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(54) A METHOD OF PROVIDING A SET OF RANDOMLY ORDERED CARDS

(57) A method to provide a set of randomly ordered cards is provided, the method, comprising
• providing of a device for providing sets of cards,
• Distributing cards from N card delivery units to M card storage means, each having P compartments, whereby in each of the M card storage means, sets of randomly ordered cards are provided by a sequence of steps by providing a number of identified cards from the N card receiving points to each of the randomly selected P compartments.

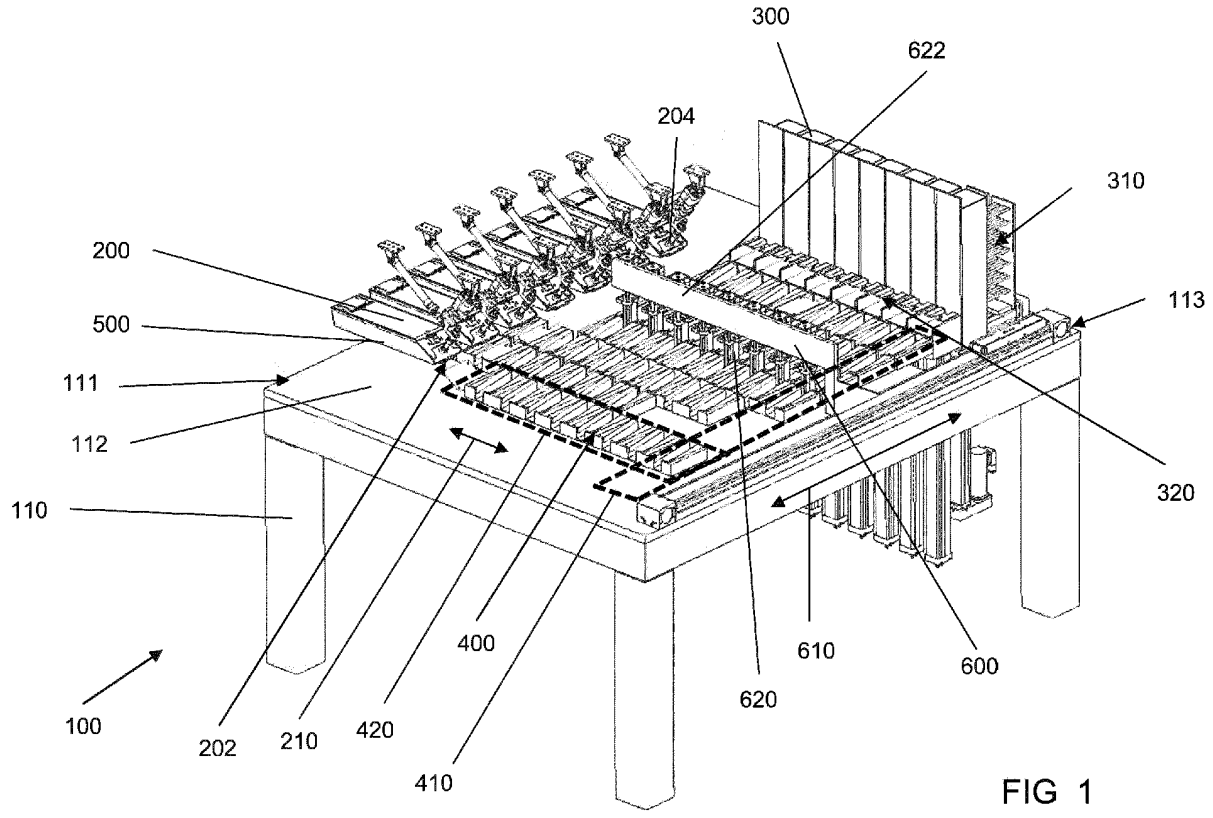

FIG 1

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Description

Field of the Invention

[0001] The present invention generally relates to devices for providing sets of cards, a method for providing sets of cards, and a computer program product for facilitating the execution of instructions, by a processing circuit, for performing a method to compile sets of cards. In this particular invention, the present invention generally relates to devices, methods and a computer program product for providing sets of cards comprising repurposed cards.

Background of the Invention

[0002] Card games are well known nowadays. Often the game is based upon the unpredictability of the order of cards being dealt or drawn from a randomly ordered deck or set of playing cards, wherein a set of playing cards comprises more than one deck of playing cards being randomly ordered at set level.

[0003] As an example, baccarat is played with a randomly ordered set of 8 decks of playing cards, in total 416 randomly ordered cards. For some games, once cards are drawn from the set, the drawn cards cannot be used anymore as such, since the order of drawing and setting aside the drawn cards can be monitored. Often the used playing cards are destroyed. The longer cards are drawn from a set of cards, and because the identity of the cards being drawn from this set can be monitored, the identity of cards still in the remnant of the set may become more predictable, and the chances that one card with a given identity is one of the following cards in the set, increases with each card being drawn. To keep the predictability for the next card being drawn under a given level, the set of cards typically comprises a so-called stop card, which is inserted in or makes part of the set of cards towards the end of the set. Typically, but not necessarily, the stop card is positioned in the last quarter of the set of cards. When this card is drawn from the set, the game is ended immediately or after only a little number of cards being drawn from the set. Sometimes the game is even ended prior to drawing the stop card. As such, a significant number of unused cards remain present in the sets returning from the card playing table. However, the predictability of the identity of cards in this remnant may be significantly high.

[0004] Seen the high stakes involved during playing of card games, any possible source of knowledge on or increased predictability of the sequence of cards in the set of cards must be avoided.

[0005] A system for creating sets of randomly ordered playing cards is described in WO2012042823. This system comprises a plurality of playing cards collecting means to collect playing cards thereby providing a set of playing cards, originating from a bundle of cards, which may be randomly ordered, a plurality of card stockers for stocking sets of cards being created, and a card sorting device. Cards being identified by their rank and suit, are directed to the first card stocker, as long as this card stocker does not compromise a given number of cards with this rank and suit. If this card stocker does compromise a given number of cards with this rank and suit, the card is directed to the adjacent, second card stocker. This way of directing the cards from the supplied bundle of cards does not alter significantly the predictability of the sequence of cars in the set of cards created, in comparison to the predictability of the sequence of cars in the bundle of cards. Hence using the remnants of the sets of cards from the card playing table having an increased predictability of the sequence of cards, may not lead to newly created sets of cards with a sufficiently low predictability of the sequence of cards.

Summary of the Invention

[0006] Hence their remains a need to provide a method and a device for recuperating the remnants of sets of cards, i.e. the unused or undrawn cards which remain present in the sets of cards returning from the card playing table.

[0007] In essence, according to a first aspect of the invention, a method to provide a set of randomly ordered cards is provided, the method, comprises:

- providing of a device for providing sets of cards,
- Distributing cards from N card delivery units to M card storage means, each having P compartments,

whereby in each of the M card storage means, sets of randomly ordered cards are provided by a sequence of steps by providing a number of identified cards from the N card receiving points to each of the randomly selected P compartments.

[0008] According to a first aspect of the invention, a method to provide a set of randomly ordered cards is provided. The method comprises:

- providing of a device for providing sets of cards, the device comprising
    - ◦ N card supply units, N>=1, each unit being defined by a card supply unit number n, wherein 1<=n<=N;
    - ◦ M card storage means, M>=1, each storage means being defined by storage means number m, wherein 1<=m<=M and N+M>2;
    - ◦ Each card storage means comprises P compartments, P>1, each compartment being defined by its compartment coordinate (m,p), wherein 1<=p<=P; 1<+m<=M
    - ◦ NxM card receiving points, matrix like positioned in N columns of M rows (each point defined by coordinates (n,m), wherein 1<=n<=N; 1<=m<=M;

- Distributing cards from the N card delivery units to the M card storage means by

    ◦ identify each of the cards being provided by one or more of the N card supply units, and assign each of said identified cards to one of M the card storage means;
    ◦ provide each of the identified cards to a card receiving point with coordinates (In, Im), wherein In is the n^{th} of the N card delivery units from which the card originates, and Im is the m^{th} of the M card storage means to which the card is to be provided;
    ◦ for each of the M rows of N card receiving points, stack and move the stacked cards provided to the N card receiving points at the m^{th} row, to the m^{th} card storage means;

whereby in each of the M card storage means, sets of randomly ordered cards are provided by the sequence of the steps

I. for the m^{th} card storage means being empty:

I.i. define a total number Tm of cards to be stored to provide a completed stack of cards;
I.ii. randomly assign to each of the P compartments of this empty card storage means a number of cards Amp to be stored in this compartment, wherein the sum of the P numbers of cards Amp equals Tm;

II. randomly select a compartment of the P compartments;
III. provide a number of identified cards from the N card receiving points at the m^{th} row to the selected p^{th} compartment;
IV. randomly select another compartment of the P compartments for which the number of identified cards in the compartment is less than Amp;
V. repeat steps III to IV until all P compartments have been provided with a number of cards being equal to Amp;
VI. Remove the competed set from the card storage means and repeat the steps I to VI.

