or other device to peel back a portion of a Scratch-Off-Coating (SOC) to reveal previously hidden indicia. The SOC is then glued back into place such that it is not obvious that the integrity of the coating has been breached. The industry has developed countermeasures to the previously described mechanical lift technique which involve changing the formulation of the SOC so that it is more difficult to remove and/or it flakes off or crumbles rather than peeling off in one piece, thereby making "unassisted" SOC lifts more difficult. However, these techniques have done little to alleviate the vexing problem of "assisted" SOC lifts. Assisted lifts differ from unassisted lifts in that another medium or material is applied to the SOC (e.g., Krylon acrylic clear spray) to strengthen it, thereby "assisting" anyone who is attempting a mechanical lift.

[0005] Another form of fraud involves completely removing the SOC, viewing the indicia, and then reprinting a new SOC on the non-winning products (via silk screen or other printing methodology) that is similar in appear-

ance to the original SOC such that an unsuspecting customer would purchase the modified product assuming it is pristine.

[0006] US 5 803 504 A discloses a scratch-off ticket with a front surface which is provided with a graphic area and a game area. An overprint can be extended to cover both the scratch-off layer and at least a portion of the non-scratch-off layer. The overprint can be a complex image, like a photographic image. Thus, for the counterfeiters it is more difficult to isolate and transfer the scratch-off layer to another ticket, or to reproduce the complex image.

[0007] Thus, it is highly desirable to develop improved methodologies for ensuring the integrity of a SOC against lifts and reapplication, as well as enhancing the product's resistance to complete SOC removal and reprinting, while at the same time maintaining an environment conducive to low cost reproduction.

BRIEF DESCRIPTION OF THE INVENTION

[0008] Aspects and advantages of the invention will be set forth in part in the following description, or may be obvious from the description, or may be learned through practice of the invention.

[0009] Described are a number of methodologies that provide practical embodiments for reliably protecting the integrity of the SOC from tampering, including mechanical lifts, SOC reapplication, and SOC reprinting.

[0010] The embodiments disclosed in combination with the figures 6-8 are not part of the claimed invention.

[0011] In the present invention, a method is provided according to claim 1.

[0012] The invention also encompasses any manner of substrate according to claim 3.

[0013] In a particularly unique embodiment, the border between the scratch-off area and the background area is non-visually distinct, which visually enhances any misalignment between the design over the scratch-off area and the design over the background area.

[0014] These and other features, aspects and advantages of the present invention will become better understood with reference to the following description and appended claims. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] A full and enabling disclosure of the present invention, including the best mode thereof, directed to one of ordinary skill in the art, is set forth in the specification, which makes reference to the appended figures, in which:

FIG. 1 is a front plan view of a first representative example of a lottery-type instant ticket where a me-

chanical lift has been attempted and the SOC was not reapplied in register;

FIG. 2 is a front plan view of a first representative example of a lottery-type instant ticket where a Benday-type pattern overprint greatly increases the difficulty of lifting and reapplying or reprinting the SOC; FIG. 3 is a front plan view of the first representative example of FIG.2 where a lift/reapplication has been attempted but the miss-registered Benday pattern makes the attempt clearly visible;

FIG. 4 is a front plan view of the first representative example of FIG.2 where a complete SOC replacement (or reprint) has been attempted but the mis-registered Benday pattern makes the attempt clearly visible;

FIG. 5 is a front plan view of the first representative example of a non-continuous release coating film application in a typical scratch-off ticket ink film layer; FIG. 6 is a cross section view of the second representative example of a release coating film with an irregular surface application in a scratch-off ticket ink film layer;

FIG. 7 is a cross section view of the third representative example of a release coating film with an irregular surface application in a scratch-off ticket ink film layer; and

FIG. 8 is a front plan view of the first representative example of a scratch-off ticket with a special coating to chemically detect assist agents.

DETAILED DESCRIPTION OF THE INVENTION

[0016] Reference now will be made in detail to embodiments of the invention, one or more examples of which are illustrated in the drawings. Each example is provided by way of explanation of the invention, not limitation of the invention. In fact, it will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the scope of the invention. For instance, features illustrated or described as part of one embodiment can be used with another embodiment to yield a still further embodiment. Thus, it is intended that the present invention covers such modifications and variations as come within the scope of the appended claims.