[0009] The number of identified cards provided from the N card receiving points at the mth row to the selected pth compartment, before taking a next step IV, may be a random number of cars, each time randomly chosen may be a fixed number of cards, a number limited to a certain threshold, or unlimited, as long as the number Amp is not exceeded.

[0010] According to some embodiments, M>1 and/or N>1.

[0011] The cards present in the P compartments may be stacked either randomly, or such that the compartment number 1 provide the lower part of the set of cards, the cards of compartment with number 2 are stacked on the last card of the compartment number 1, and so on, the Pth compartment providing the cards present at the top of the set of cards, all cards having their face side oriented away from the top of the set of cards.

[0012] The first card supply means may be adapted to supply 2, 3, 4, 5, 6, 7, 8, 9, 10 or even more series of cards, possibly series of randomly ordered cards. Preferably each of the N card supply units is a unit adapted to provide a series of randomly ordered cards, such as a series of cards originating from a used card cartridge, in which the undealt cards are still present, and from which these undealt cards are drawn one by one. Therefore, according to some embodiments, for the card supply means supplying a plurality of series of randomly ordered cards, more than one of the series of randomly ordered cards may comprise repurposed cards. Optionally all of the series of randomly ordered cards may comprise repurposed cards, or all but one of the series of randomly ordered cards may comprise repurposed cards.

[0013] According to some embodiments, the method may provide a set of playing cards, each set comprises Q decks of playing cards, these Q decks of playing cards being said Tm of cards.

[0014] In the contact of this invention, each set may comprise a plurality of decks of playing cards

[0015] Unless specified differently, the term "card" hereinafter may refer to a playing cards, each card being identifiable by its rank and suit, or may refer to any card which is identifiable by one or more identification elements and/or a card identity code and which form part of a set of cards in which each card comprises such identification elements and/or a card identity code. A set of cards may comprise more than one decks of cards, like decks of playing cards. A deck of cards is a plurality of identical or mutually different cards, which together form one card pack. A deck of playing cards comprises 52 mutually different playing cards, including 13 ranks of 4 suits (hearts, diamonds (or tiles), clubs (or clovers), and spades (or pikes)). Each suit includes an ace (depicting a single symbol of its suit), a king, queen, and jack (each depicted with a symbol of their suit) and the ranks two through ten. A set of playing cards may comprise more than one deck of playing cards, like 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12 decks of playing cards, and may further include one or more special cards, i.e. cards with a special function in the game to be played with the set of playing cards, e.g. jokers, stop cards and alike.

[0016] Preferably the playing card is a card having a face side showing a rank and suit.

[0017] Each set hence may have a multiple, hereinafter Q, Q being an integer more than 1, of 52 mutually different playing cards. A group of these 52 mutually different playing cards is a deck of playing cards. Each set comprises hence Q decks, or hence Q cards of each kind of cards in the 52 mutually different cards.

[0018] Preferably Q is in the range of 2 to 15, such as 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 or 15. Most preferably Q

is in the range of 6 to 10.

[0019] According to some embodiments, identifying each of the cards may comprise obtaining information on the rank and suit of the card, the method further comprises counting the number of cards with given rang and suit being assigned to each of the M card storage means, and assigning and identified card to a one of the card storage means, only when for this type of card with said identified rank and suit, the number of this kind of cards in this card storage means is less than Q.

[0020] Therefore M times 52 counters are defined, referred to as Qmrs. In Qmrs, m is an integer from 1 to M, r being the rank and ranging from 1 to 13, wherein 11 being the rank "Jack", 12 being the rank "Queen" and 13 being the rank "King", and s being the suit, i.e. being hears, spades, diamonds or clubs.

[0021] Upon executing the first step, the method further comprises a step 1.4 being putting all counters Qmrs to zero. By counting each type or kind of cards for each set to be compiled, the set of cards will be provided with Q times 52 mutually different cards.

[0022] As it is possible that upon identifying a card, this identified card can be assigned to more than one of the M sets of cards being complied, each of the M card storage means may be given a priority number Rm, ranging from 1 to M, each of the sets having a unique priority number Rm, and conventionally calling priority number "1" the highest priority, calling priority number "M" the lowest priority.

[0023] When an identified card can be assigned to more than one of the M card storage means being complied, the method may comprise assigning said identified card to the card storage means having the highest priority number.

[0024] At startup of the device executing this method, the priority numbers may be randomly assigned to the card storage means, though preferably the first card storage means is given priority number "1", the second card storage means is given priority number "2" and so on, until the last card storage means is given priority number "M".

[0025] Once a set of cards is completed in a card storage means, the priority number of this emptied card storage means is set to M, and all priority numbers which were larger than the former priority number of the completed set, hence card storage means, are decreased by 1.

[0026] According to some embodiments, the device may comprise a card identifying means identifying cards by their rank and suit and/or one or more identification elements and/or a card identity code.

[0027] The card identification means can identify the card by its rank and suit and/or one or more identification elements and/or the card identity, and attribute this information to the position of the card in the sequence of cards from each of the series of the plurality of series of randomly ordered cards passing the card identification means. Each card passing the card identification means may generate a data set comprising the position of the card in the series of the plurality of series of randomly ordered cards and the rank and suit and/or one or more identification elements and/or card identity of this card.

[0028] To identify the card, the card identification means may comprise an optical system, e.g. at least one optical system or one optical system per series of randomly ordered cards provided, and optionally comprises one more than one camera per optical system. The images of the face-sides of the cards captured by the camera or cameras, are converted and/or analyzed, such that card identification element or identification elements or identity on the face-side of the cards are identified. These card identification element or elements may be the rank and suit in case of playing cards. Optionally the card identifying means obtains the card identity code which is readable on the face-side of the card, e.g. as a barcode. Optionally the card identifying means may read the card identity code by means of UV light only. The card identifying means thus may comprise a UV sensible camera, and/or may cooperate with a UV lighting device. The card identification means may check for suspicious cards, based upon the card identity code read. For each card identity code read, the card identification means may check if this card with this unique card identity code may be part of the plurality of series of randomly ordered cards, e.g. by comparing the card identity code read with a list of allowed card identity codes stored in a database. If the card with the read card identity code may not be part of the plurality of series of randomly ordered cards, such cards cannot be part of any set of cards generated by the device. The card identification means may identify this card as a suspicious card which needs to be removed from the plurality of series of randomly ordered cards. The card identification means may identify this card as a card to be removed.

[0029] The card identification means may identify cards with a special function in the set of cards, like the set of playing cards to be created, like e.g. stop cards. The card identification means may identify this card as a card to be removed, or as a card to be treated as a card which needs to become part of one of the sets of cards being created by the device.

[0030] According to some embodiments, the device may comprise a defect detection means to detect defective cards. The face- and back-side of the cards may be checked for defects, like stains, scratches, tears, dots and alike. Cards with defects cannot be part of any set of cards generated by the device and need to be removed from the plurality of series of randomly ordered cards being compiled. The defect detection means optionally may provide information to the card identification means to identify this defective card as a card to be removed.

[0031] The defect detection means may comprise one or more optical systems, e.g. one per series of randomly ordered cards, and optionally one or more than one cameras per optical system. The images of the face-sides and the back-sides captured by the camera or

cameras, are analyzed, such that defects are identified. Possibly the optical systems, or some of the cameras of the optical systems of the card defect detection mean may be shared with the optical systems of the card identification means. The device used to execute the method may comprise a card extraction means adapted to receive cards to be removed from the plurality of series of randomly ordered cards.

[0032] The identified cards from the plurality of series of cards are assigned to one of the plurality of card storage means e.g. by a control means.

[0033] This control means may control the execution of the movements of the moveable parts of the device, as well as keeping track of the identity and number of cards being distributed to the various card storage means. The control means may control and increment or reset the counters Qmrs for counting the type of cards being provided to each of the M card grouping means, the control means may even keep track of the order of the cards in which they are provided to the P compartments of the M card grouping means, as the control unit has information on the mechanical setup of the device, like the mutual positions of the N card supplying units, the NxM card receiving points and the P compartments of the M card storage means and the mutual position of the M card storage means, the control unit even can keep track of the order of the cards being provided to each of the M card storage means. As such, for each set of cards being compiled, the control unit may generate a data set, reflecting the order of cards in the compiled set of cards.

[0034] The control unit may as well control the values Tm, the value of the number of cards Amp, the randomly assignment of these values Amp, the randomly selection of the next empty compartment of the P compartments of each of the M card storage means, the priorities of the M card storage means, any other counter used to control the execution of the method, as well as the identification of the cards from each of the N card supply means and the assignment of one of the M card storage means for each identified card.

[0035] Optionally, P may be an integer in the range of 4 to10.

[0036] Hence P is preferably 4, 5, 6, 7, 8, 9 or 10. P may be equal or different for each of the M card storage means. Optionally, though each of the card storage means may comprise P compartments, the method may comprise a step of defining, optionally even randomly, for each empty card storage means, the number of compartments to be used for compiling the set of cards. The number of compartments used may be an integer between a lower threshold Pmin and P, wherein Pmin preferably is equal or more than 4.

[0037] Optionally, N may be an integer in the range of 4 to 12. Hence N is preferably 4, 5, 6, 7, 8, 9, 10, 11 or 12.

[0038] Preferably, all N card supply units, may be a card supply unit providing itself a series of randomly ordered cards.

[0039] Each card supply unit may comprise a holder for holding a cartridge of cards, and a pull out system to pull out a card from said cartridge. The cartridges may be the cartridges returning form the playing table, in which the leftover of the set of cards is still present, which leftover cards have not been drawn during the game.

[0040] The pull out system may comprise a finger, contacting the backside of the card in the cartridge, and push down the card as if it were pulled out by the croupier. The finger may grab the card or may use a vacuum to such a cup to the backside of the card.

[0041] The finger may bring the cards face side in front of a camera, which may make an image of the cards face side, or even immediately reads the rank and suit. This camera may be part of the card identification means. In case the cards are provided with a, possibly eye-invisible, identity number or identification means, the camera may read this identity number or identification means as well, and the control system may look up to what extent this card is either expected at this position in the recycled set of cards in the cartridge, of if this card is flagged as being a potentially corrupted card.

[0042] Possibly, but not necessarily, there is an additional, N+1th card supply unit which may be a unit supplying specific kind of cards, like cut cards or alike.

[0043] This N+1th card supply unit possibly does not comprise an identifying means, and the number of cards being provided by this card supply unit may be controlled in a different way as compared to the N card supply units. As an example, one such special card is provided to the mth set of cards, hence to the mth card storage means, when already a present, optionally randomly chosen, total number of cards have been assigned to this mth set of cards.

[0044] According to some embodiments, M may be an integer in the range of 4 to 10. Hence M is preferably 4, 5, 6, 7, 8, 9 or 10.

[0045] Preferably there is an additional, M+1th card storage means which may be the storage means where identified cards, which cannot be assigned to any of the M card storage means at that moment in executing the method, are assigned to. The cards being provided to this M+1th card storage means, referred to as overflow cards, may be recuperated later on and brought back in the method though one of the N card supply units.

[0046] This M+1th card storage means possibly does not comprise compartments, but may be a simple box in which the overflow cards are pushed into.

[0047] According to some embodiments, each of the Amp may be in the range of 0.5*Tm/P to 1.5*Tm/P.

[0048] The methods according to the first aspect have several advantages. Due to the multiple randomly selected parameters in the method, the order of the set or sets of cards compiled in each and every card storage means, and during a long term of continuously performing this method, is remaining totally unpredictable. this even if some information on the order of cards provided by the N card supply means would be known.

[0049] When the system is not using such three step

compiling of the set in a card storage means, using a plurality of P compartments, the cards which are relatively less present in the series of - repursued and/or randomly ordered - cards (hereafter referred to as scarce cards) from the N card supply means, tend to be relatively more likely present in the top part of the set of cards compiled by simply stacking the cards from the card receiving points. This may not be immediately noticeable in the first few sets compiled, but buy observing the order of cards being drawn from these sets, one may notice that for sets of cards being compiled subsequently, these "scarce" cards also seems to be more present in the first cards being drawn. As such the re may be a predictability in the randomness of the cards in sets of cards being compiled.

[0050] According to a second, individual aspect of the invention, a computer program product is provided, the computer program product comprising instructions for performing, when the computer program is run on a controller comprising at least one processor, a method to control the compilation of M decks of cards, wherein M>=1, said method comprising identifying a card to become part of one of the M decks, assigning the identified card to one deck of the decks and controlling provision of the assigned card to the assigned deck; and controlling the compilation of the M decks of cards by, for each of the M decks of cards,

I. defining a total number Tm of cards to be stored to provide a deck of cards;
II. defining a number Amp of cards for P groups of cards, the sum of the P numbers Amp equals Tm;
III. setting the value Bmp of a first card counter for each of the P groups of cards to 0;
IV. randomly selecting a compartment p of the P groups of cards;
V. incrementing the value Bmp with 1 for each card being provided to the pth group of cards;
VI. randomly selecting another group of the P groups and
VII. repeat step V and VI until all Bmp are equal to Amp.

[0051] It is clear that this computer program product may store instructions to be executed by a processing circuit, the instructions being instructions for performing a method according to the first aspect of the invention. The features described in view of the method according to this first aspect of the invention, hence may apply to and may be combined with the instructions and the computer program product according to this second aspect of the invention.

[0052] According to some embodiments, the instructions further may comprise identifying cards from one or more series of cards.

[0053] According to some embodiments, M>1. According to some embodiments, N>1.

[0054] According to some embodiments, the instructions further may comprise assigning an identified card from one or more series of cards to the mth set of cards of the M sets of cards, prior to increment the value Bmp with 1.

[0055] The cards present in the P compartments may be stacked such that the compartment number 1 provide the lower part of the set of cards, the cards of compartment with number 2 are stacked on the last card of the compartment number 1, and so on, the Pth compartment providing the cards present at the top of the set of cards, all cards having their face side oriented away from the top of the set of cards.

[0056] The computer program product may identify and assigning the identified card originating from N, N being a plurality like 2, 3, 4, 5, 6, 7, 8, 9, 10 or even more, series of cards, possibly series of randomly ordered cards. Preferably each series of cards is a series of randomly ordered cards, such as a series of cards originating from a used card cartridge, in which the undealt cards are still present, and from which these undealt cards are drawn one by one.

[0057] Unless specified differently, the term "card" hereinafter may refer to a playing cards, each card being identifiable by its rank and suit, or may refer to any card which is identifiable by one or more identification elements and/or a card identity code and which form part of a set of cards in which each card comprises such identification elements and/or a card identity code. A set of cards may comprise more than one decks of cards, like decks of playing cards. A deck of cards is a plurality of identical or mutually different cards, which together form one card pack. A deck of playing cards comprises 52 mutually different playing cards, including 13 ranks of 4 suits (hearts, diamonds (or tiles), clubs (or clovers), and spades (or pikes)). Each suit includes an ace (depicting a single symbol of its suit), a king, queen, and jack (each depicted with a symbol of their suit) and the ranks two through ten. A set of playing cards may comprise more than one deck of playing cards, like 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12 decks of playing cards, and may further include one or more special cards, i.e. cards with a special function in the game to be played with the set of playing cards, e.g. jokers, stop cards and alike.

[0058] Preferably the playing card is a card having a face side showing a rank and suit.

[0059] Each set hence may have a multiple, hereinafter Q, Q being an integer more than 1, of 52 mutually different playing cards. A group of these 52 mutually different playing cards is a deck of playing cards. Each set comprises hence Q decks, or hence Q cards of each kind of cards in the 52 mutually different cards.

[0060] Preferably Q is in the range of 2 to 15, such as 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 or 15. Most preferably Q is in the range of 6 to 10.

[0061] According to some embodiments, the instructions may be instructions for performing a method to compile M sets of playing cards, each set of playing cards comprising Q decks of playing cards, the instructions

comprise

- setting M*52 counters Qmrs to 0 in a step performed between step 1 and step 2, for which 1<=m<=M, 1<=r<=13 and each r corresponding to a rank of a playing card, 1<=s<=4 and each s corresponding to a suit of a playing card,
- during identifying a card, identify the rank and suit of the identified card and
- when incrementing Bmp by 1, increase the counter Qmrs by 1, this counter being the counter for which m corresponds to the set of cards the identified card is assigned to, r corresponds to the rank of the identified card and s corresponds to the suit of the identified card.

[0062] According to some embodiments, an identified card may be assigned to the mth set of cards only when the counter Qmrs is less than Q, for which m corresponds to the set of cards, r corresponds to the rank of the identified card and s corresponds to the suit of the identified card.