[0017] Whether attempting a mechanical lift/reapplication or reprinting a new SOC coating, the perpetrator's principal challenge is the reapplication of the lifted SOC, or reprinting of a new SOC material, such that the SOC remains in registration with the graphics on the rest of the ticket. If registration is not maintained between the lifted/new SOC and the rest of the ticket, the product would appear modified or defective. For example, FIG. 1 illustrates a lottery ticket 100 where the scratch-off area 101 SOC has been mechanically lifted in six places 102, but not reapplied into proper registration with the other graphics on the ticket.

[0018] Regrettably, after some practice, a skilled technician

can perform SOC lifts and replacements with little impact in registration on most tickets such that the ticket would pass as pristine under normal inspection. However, the ability for the skilled technician to perform these SOC lifts and replacements without detection varies with ticket design, with more complex graphics in the scratch-off area(s) greatly increasing the difficulty. For example, a photographic reproduction of people or familiar objects in the scratch-off area(s) of a ticket makes it practically impossible to perform a mechanical lift/reapplication without leaving a telltale mark. The problem with this approach is that it is difficult to maintain an environment conducive to low cost photographic reproduction. Additionally, if the photographic image is confined to only the scratch-off area of the ticket with a clear delineation between the scratch-off area and the rest of the ticket (for example, provided by a border as is typical in scratch-off ticket graphic design), completely reprinting the removed SOC remains viable, because the graphic scratch-off border helps mask any out-of-register condition.

[0019] If the photographic image is extended beyond the scratch-off area, with the delineating scratch-off graphic border reduced in intensity (e.g., screened half tone or dashed line), reprinting a removed SOC via lithographic methods becomes un-viable since registration with the ticket substrate image would be exceedingly difficult. This same concept, of bridging the graphics over the scratch-off area and surrounding ticket substrate, can be expanded to simpler designs (e.g., Benday patterns) that accomplish the same registration challenges for the lift/replacement attack without the added costs of printing photographic images over the scratch-off area(s) of a ticket. Thus, in this preferred embodiment, low cost production and miss-registration detection methods are both incorporated into the same product.

[0020] FIG. 2 illustrates an example of this preferred embodiment. In FIG. 2, the six scratch-off areas 101 of the ticket 100 all include Benday overprints 111 that cover both the scratch-off areas 101 as well as a portion of the background ticket substrate 103. By covering both the scratch-off areas as well as the ticket substrate, the fine lines of the Benday patterns make registration exceedingly difficult to effectively hide both the SOC lift/reapplication and the reprinting of SOC.

[0021] FIG. 3 provides an illustration of how the Benday patterns 111 provide a ready visual indication 115 that a mechanical lift/reapplication has been attempted in the six scratch-off areas, even to someone that is not necessarily aware of the technique. FIG. 4 illustrates how the same Benday patterns 111 would also protect against reprinting of the entire SOC in the six scratch-off areas, by readily showing a registration failure 260 between the replacement SOC and the ticket substrate 103 that is not apparent in non-tampered tickets.

[0022] Of course there are numerous other variations of this preferred embodiment (e.g., fingerprint patterns, water flow patterns, etc.) that are obvious to anyone skilled in the art and may under some circumstances be

more desirable than the previously disclosed embodiment.

[0023] In the following examples, not part of the claimed invention, protection of the integrity of the SOC can be provided by alterations to the release material associated with the SOC rather than by an elaborate overprint. Scratch-off tickets typically employ a release coating layer beneath the SOC opaque and decorative layers. The release layer, as its name implies, causes any coatings placed over it to easily scratch-off. The physical nature of the scratch-off coating varies from manufacturer to manufacturer (e.g., wax base, UV coating, etc.) and has been documented in numerous other patents as well as many public domain documents and is not essential to the present description. In known applications, however, the release layer is specified as a continuous film providing a foundation from which all subsequent layers of ink film will scratch-off, allowing for the one-time reveal that is typical of scratch-off tickets. The problem with this homogeneous continuous release film, however, is that it provides an excellent base for SOC mechanical lifts and/or replacement of the SOC by devious means.

[0024] Thus, a release film with partial coverage causes the SOC to release easily from some areas and not at all from others, thereby making it difficult if not impossible to lift or reprint the SOC even with mechanical assists. In one possible embodiment, the release film 200 is applied as illustrated in FIG. 5 with a pattern of dots (holes) 201 in which no release film is present. In this embodiment, if the dots 201 are small enough they will not hinder the normal scratching process or obscure the imaged indicia. However, the presence of a non-continuous release film with holes large enough to prohibit lifting of the SOC will greatly hinder or render impossible mechanical lifting of the SOC due to the dotted areas with no release that would effectively block a sharp X-Acto or razor blade from raising a smooth film. Additionally, the pattern of dots (holes) 201 would also make it extremely difficult to reapply a new SOC to the scratched off area(s) due to registration problems with the SOC overprint and the multiplicity of dots. Of course there are many possible patterns obvious to anyone skilled in the art that might perform better than the previously described dots and in some instances may be more desirable, but for the sake of brevity, only the dot pattern is described in for this particular embodiment.