[0063] According to some embodiments, each of the M sets of cards may be provided with a priority number Rm, m ranging from 1 to M, each of the sets having a unique priority number Rm, the instructions comprise assigning the identified card to the set of cards having the highest priority amounts the group of sets of cards, for each of which the counter Qmrs is less than Q, m corresponding to the set of cards, r corresponding to the rank of the identified card and s corresponding to the suit of the identified card.

[0064] As it is possible that upon identifying a card, this identified card can be assigned to more than one of the M sets of cards being complied, each of the M card storage means may be given a priority number Rm, ranging from 1 to M, each of the sets having a unique priority number Rm, and conventionally calling priority number "1" the highest priority, calling priority number "M" the lowest priority.

[0065] When an identified card can be assigned to more than one of the M card storage means being complied, the method may comprise assigning said identified card to the card storage means having the highest priority number.

[0066] At startup of the device executing this method, the priority numbers may be randomly assigned to the card storage means, though preferably the first card storage means is given priority number "1", the second card storage means is given priority number "2" and so on, until the last card storage means is given priority number "M".

[0067] Once a set of cards is completed in a card storage means, the priority number of this emptied card storage means is set to M, and all priority numbers which were larger than the former priority number of the completed set, hence card storage means, are decreased by 1.

[0068] According to some embodiments, P may be an integer in the range of 4 to10.

[0069] Hence P is preferably 4, 5, 6, 7, 8, 9 or 10. P may be equal or different for each of the M card storage means. Optionally, though each of the card storage means may comprise P compartments, the method may comprise a step of defining, optionally even randomly, for each empty card storage means, the number of compartments top be used for compiling the set of cards. The number of compartments used may be an integer between a lower threshold Pmin and P, wherein Pmin preferably is equal or more than 4.

[0070] More preferably the number N of series of cards, possibly being randomly ordered cards is an integer in the range of 4 to 12. Hence N is preferably 4, 5, 6, 7, 8, 9, 10, 11 or 12.

[0071] According to some embodiments, M may be an integer in the range of 4 to 10. Hence M is preferably 4, 5, 6, 7, 8, 9 or 10.

[0072] According to some embodiments, each of the Amp may be in the range of 0.5*Tm/P to 1.5*Tm/P.

[0073] The computer program product according to this second aspect of the invention has the same or similar advantages as the performance of a methods according to the first aspect.

[0074] According to a third, independent aspect of the invention, a device for providing sets of cards is provided, the device comprises

- o N card supply units for providing a series of cards, N>1, each unit being defined by a card supply unit number n, wherein 1<=n<=N;
- ◦ NxM card receiving points, matrix like positioned in N columns of M rows, M>=1 and M+N>2, each point defined by coordinates (n,m), wherein 1<=n<=N; 1<+m<=M, each of the card receiving points of each of the N columns of card receiving points are adapted to receive cards from one of the N card supply units;
- ◦ M card storage means, each storage means being defined by storage means number m, wherein 1<=m<=M;
- ◦ A card delivery means for providing the cards provided to each of the card receiving points of each of the M rows of card receiving points to one of the M card storage means;

characterised in that said card delivery means has M card drop off points, one card drop off point for each of the M card storage means, each of the M card storage means comprises P compartments, P>1, for each of the M card storage means, the card drop off point and the compartments being mutually positionable to allow cards from the drop off point to be provided into each of the compartments.

[0075] Preferably the card supply units are adapted to provide each a series of randomly ordered cards.

[0076] According to some embodiments, M>1. According to some embodiments, N>1.

[0077] According to some embodiments, each card storage means may comprise a row of P boxes, each box providing a compartment, the card drop off point and the compartments being mutually positionable by moving the card drop off point and/or the row of boxes in the direction of the row.

[0078] Preferably the row of compartments is a row of boxes, all having an open side (hereafter the face side) being parallel to each other, optionally even be coplanar. This row of compartments is preferably aligned substantially vertically, thereby providing a pile of compartments.

[0079] Possibly for each of the M card storage means, the M rows of compartments are rows of boxes, all having an open side (hereafter the face side) being parallel to each other, optionally even be coplanar. The number of compartments for the M card storage means may all be identical or being different.

[0080] The card drop off point and the compartments being mutually positionable hence may be obtained by moving the card drop off point in the direction of the alignment of open sides of the row of boxes, i.e. the direction of the row.

[0081] According to some embodiments, the card drop off point and the row of boxes may be mutually positionable by moving the row of boxes in the direction of the row.

[0082] According to some embodiments, each two adjacent boxes may be separated by a separation walls.

[0083] This separation or partition wall may be a common wall, one side of the wall providing a side of the first box, the other side of the wall providing a side of the second box. When the boxes are oriented substantially vertically, a separation walls may provide the top wall of the lower of the two walls, and the bottom of the upper of the two boxes.

[0084] According to some embodiments, the separation walls may be removeable from the row.

[0085] This is in particularly beneficial hen the set of cards is completed in the card storage means, by removing the separation walls, the packs of cards in the different boxes may be positioned one next or on top of the other.by simply bringing the packs of cards together in the remaining wall structure of the boxes, the set of cards is physically complied and can be removed from the card storage means, this is in particularly thru for compartments being provided as a pile of boxes. By removing the separation walls, the packs of cards in the different boxes drop down on each other and for the compiled set of cards. When the cards are provided in the compartments with their face side oriented downwards, the set of cards can be removed from the card storage means even with the lowest card in the set of cards being invisible on first sight.

[0086] According to some embodiments, the row may have two outermost boxes, the first outermost box of the row of boxes has a moveable wall being opposite to the separation wall delimiting said box, the moveable wall is moveable along the length of the row in a direction and sense towards the second outer box. Optionally, the second of the row of boxes has an open side or a moveable wall opposite to the separation wall delimiting said box, the moveable wall of the first box is moveable along the length of the row in a direction and sense towards the second outer box at least to the position of the open side or the moveable wall of the second outer box. Possibly, the row is a pile being oriented substantially vertically, the first outermost box is the lowermost box.

[0087] When the cards are provided in the compartments with their face side oriented downwards, and moving this set of cards upwards hen being supported on the lower wall of the first outer box, the set of cards can be removed from the card storage means even with the lowest card in the set of cards remaining invisible on first sight.

[0088] According to some embodiments, the card drop off point and the compartments of each of the M card storage means may be mutually positionable independent from the other of the M card storage means.

[0089] For each of the M card storage means, the card delivery means may group and provide the cards provided to the corresponding drop off point of this m^{th} card storage means. This may be done by stacking or combing the cards present on the N card receiving points in the m^{th} row of card receiving points in the matrix of NxM card receiving points.

[0090] The card receiving point together may form a card receiving means, the card receiving points being matrix-like distributed over a substantially planar surface. The receiving point hence may be organised such that the N card supply units are aligned in a direction of the row of the matrix. Possibly the N card supply units have each a card supply point, where the cards supplied by the card supply unit can be transferred to one of the card receiving points. The N card supply points may be linearly aligned in the direction of the rows of the matrix. Each of the N columns of M card receiving points may move its card receiving points relatively to the corresponding card supply point. As an example, the M card receiving points of one of the column of card receiving points, may move under the corresponding card supply point, even under the card supply unit. The corresponding card supply point may transfer the card supplied by the card supply unit to the card receiving point which is part of the row of card receding point corresponding with the assigned card storage means of the M card storage means.

[0091] Hence each of the N columns of M card receiving points may have M positions, all aligned in the direction of the columns of the matrix-like distribution, where in each of the positions, the card supply unit can transfer its card or cards supplied to one of the M card receiving points of this column of M card receiving points. In one of the positions, hereinafter referred to as the basic position, a card receiving point is in its basic position when this card receiving point is linearly aligned to the drop of point of the row of card receiving points it belongs to in the matrix-like distribution.

[0092] The M card drop off points of the M card storage

means and the M rows of card receiving points, may be linearly aligned in the direction of the columns of the matrix-like distribution. The card drop off points may be positioned adjacent the Nth column of card receiving points, and in front of the M card storage means.

[0093] The card delivery means may be adapted to shift the cards provided to one or more of the m^{th} row of card receiving points, towards the m^{th} card storage means.

[0094] As an example, each of the card receiving points is defined by two vertically upstanding walls having a linear top side, which upper sides are adapted to receive cards. These top sides define a plane being inclined to the vertical. The top side hence inclines upwards towards the adjacent receiving point being closer to the card restorage means from a lower extremity to a higher extremity.

[0095] Between each two upstanding walls of the card receiving point, a pushing means, like a bar or rod or alike, may move in the direction from the lower extremity to the higher extremity. Hence the card delivery means may comprise M pushing means, each being adapted to push the cards received by each of the N card receiving points of one of the M rows of card receiving points, towards the corresponding card delivery point of one of the M card storage means. The pushing means will move while being present in the gap defined by the two walls of the card receiving points.

[0096] More, the card delivery means may comprise M pushing means, each being adapted, when moving from the 1^{st} to the last of the N card receiving points of a row of card receiving points, to push the cards received by the nth card receiving point of the N card receiving points to the n+1th card receiving point of the N card receiving points, and this for all N card receiving points, except the Nth card receiving point, and from the Nth card receiving point to the card delivery point corresponding to the card storage means the poshing means is corresponding to. To achieve this pushing from one card receiving point to an adjacent card receiving point, the nth card receiving point and the n+1th card receiving point of the N card receiving points of this row of card receiving points must be in their basic position. While a card receiving point is not involved in a pushing operation, the column of card receiving points this non-involved card receiving point belongs to, may move relatively to the card supply point it is to receive cards from.

[0097] More, the card delivery means may comprise M pushing means, each being adapted to be retracted out of the gap between the two walls of each of the card receiving points, when moving from the Nth to the first of the N card receiving points of a row of card receiving points.

[0098] Possibly all M pushing means move synchronously between the first and last card receiving points of a row of N card receiving points. The M pushing means may all be mounted to a common bar or rail, moving over or under the matrix like distributed card receiving points.

[0099] According to some embodiments, the device further may comprise a card storage voiding means adapted to remove complete sets of cards from the card storage means. The card storage voiding means may make use of a robot or automated system taking and removing the sets of cards from the card storage means.

[0100] According to a fourth independent aspect of the invention, a device for providing sets of cards is provided, the device comprising

- N card supply units for providing a series of cards, N>1, each unit being defined by a card supply unit number n, wherein 1<=n<=N;
- NxM card receiving points, matrix like positioned in N columns of M rows, M>=1 and M+N>2, each point defined by coordinates (n,m), wherein 1<=n<=N; 1<+m<=M, each of the card receiving points of each of the N columns of card receiving points are adapted to receive cards from one of the N card supply units;
- M card storage means, each storage means being defined by storage means number m, wherein 1<=m<=M;
- A card delivery means for providing the cards provided to each of the card receiving points of each of the M rows of card receiving points to one of the M card storage means;

characterised in that each of said N card supply units has a card supply point, for each of the N card supply units, one column of card receiving points is moveable in view of the card supply point to allow cards from said card supply unit to be provided onto each of the card receiving points of the column of card receiving points.

[0101] Preferably the card supply units are adapted to provide each a series of randomly ordered cards.

[0102] According to some embodiments, M>1. According to some embodiments, N>1.

[0103] According to some embodiments, the card supply points may be colinearly positioned. Optionally the card receiving points are substantially coplanar. The card supply points may be colinearly positioned according to a line being parallel but not coplanar to the plane defined by the card receiving points. The plane defined by the card receiving points may be oriented substantially horizontal.

[0104] The column of card receiving points and the card supply points may be mutually positionable by moving the card supply point over its column of card receiving points. Possibly, the column of card receiving points and the card supply points may be mutually positionable by moving the column of card receiving points under its card supply point. According to some embodiments, for each of the N card supply units, the card supply point and the card receiving points may be mutually positionable independent from the other of the N card supply units.

[0105] It is clear that the features of his fourth aspect can be combined with one or more of the features of the third aspect of the invention.

[0106] Also, a device according to the third and/or fourth aspect of the invention may comprise a control

unit or control means, adapted to control the movement of all moveable elements of the device, as well as to ensure the device is providing randomly orders sets of cards. The latter may be obtained by having the device according to the third and/or fourth aspect executing a method according to the first aspect of the invention, and/or including a processing circuit in the control means, which processing unit may execute the instructions present on a computer program product according to the second aspect of the invention.

[0107] Hence the features of one aspect of this invention may be combined with one or more of the features of any of the other aspects of the invention.

[0108] The devices according to the third and/or fourth aspect of the invention may be used to execute a method according to the first aspect of the invention.

Brief Description of the Drawings

[0109]

Fig. 1 illustrates schematically a device according to the present invention.

Fig. 2 illustrates schematically a cart storage means being part of the device of figure 1.

Fig. 3a and 3b illustrate schematically the cart storage means of figure 2.

Fig. 4 illustrates schematically the card receiving points of the device of figure 1.

[0110] In the different figures, the same reference signs make reference to the same or a similar feature.

Detailed Description of Embodiment(s)

[0111] A device 100 for providing sets of cards is schematically shown in figure 1. The device 100 comprises device comprises N card supply units 200, each card supply unit is adapted to provide a series of cards, in particularly a series of randomly ordered cards. In this embodiment, seven card supply unit are provided, numbered 1 to 7. The device 100 further comprises eight card storage means 300, each storage means being defined by storage means number 1 to 8. Details of each card storage means 300 are schematically shown in figure 2. The card supply units 200 are mount above a table-like frame 110, all aligned along a first side 111 of the substantially rectangular tabletop 112. The card storage means are also aligned along and adjacent a second side 113 of the tabletop 112. The sides 111 and 113 are non-parallel. On the tabletop 112, fifty six card receiving points 400 are provided, matrix like positioned in seven columns 420 of eight rows 410; each of the eight card receiving points 400 of each of the seven columns of card receiving points are adapted to receive cards from the corresponding card supply unit. The card receiving points 400 of the columns of card receiving points 420 are mutually connected and may slide parallel to the tabletop in a direction 210 to and from the corresponding card supply unit 200. The columns of card receiving points 420 may slide under the card supply point 202 of the card supply unit.

[0112] Each card supply unit 200 comprises a holder for holding a cartridge 500 which is at least partially filled with cards, e.g. remaining, undealt cards which are left in the cartridge after said cartridge is used to play a card game. The cartridge returns as such from the game table, and the device 100 is hence suitable to recuperate leftovers from cartridges being used. The card supply unit 200 comprises e.g. a card drawing means, in this embodiment a moveable finger 204, which can draw the cards one by one from the cartridge 500.

[0113] The cards being drawn from the cartridges, are scanned and identified by a camera system (not shown in figure 1), identifying the card by means of its rank and suit, and/or by an identification code present on the face side of the card, optionally only visible by UV light. As such an identified card is made available at the card supply point 202.

[0114] The identified card is assigned top one of the eight card storage means 300, and the column 420 of card receiving points 400 is moved under the supply point 202 of the corresponding card supply means 200 such the card receiving point 400 with the row number identical to the number of the assigned card storage means, is positioned under the card supply point. The card supply point now transfers the identified card to the card receiving point 400, in vertical direction 701.

[0115] Meanwhile, a card delivery means 600 of the device is moving in a direction 610 towards the card storage means 300. As will be set out further, the card pushing means, in this embodiment referred to as fingers 620, of the card delivery means 600 move along with a beam 622 which moves over the card receiving points 400. The fingers 620 transfer the cards from one card receiving point to the adjacent card receiving point in the direction towards the card storage means 300, until the one or more cards of are provided to the drop off point 320 of the card storage means 300. By ensuring that during these movements of the card delivery means 600, the column 420 of card receiving points 400 is aligned with its adjacent column 420 of card receiving points 400, i.e. the card receiving points with identical row number are one adjacent the other, the cards provided to the drop off points are cards which were assigned to the same card storage means corresponding to the card drop off point. Once the fingers of the card delivery means 600 has reached the card drop off point, the fingers are lifted or removed from the path of the card receiving points and the card delivering means is transferred back to a position before the first column of card receiving points. The fingers are lowered again and the delivering action restarts.

[0116] During assignment of the identified cards, the control unit may count how many cards of which rank and suit have been provided to each of ecard storage means; as such, the control unit may control the number and the order of cards being supplied to the card storage means, and hance may as well ensure the set of cards compiled in each o f the card storage means, comprises a given number of decks of cards, each set being randomised at set level. as the control unit may at all times know which card with witch rank and suit is where in the device, the control unit may generate data on the order of the cards in the set of cards.

[0117] The device having these features may provide simultaneously a number, in this embodiment eight, sets of cards, with are randomly ordered.

[0118] Alternatively or additionally, the card storage means 300 each may be provided with a number of compartments 310, as more clearly shown in figures 2, 3a and 3b. in this embodiment in figures 2, 3a and 3b, each card storage means 300 is provided with seven compartments 310, numbered 1 to 7, compartment 1 being vertically at the lowest position, cartridge seven being the uppermost compartment. It is understood that a different number of compartments may be used as well, e.g. 5, 6, 8, 9 or 10 compartments. The card storage means comprises a moving means 312 to move the card storage means 300 relatively up- or downwards in direction 350 in view of the card drop off point. The cards at the card drop off point, may be inserted in each of the compartments by moving the card storage means up- or downwards prior to transferring the cards from the card drop off point to the compartment 310, as is schematically shown in figure 3a. The compartment to which the one or more cards a the drop off point of the card storage means is transferred to, may randomly be chosen as well. As such, the randomness of the cards in the set of cards may be increased.