[0025] In yet another embodiment, rather than a pattern of holes or lines with no release present in the film, the same effect of making the film resistant to mechanical lifts and/or replacement of SOC can be accomplished with an irregular or rough release film surface. FIG. 6 illustrates an irregular or rough SOC film 202, printed on a ticket substrate 103, above the win or lose indicia 252, with opaque and decorative overprints 253 printed on top of the irregular release film 202. In this embodiment, the irregular release film surface 202 when initially applied and not completely cured allows for subsequent SOC ink

film layers to flow into the irregular surfaces forming a homogeneous and opaque covering 253. The irregularities in the release film may be generated by planned deformities in the Flexographic printing plate (or other type of printing) that applies the release film to the ticket substrate 103. In this embodiment, the rough/irregular surface of the release film 202 is not so irregular that it significantly impacts removal of the SOC by normal consumer scratching with a relatively blunt coin or other object. However, when a perpetrator attempts to lift the SOC via assisted or unassisted means, the rough/irregular surface of the release film 202 functions as a series of 'speed bumps' that repeatedly catch the sharp edge of the X-Acto or razor blade typically used in mechanical lifts causing the blades to jerk and not lift a continuous patch. Additionally, while the irregular release film surface 202 does allow removal of the majority of the SOC 253 with blunt coins and other objects (e.g., fingernail), it does allow for microscopic parts of the SOC 253 to remain. While these microscopic SOC remnants are not sufficient to significantly impact viewing of the revealed play indicia 252, the remnants do intermingle with any fresh SOC ink coating(s) reapplied to a played ticket, such that the resulting ink films appear tampered with and would be unlikely to be accepted by a consumer as pristine.

[0026] In still another embodiment, the release film coating thickness can be varied, producing a series of plateaus, which halt or disrupt any mechanical lifting attempts. In this embodiment, shown in FIG. 7, the release film 203 is applied in multiple levels, resulting in a series of planes to which the SOC ink film(s) 253 are applied. The multiple levels of release coating could be achieved by altering the line screen on a single Flexographic printing plate or by the application of multiple printing plates.

[0027] In the special case of preventing assisted mechanical lifts, the chemical nature of the spray-on assist material can be used to trigger a reaction on the ticket's scratch-off surface. For example, Krylon clear spray contains keytones, petroleum distillates, toluene, naphthalene, acetone, and ethyl 3-ethoxypropionate. Dyes exist that responds to one of these ingredients. These dyes could be applied as an overcoat to the ticket's scratch area and serve as an obvious indication of attempted "assisted lift" tampering. FIG. 8 provides an exemplary illustration of this embodiment. In FIG. 8, the lottery ticket 100 has special dyes 255 that are sensitive to one of the key ingredients in the assisted lift medium (e.g., Krylon). As shown, when the ingredients from the assisted lift medium contact the dyes in the scratch-off area 101 overprint, a chemical reaction occurs causing the dyes to become visible, with the word 'VOID' 255 appearing in this example. Of course the chemical reaction, could cause the ticket's ink to dissolve, bleed, run, thin, or otherwise dramatically alter in appearance to indicate tampering.

[0028] While the aforementioned chemical reaction methodology is only affective against assisted mechanical lifts, it can be used in addition to some of the other

techniques described in this application to provide a more robust defense against ticket fraud.

[0029] This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. It is intended that the present invention include such modifications and variations as come within the scope of the appended claims.

Claims

1. A method for deterring and detecting fraudulent removal of a scratch-off coating (SOC) from a substrate, comprising:

forming a substrate (103) comprising;
at least one scratch-off area (101); and
a background area surrounding the at least one scratch-off area (101);
applying a scratch-off coating to the at least one scratch-off area (101);
overlying a design on the scratch-off coating, the design extending over the scratch-off coating and onto the background area; and
wherein misaligned portions of the design provides a visual indication of attempts to remove and reapply the scratch-off coating,
characterized in that said design is selected from the group consisting of fingerprint patterns, water flow patterns, or Benday pattern series of lines (111).