[0119] Once the required number of cards are present in the set of cards provided to the card storage means, the walls 330 proving the separation between adjacent compartments, may be removed, e.g. withdrawn from between the stacks of cards as shown in figure 3b, by a withdrawing means 340. As such the cards present in the compartments may stack and for the completed set of cards. A lifting means may lift the complied set of cards upwards, as shown in figure 3b, in order to allow the set of cards 800 to be taken from the card storage means.

[0120] In order to further improve the unpredictability of the order of cards, in particularly over a longer period in time, hence compared to subsequent sets of cards provided by the device 100, a specific method and algorithm is used to fill the compartments of each of the card storage means. First, the total number of cards Tm to be present in the set of cards compiled in the m^{th} card storage means is defined. This is usually a given number Q of decks of cards. As the control unit may count the number of each kind of card, identified by its rank and suit, for each card storage means, a series of counters Qmrs is set to 0. Subsequent, the control unit may randomly choose the number of compartments which will be used during compilation of the next set of cards. However preferably as much compartments as possible will be used, so all compartments are used. The control unit now randomly chooses the number of cards to be provided to each of the used compartments, being Amp, where Amp is the number of cards in the p^{th} compartment of the m^{th} card storage means. Obviously the sum of Amp for each card storage means must equal Tm.

[0121] Thereafter, the control unit selects randomly a first, empty cartridge, i.e. the compartment in which the first one of few cards will be provided in. A number of identified cards provided from the N card receiving points at the m^{th} row to the selected p^{th} compartment, is provided to the drop off point of the card storage means, prior to selecting a further compartment of the card storage means. By altering the compartments in which further numbers of identified cards are provided, the randomness of the compiled set of cards is increased. This iteration continues until all compartments comprises Amp cards. Once this achieved, the stacks of cards in the compartments are compiled, thereby forming the set of cards in the card storage means. The stacks in the different compartments may be stacked in a random order, or may be stacked in a known fixed order. In this embodiment, the stacks are combined by withdrawing the common walls from between the compartments, thereby allowing the stacks to fall one on top of the other.

[0122] The instructions of a computer program product, comprising instructions for performing, when the computer program is run on a controller comprising at least one processor, a method to control the compilation of M decks of cards, may be run on the control unit of the device of figures 1 to 4.

[0123] The control unit may define counters and values, randomly choose, assign or select elements of the device, and control the movement of the various elements of the device.

[0124] Turning to the card receiving points 400 as shown in figure 4, as an example, each of the card receiving points is defined by two vertically upstanding walls 401 having a linear top side 402, which upper sides are adapted to receive cards 700. These top sides define a plane being inclined to the vertical 701 . The top side hence inclines upwards towards the adjacent receiving point being closer to the card restorage means from a lower extremity 403 to a higher extremity 404.

[0125] Between each two upstanding walls 401 of the card receiving point, a pushing means 620, like a bar or rod or alike, optionally in the form of a finger, may move in the direction from the lower extremity to the higher extremity. Hence each pushing means 620 is adapted to push the cards 700 received by each of the N card receiving points of one of the M rows of card receiving points, towards the corresponding card delivery point or drop off point of one of the M card storage means. The pushing means 620 hence may move while being pre-

sent in the gap defined by the two walls of the card receiving points.

[0126] Although the present invention has been illustrated by reference to specific embodiments, it will be apparent to those skilled in the art that the invention is not limited to the details of the foregoing illustrative embodiments, and that the present invention may be embodied with various changes and modifications without departing from the scope thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein. In other words, it is contemplated to cover any and all modifications, variations or equivalents that fall within the scope of the basic underlying principles and whose essential attributes are claimed in this patent application. It will furthermore be understood by the reader of this patent application that the words "comprising" or "comprise" do not exclude other elements or steps, that the words "a" or "an" do not exclude a plurality, and that a single element, such as a computer system, a processor, or another integrated unit may fulfil the functions of several means recited in the claims. Any reference signs in the claims shall not be construed as limiting the respective claims concerned. The terms "first", "second", third", "a", "b", "c", and the like, when used in the description or in the claims are introduced to distinguish between similar elements or steps and are not necessarily describing a sequential or chronological order. Similarly, the terms "top", "bottom", "over", "under", and the like are introduced for descriptive purposes and not necessarily to denote relative positions. It is to be understood that the terms so used are interchangeable under appropriate circumstances and embodiments of the invention are capable of operating according to the present invention in other sequences, or in orientations different from the one(s) described or illustrated above.

Claims

1. A method to provide a set of randomly ordered cards, comprising

- providing of a device for providing sets of cards, the device comprising
  - N card supply units, N>=1, each unit being defined by a card supply unit number n, wherein 1<=n<=N;
  - M card storage means, M>=1, each storage means being defined by storage means number m, wherein 1<=m<=M and N+M>2;
  - Each card storage means comprises P compartments, P>1, each compartment being defined by its compartment coordinate (m,p), wherein 1<=p<=P; 1<+m<=M
  - NxM card receiving points, matrix like positioned in N columns of M rows (each point defined by coordinates (n,m), wherein 1<=n<=N; 1<=m<=M;

- Distributing cards from the N card delivery units to the M card storage means by
  - identify each of the cards being provided by one or more of the N card supply units, and assign each of said identified cards to one of M the card storage means;
  - provide each of the identified cards to a card receiving point with coordinates (In, Im), wherein In is the n^{th} of the N card delivery units from which the card originates, and Im is the m^{th} of the M card storage means to which the card is to be provided;
  - for each of the M rows of N card receiving points, stack and move the stacked cards provided to the N card receiving points at the m^{th} row, to the m^{th} card storage means;

whereby in each of the M card storage means, sets of randomly ordered cards are provided by the sequence of the steps

I. for the mth card storage means being empty:

I.i. define a total number Tm of cards to be stored to provide a completed stack of cards;

I.ii. randomly assign to each of the P compartments of this empty card storage means a number of cards Amp to be stored in this compartment, wherein the sum of the P numbers of cards Amp equals Tm;

II. randomly select a compartment of the P compartments;

III. provide a number of identified cards from the N card receiving points at the m^{th} row to the selected p^{th} compartment;

IV. randomly select another compartment of the P compartments for which the number of identified cards in the compartment is less than Amp;

V. repeat steps III to IV until all P compartments have been provided with a number of cards being equal to Amp;

VI. Remove the competed set from the card storage means and repeat the steps I to VI.

2. A method according to claim 1, wherein M>1.

3. A method according to any one of the preceding claims, wherein N>1.

4. A method according to any one of the preceding claims, wherein the method provides a set of playing cards, each set comprises Q decks of playing cards, these Q decks of playing cards being said Tm of cards.

5. A method according to claim 4, wherein said identifying each of the cards comprises obtaining information on the rank and suit of the card, the method further comprises counting the number of cards with given rang and suit being assigned to each of the M card storage means, and assigning and identified card to a one of the card storage means, only when for this type of card with said identified rank and suit, the number of this kind of cards in this card storage means is less than Q.

6. A method according to any one of the preceding claims, wherein P is an integer in the range of 4 to10.

7. A method according to any one of the preceding claims, wherein N is an integer in the range of 4 to 12.

8. A method according to any one of the preceding claims, wherein M is an integer in the range of 4 to 10.

9. A method according to any one of the preceding claims, wherein each of the Amp is in the range of 0.5*Tm/P to 1.5*Tm/P.

10. A method according to any one of the preceding claims, wherein said device for providing sets of cards, the device comprising

- ◦ N card supply units for providing a series of cards, N>1, each unit being defined by a card supply unit number n, wherein 1<=n<=N;
- ◦ NxM card receiving points, matrix like positioned in N columns of M rows, M>=1 and M+N>2, each point defined by coordinates (n,m), wherein 1<=n<=N; 1<+m<=M, each of the card receiving points of each of the N columns of card receiving points are adapted to receive cards from one of the N card supply units;
- ◦ M card storage means, each storage means being defined by storage means number m, wherein 1<=m<=M;
- ◦ A card delivery means for providing the cards provided to each of the card receiving points of each of the M rows of card receiving points to one of the M card storage means;

characterised in that said card delivery means has M card drop off points, one card drop off point for each of the M card storage means, each of the M card storage means comprises P compartments, P>1, for each of the M card storage means, the card drop off point and the compartments being mutually positionable to allow cards from the drop off point to be provided into each of the compartments.

11. A method according to any one of the preceding claims, wherein said device for providing sets of cards, the device comprising

- ◦ N card supply units for providing a series of cards, N>1, each unit being defined by a card supply unit number n, wherein 1<=n<=N;
- ◦ NxM card receiving points, matrix like positioned in N columns of M rows, M>=1 and M+N>2, each point defined by coordinates (n,m), wherein 1<=n<=N; 1<+m<=M, each of the card receiving points of each of the N columns of card receiving points are adapted to receive cards from one of the N card supply units;
- ◦ M card storage means, each storage means being defined by storage means number m, wherein 1<=m<=M;
- ◦ A card delivery means for providing the cards provided to each of the card receiving points of each of the M rows of card receiving points to one of the M card storage means;

characterised in that each of said N card supply units has a card supply point, for each of the N card supply units, one column of card receiving points is moveable in view of the card supply point to allow cards from said card supply unit to be provided onto each of the card receiving points of the column of card receiving points.

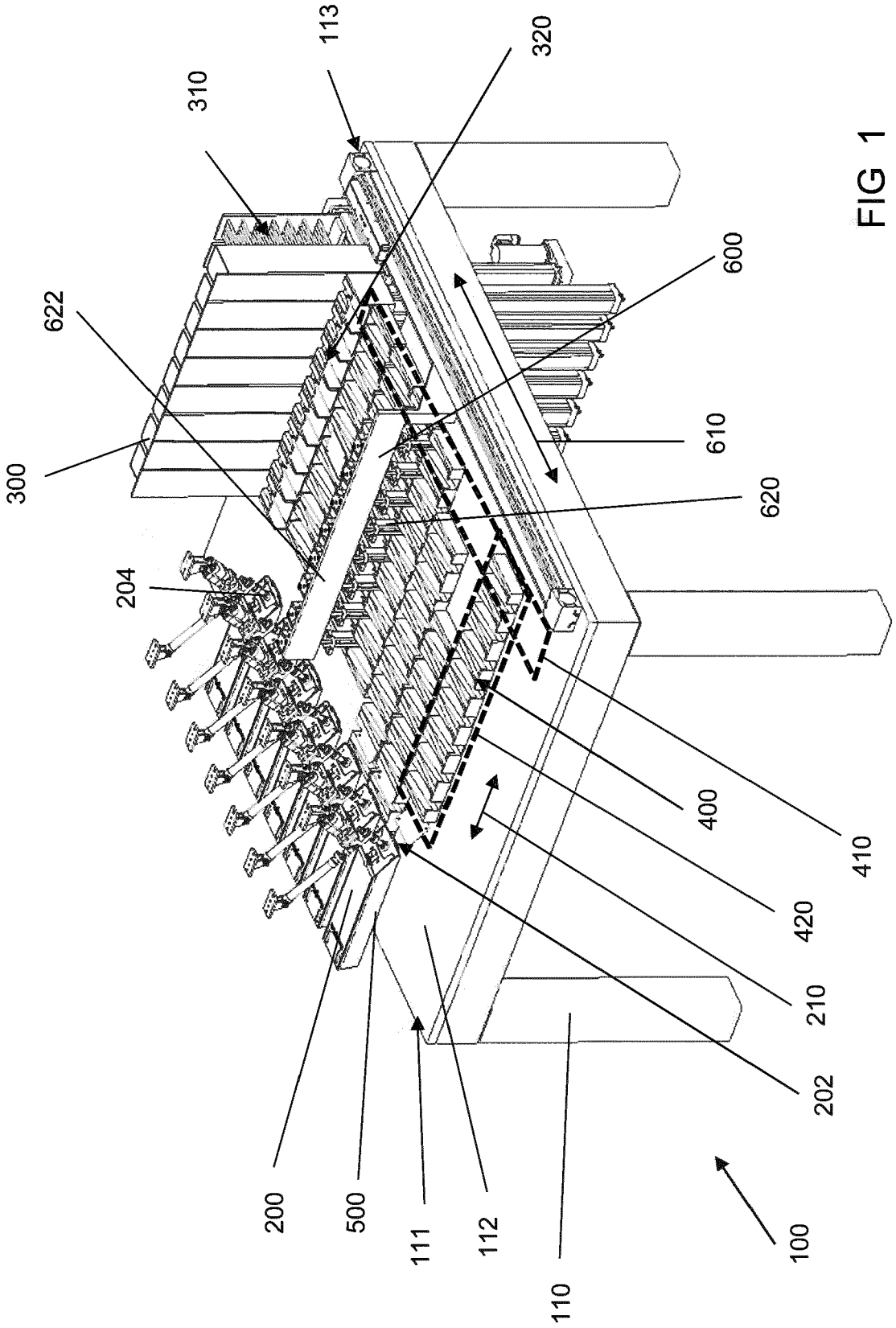
113
320
310
600
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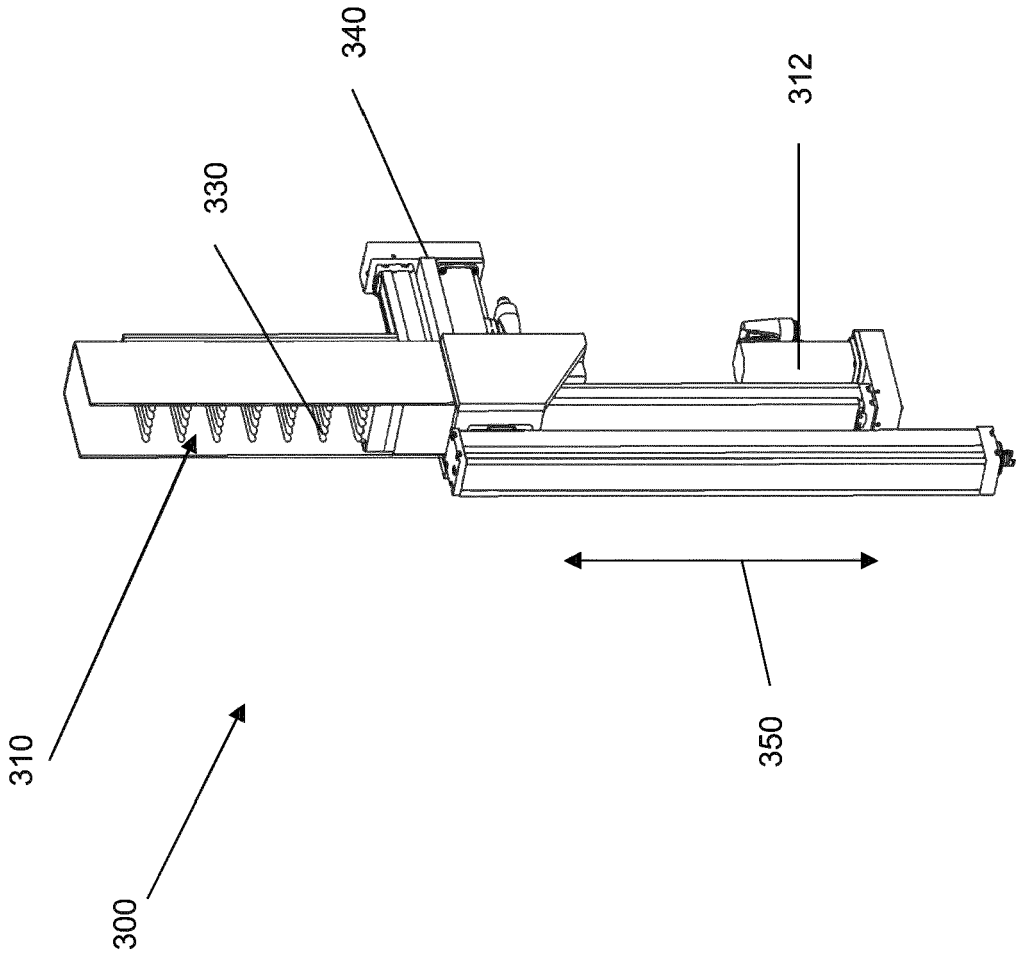
FIG 1