2. The method of claim 1, wherein the design is generated and applied such that reapplying the scratch-off coating causes the portions of the design over the scratch-off coating to be misaligned with the portions of the design extending onto the background area.

3. A substrate, comprising:

a scratch-off area (101);
a background area surrounding the scratch-off area (101);
a scratch-off coating applied to the scratch-off area (101);
a design applied on the scratch-off coating, the design extending over the scratch-off coating and onto the background area; and
the design having a visual appearance such that misaligned portions of the design provide a visual indication of attempts to remove and reapply the scratch-off coating,

characterized in that said design comprises any one of a fingerprint pattern, water flow pattern, or a Benday pattern series of lines (111).

4. The substrate of claim 3, wherein the design is generated and applied such that reapplying the scratch-off coating causes the portions of the design over the scratch-off coating to be misaligned with the portions of the design extending onto the background area.
5. The substrate of claim 3, further comprising a non-visually distinct border between the scratch-off area (101) and the background area, the design bridging the border.

Patentansprüche

1. Verfahren zum Abschrecken und Erkennen betrügerischen Entfernens einer Rubbelbeschichtung von einem Substrat, umfassend:

Ausbilden eines Substrats (103), umfassend:

mindestens einen Rubbelbereich (101);
und
einen Hintergrundbereich, der den mindestens einen Rubbelbereich (101) umgibt;
Applizieren einer Rubbelbeschichtung auf den mindestens einen Rubbelbereich (101);
Überlagern der Rubbelbeschichtung mit einer Darstellung, wobei sich die Darstellung über die Rubbelbeschichtung und auf den Hintergrundbereich erstreckt; und
wobei falsch ausgerichtete Teile der Darstellung ein sichtbares Indiz für Versuche liefern, die Rubbelbeschichtung zu entfernen und wieder zu applizieren,
dadurch gekennzeichnet, dass die besagte Darstellung aus einer Gruppe gewählt wird, die aus Fingerabdruckmustern, Wasserströmungsmustern und Bendaymuster-Linienreihen (111) besteht.

2. Verfahren nach Anspruch 1, wobei die Darstellung so erzeugt und appliziert wird, dass erneutes Applizieren der Rubbelbeschichtung dazu führt, dass die Bereiche der Darstellung über der Rubbelbeschichtung zu den Bereichen der Darstellung, die sich auf den Hintergrundbereich erstrecken, falsch ausgerichtet sind.

3. Substrat, umfassend:

einen Rubbelbereich (101);
einen Hintergrundbereich, der den Rubbelbe-

- reich (101) umgibt;
 eine auf den Rubbelbereich (101) applizierte
 Rubbelbeschichtung;
 eine auf die Rubbelbeschichtung applizierte
 Darstellung, wobei sich die Darstellung über die
 Rubbelbeschichtung und auf den Hintergrund-
 bereich erstreckt; und
 wobei die Darstellung ein solches sichtbares Er-
 scheinungsbild aufweist, dass falsch ausgerich-
 tete Teile der Darstellung ein sichtbares Indiz
 für Versuche liefern, die Rubbelbeschichtung zu
 entfernen und wieder zu applizieren,
dadurch gekennzeichnet, dass die besagte
 Darstellung ein beliebiges aus einem Fingerab-
 druckmuster, einem Wasserströmungsmuster
 oder einer Bendaymuster-Linienreihe (111) um-
 fasst.
4. Substrat nach Anspruch 3, wobei die Darstellung so
 erzeugt und appliziert ist, dass erneutes Applizieren
 der Rubbelbeschichtung dazu führt, dass die Berei-
 che der Darstellung über der Rubbelbeschichtung
 zu den Bereichen der Darstellung, die sich auf den
 Hintergrundbereich erstrecken, falsch ausgerichtet
 sind.
5. Substrat nach Anspruch 3, weiter umfassend einen
 visuell nicht ausgeprägten Rand zwischen dem Rub-
 belbereich (101) und dem Hintergrundbereich, wo-
 bei die Darstellung den Rand überbrückt.