FIG 2



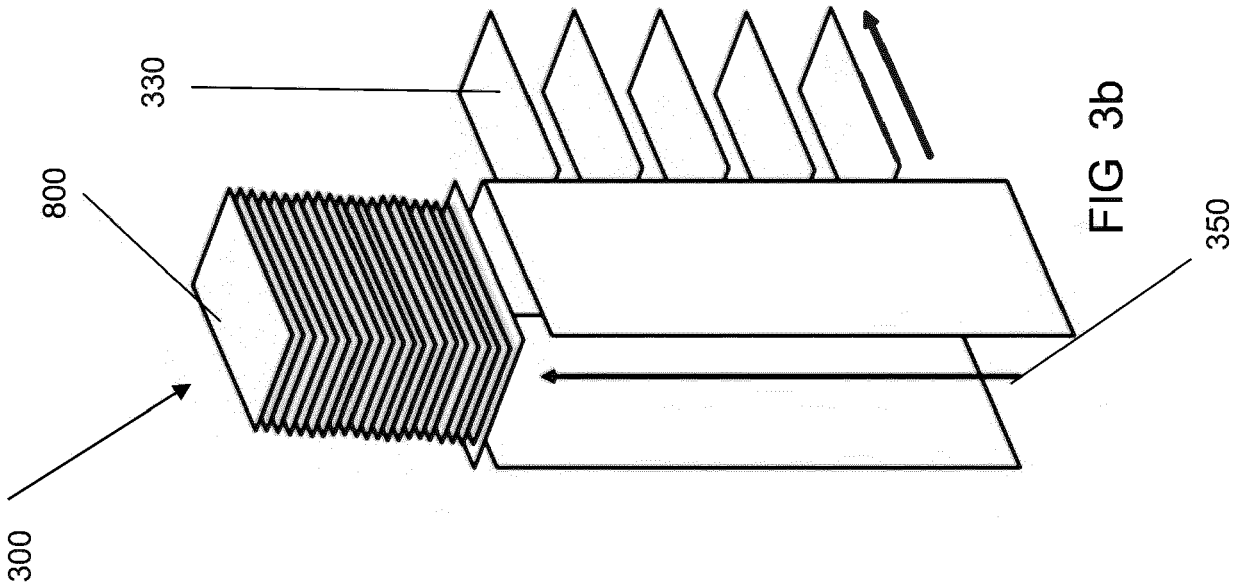


FIG 3b

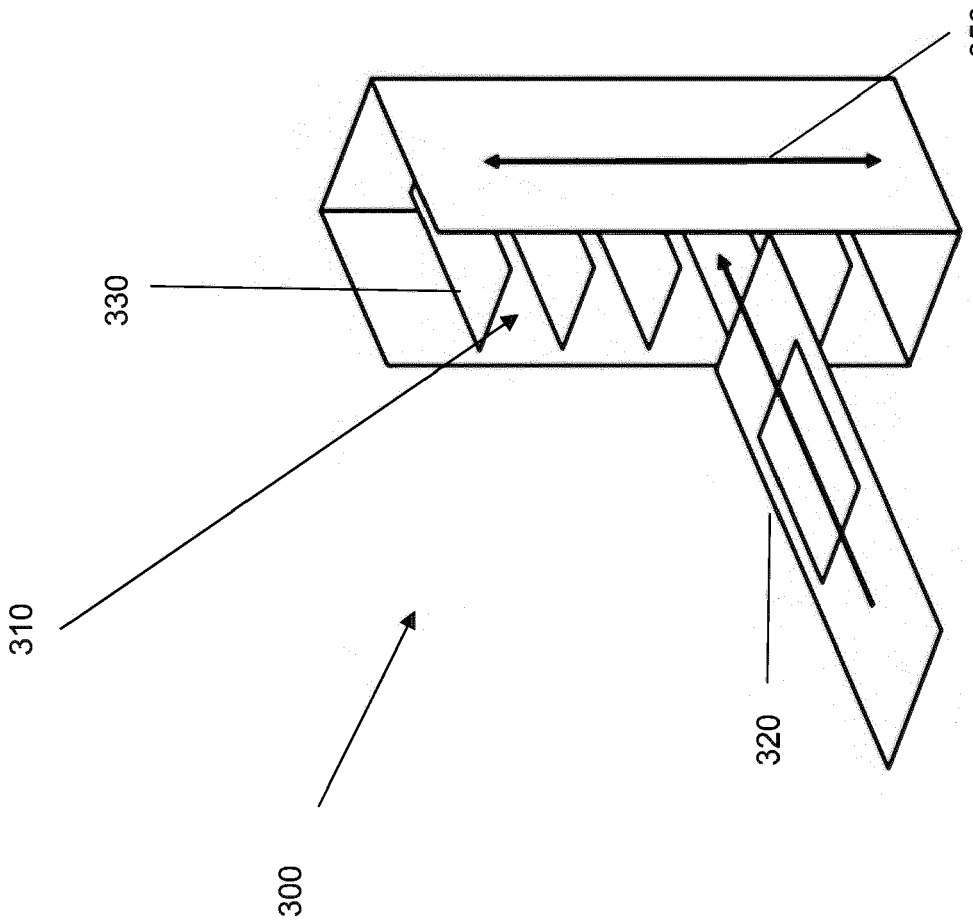


FIG 3a

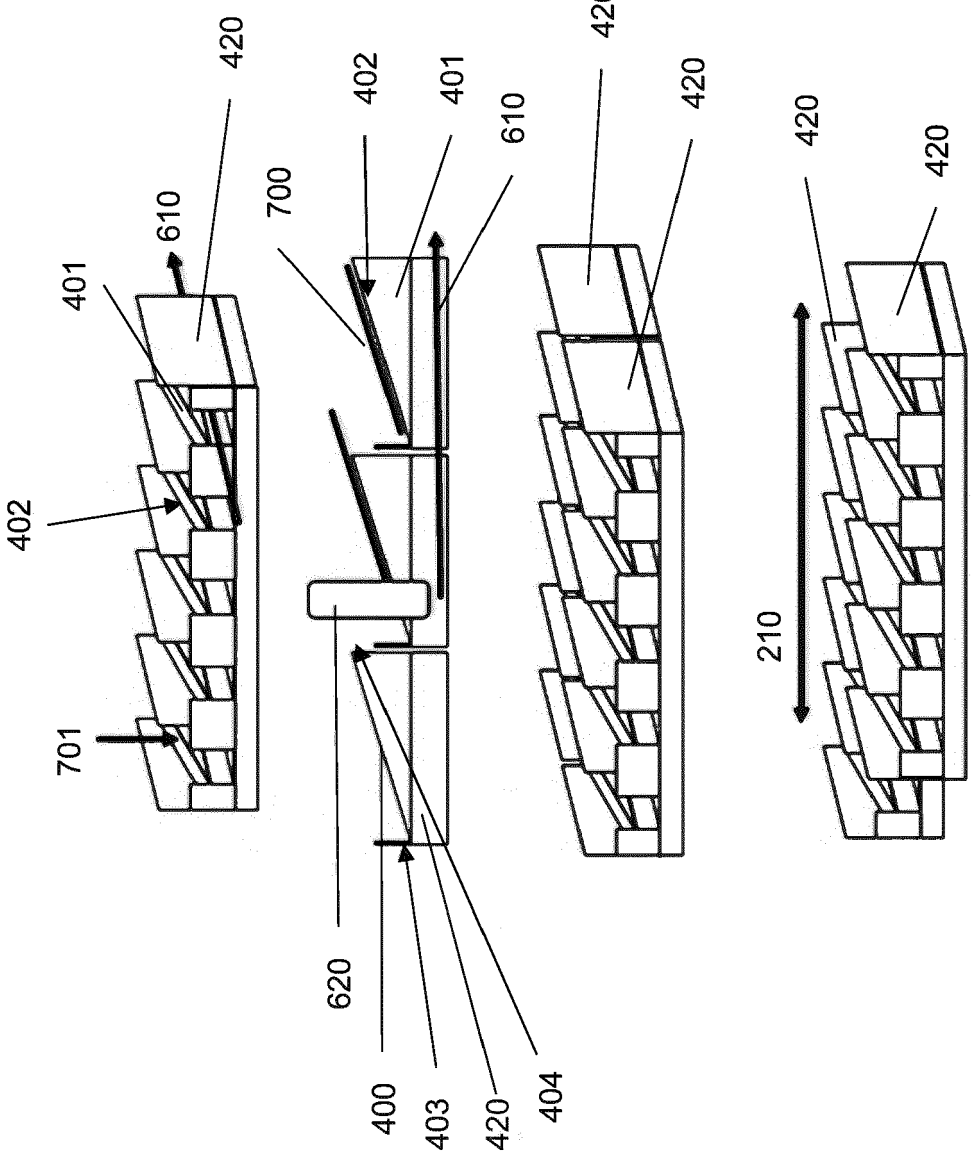


FIG 4

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 23 18 5219

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	WO 2012/042823 A1 (ANGEL PLAYING CARDS CO LTD [JP]; SHIGETA YASUSHI [JP]) 5 April 2012 (2012-04-05) * the whole document *	1	INV. A63F1/12 ADD. A63F9/24
A	EP 4 201 495 A1 (CARTAMUNDI SERVICES NV [BE]) 28 June 2023 (2023-06-28) * the whole document *	1-11	
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