Revendications

1. Méthode pour dissuader et détecter une suppres-
 sion frauduleuse d'un revêtement à gratter (SOC)
 depuis un substrat, comprenant les étapes
 suivantes :
- former un substrat (103) comportant ;
 au moins une zone à gratter (101) ; et
 une zone de fond entourant l'au moins une zone
 à gratter (101);
 appliquer un revêtement à gratter sur l'au moins
 une zone à gratter (101) ;
 superposer un design sur le revêtement à gratter,
 le design s'étendant au-delà du revêtement
 à gratter et sur la zone de fond ; et
 dans lequel les parties mal alignées du design
 fournissent un indice visuel de tentatives de sup-
 pression et de réapplication du revêtement à
 gratter,
caractérisé en ce que ledit design est sélectionné
 du groupe comprenant des dessins d'em-
 preintes digitales, des dessins d'écoulement
 d'eau et des dessins Benday de séries de lignes
 (111).

2. Méthode selon la revendication 1, dans laquelle le
 design est généré et appliqué de sorte que la réap-
 plication du revêtement à gratter provoque le défaut
 d'alignement des parties du design sur le revêtement
 à gratter par rapport aux parties du design s'étendant
 sur la zone de fond.
3. Substrat, comportant :
- une zone à gratter (101) ;
 une zone de fond entourant la zone à gratter
 (101) ;
 un revêtement à gratter appliqué sur la zone à
 gratter (101) ;
 un design appliqué sur le revêtement à gratter,
 le design s'étendant au-delà du revêtement à
 gratter et sur la zone de fond ; et
 le design possédant une apparence visuelle tel-
 le que des parties mal alignées du design four-
 nissent un indice visuel de tentatives de sup-
 pression et de réapplication du revêtement à
 gratter,

caractérisé en ce que ledit design comprend l'un
 quelconque d'un dessin d'empreinte digitale, d'un
 dessin d'écoulement d'eau ou d'un dessin Benday
 de séries de lignes (111).

4. Substrat selon la revendication 3, dans lequel le de-
 sign est généré et appliqué de sorte que la réappli-
 cation du revêtement à gratter provoque le défaut
 d'alignement des parties du design sur le revêtement
 à gratter par rapport aux parties du design s'étendant
 sur la zone de fond.
5. Substrat selon la revendication 3, comprenant en
 outre une limite non visuellement distincte entre la
 zone à gratter (101) et la zone de fond, le design
 s'étendant au-delà de la limite.

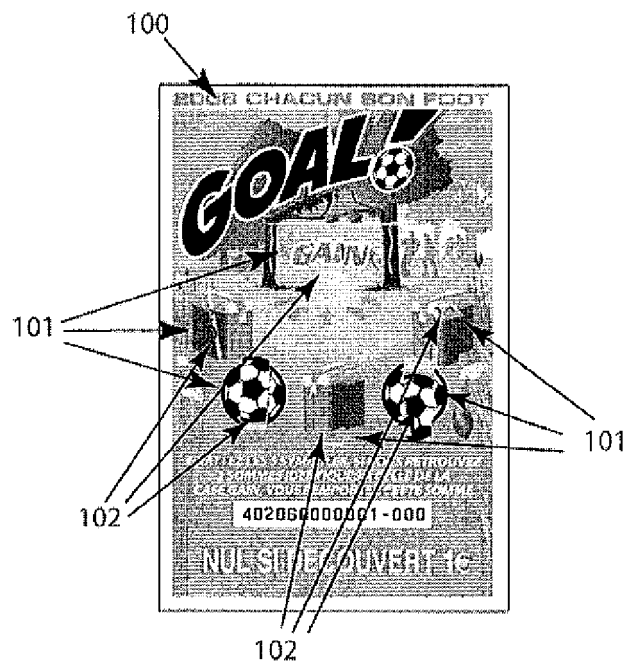


FIG. 1

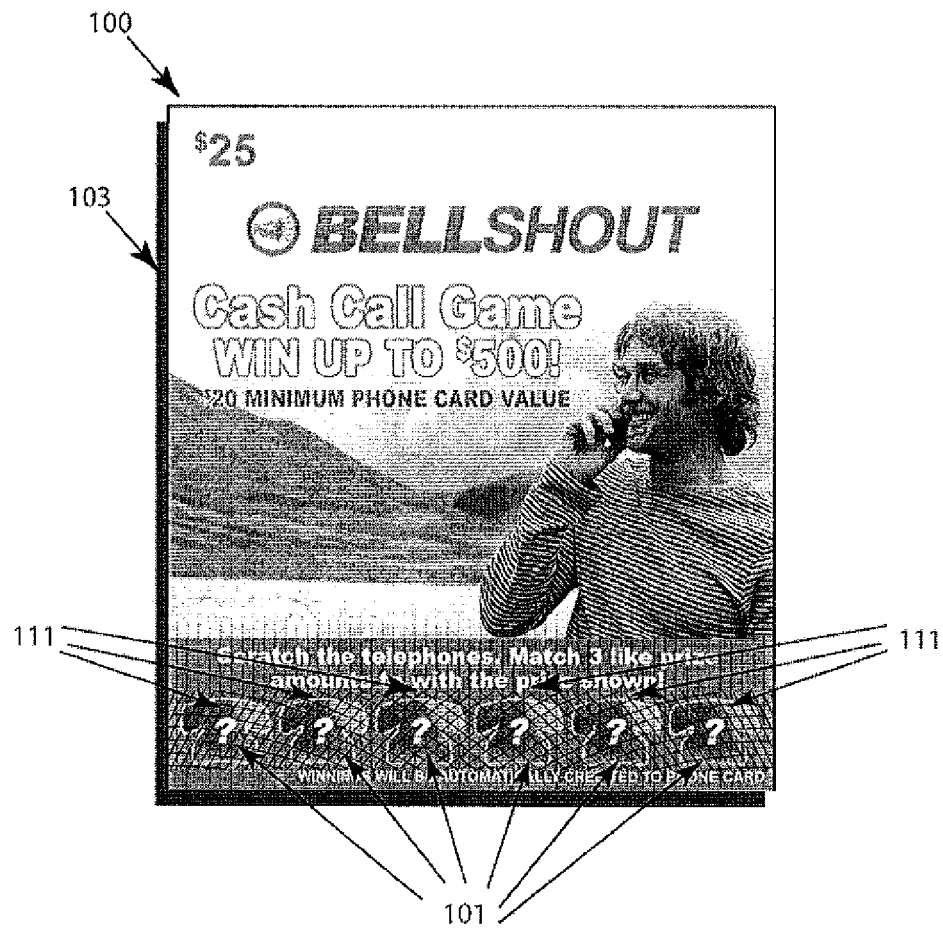


FIG. 2

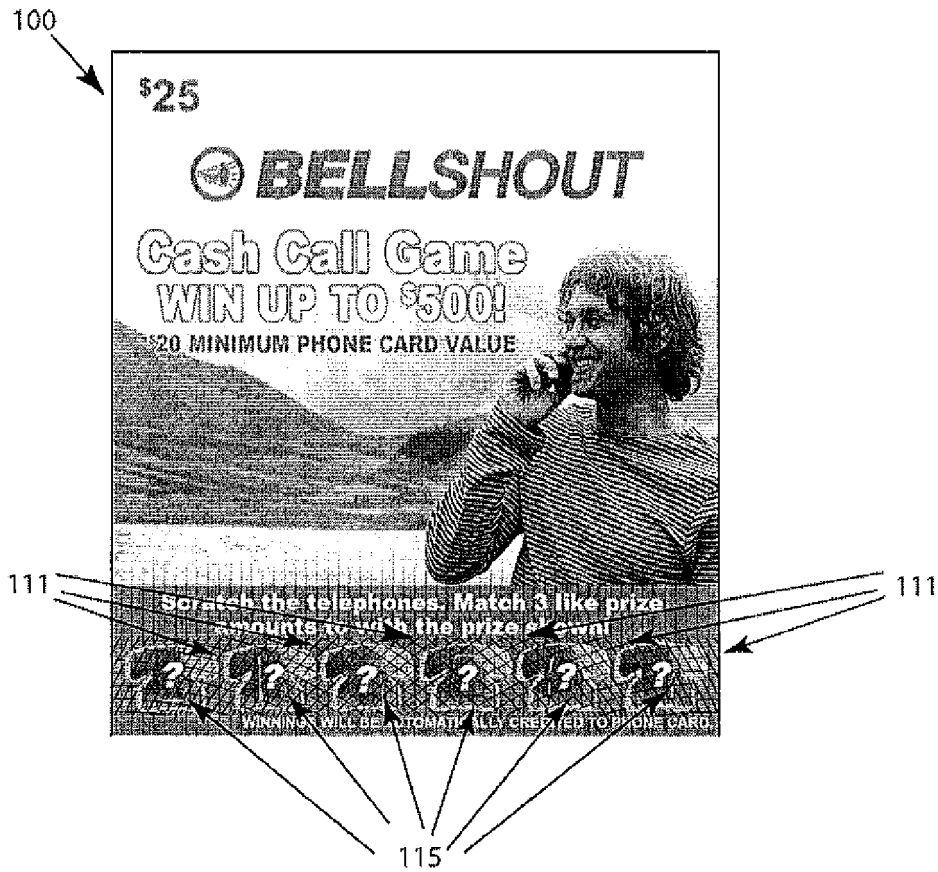


FIG. 3

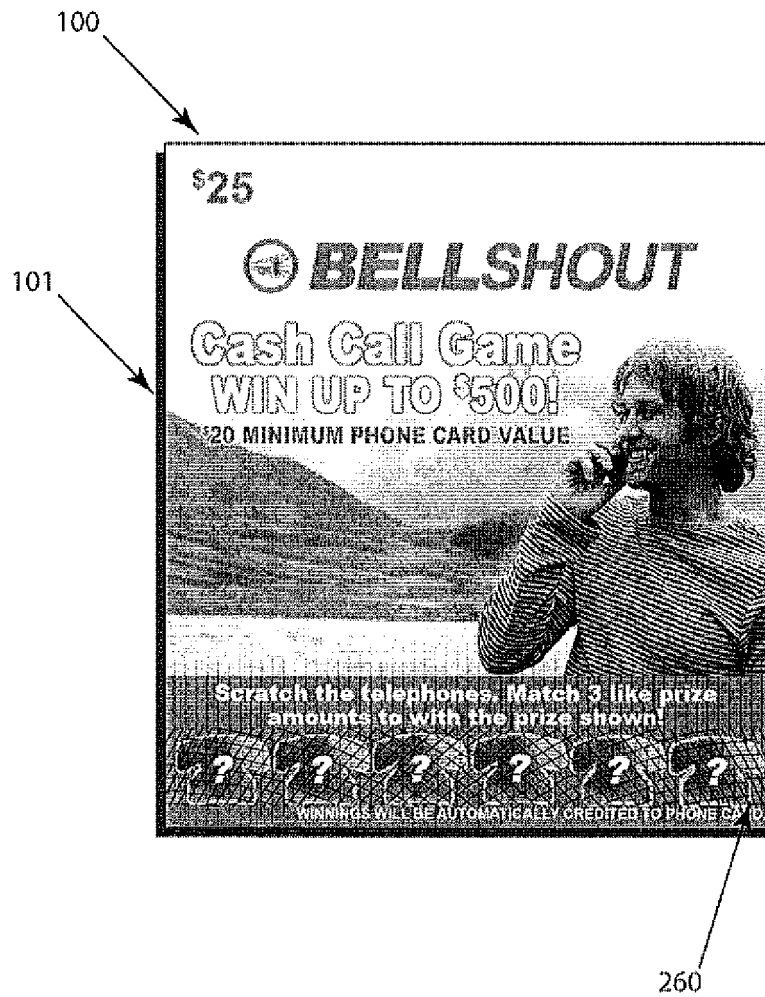


FIG. 4

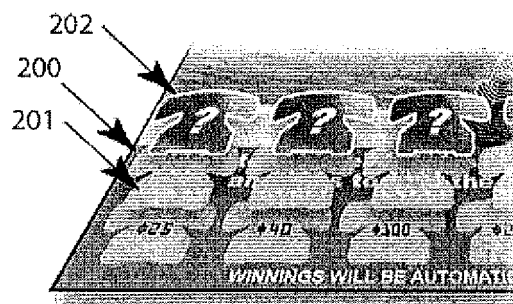


FIG. 5

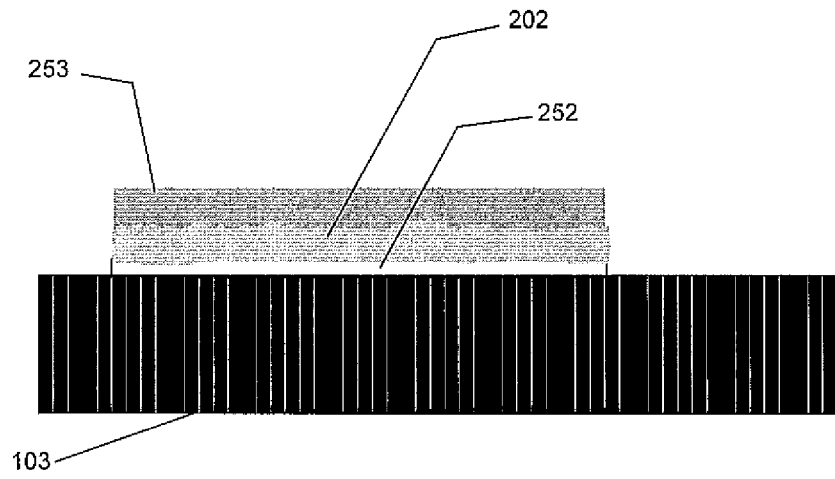


FIG. 6

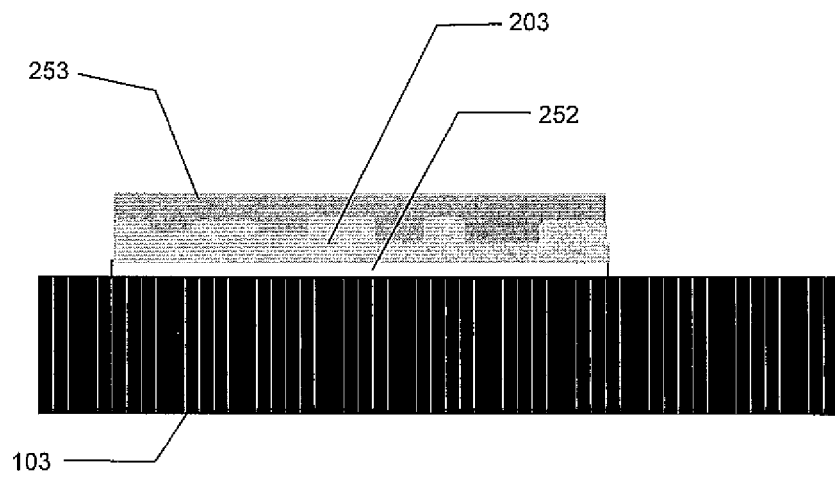


FIG. 7

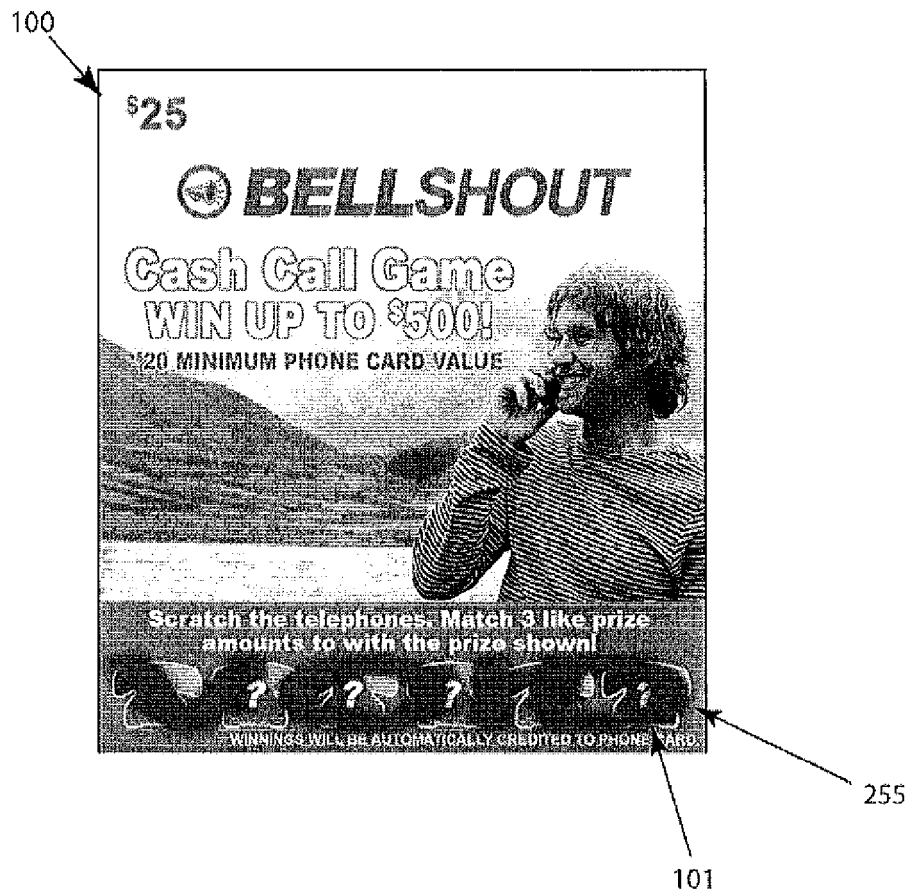


FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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