Title: A SYSTEM AND A METHOD FOR GENERATING PLAYING COUNTERS AND DRAWING SEQUENCES

Abstract

The invention concerns a system and a method for generating playing counters (1) and drawing sequences, said playing counters being used in a lottery and having a predetermined dividend with respect to said drawing sequences, and according to which a player's marker by way of moves determined by a drawing sequence selected at random from said drawing sequences, is directed from a start position (7) to an end position on each playing counter. The method comprises the steps of determining the mutual relationship between the states of the start and the end positions on each playing counter, dividing the playing counters into parts (2, 3, 4) and preferably randomly generating marker moves for each part (2, 3, 4) in the form of draw series which in conjunction, when applied to a playing counter, result in said end position state relatively to the state of the start position (7) and which form said drawing sequences. The system includes a computer arranged to generate and register, preferably randomly, said draw series which jointly, when applied to a playing counter, cause said state of the end position relatively to the start position (7) and which form said drawing sequences.
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A SYSTEM AND A METHOD FOR GENERATING PLAYING COUNTERS AND DRAWING SEQUENCES

The present invention relates to a system and a method for generating playing counters and drawing sequences, which playing counters, after the generation process, are used in a lottery, with a predetermined dividend with respect to said drawing sequences. In the lottery draw one of said generated drawing sequences is randomly selected and the selected drawing sequence comprises moves of a player's marker, said moves taking place from a start position to an end position on each playing counter.

It is essential to be able to guarantee that the prizes in a lottery, at least distributed over several lottery draws, yield a certain predetermined dividend. By a predetermined dividend should in this context be understood that the number of prizes on the playing counters is predetermined to occur within a certain range. The prizes on the playing counters could for instance correspond to a certain sum of money or could give the winner a chance to take part in other forms of lotteries having other dividends, such as larger sums of money. It is thus easily understood that by a predetermined dividend is to be understood that the number of prizes or lucky numbers, at least when distributed over several lottery draws, are to occur within said range. However, it is connected with problems to generate large numbers of playing counters and drawing sequences which jointly give said predetermined dividend, particularly if the number of possible marker moves from the start to the end positions is considerable. It is likewise understood that the process of generating playing counters and drawings sequences becomes complicated, when the number of playing counters, drawing sequences and possible moves from the
start to the end positions and possible prize indicator positions on the playing counters is considerable, because of the very large number of possible combinations of these parameters.

A first object of the present invention thus is to provide a method and a system for generating playing counters and drawing sequences having a predetermined dividend.

The second object of the present invention is to provide a method and a system for generating playing counters and drawing sequences according to which the number of possible combinations of various parameters that affect the generating process, such as e.g. the number of drawing sequences, different configurations of the playing counters and the positions of the prize indicators on the playing counters becomes manageable in order to allow rapid and simple generation of playing counters and drawing sequences.

The inventive method and system for generating playing counters and drawing sequences are also aimed at meeting the conventional requirements established for lotteries, for instance with respect to the lottery draws.

These and other objects are obtained in accordance with the present invention by means of a method and a system for generating playing counters and drawing sequences as defined in the dependent claims.

Some presently preferred embodiments of the invention will be described in the following with reference to the accompanying drawings.

Fig. 1 illustrates one example of an embodiment of the playing counter, also showing marker moves with respect to one drawing sequence from a start position to an end position.

Fig. 2 illustrates one example of a director area used in the generation procedure.
Fig. 3 illustrates on an enlarged scale a part of a playing counter e.g. the playing counter illustrated in Fig. 1, the digits indicating the distribution by percentage of the number of marker hits in the drawing series included in the different drawing sequences with respect to different sections of the playing counter part.

Fig. 4 illustrates one example of the disposition of the above-mentioned director areas in the form of director patterns on a playing counter, e.g. the one illustrated in Fig. 1.

The playing counter of Fig. 1, generally referred to by reference 1, is divided into three parts, generally indicated by references 2, 3 and 4, respectively. In accordance with the embodiment shown each playing counter part comprises a grid comprising six columns and eleven rows, and the counter parts 2, 3, 4 are positioned side by side. The columns and the rows delimit sections 5, of square configuration in accordance with the embodiment shown. The playing counter 1 has a start column generally designated by reference 6. In accordance with the embodiment shown, the start column 6 comprises five sections and vertically it is centred about the middle rows of sections of the parts 2, 3 and 4, respectively. In one of the sections of the start column 6 is a mark 7 indicating a start position. The playing counter 1 also comprises an end column generally designated by reference 8. The end column is a part of the playing counter part 4 in accordance with the embodiment shown.

In accordance with the embodiment shown the playing counter also comprises directors 9 in the form of arrows pointing vertically upwards or downwards. The directors 9 are disposed in three columns in playing counter parts 2 and 3 in accordance with the embodiment shown, and in two columns in playing counter part 4. However, they could equally well be disposed in other columns on the playing counter.
The end column 8 shows a number of prize indicators 10 which in the example illustrated are different sums of money. In some sections of playing counter parts 2, 3, 4 there are also prize indicators in the form of signs 11, in this case the letters A, B, C. In accordance with the embodiment shown all A’s are found in the first part 2, all B’s in the second part 3 and all C’s in the third part 4. This is not, however, necessary but all sign prize indicators 11 for instance in the form of A’s could appear in several playing counter parts simultaneously. The number of different types of sign prize indicators 11 could exceed or be lower than that shown (which is A, B, C).

In accordance with the inventive generation process, playing counters of the kind shown in Fig. 1 are generated as well as drawing sequences. The drawing sequences consist of a collection of marker moves from a start position to an end position on the playing counter. Once the generation process is completed it is advantageous to sell the playing counters to players before the drawing proper is effected during which one of the generated drawing sequences is selected at random. The marker moves in the drawing sequence could be indicated for instance in the form of arrows, the marker moves in accordance with the example shown being effected laterally from the left to the right between the sections of juxtaposed columns on the playing counter. The lateral moves in the drawing sequences could in this case be horizontal, be directed diagonally upwards, or diagonally downwards. In Fig. 1, line 12 indicates one example of marker moves generated by one drawing sequence as drawn. When the marker hits a director 9 it should be moved upwards or downwards laterally in the direction indicated, to an adjacent section. The start column 6 could for instance have an opaque scrape-off cover hiding in which section the start position 7 is disposed on the playing counter. This feature in combination with the
directors 9 and the fact that the drawing sequence preferably will be disclosed draw for draw, for example during a television transmission, make the marker moves an exciting part of the game to the player. In the example shown, the player is lucky since the marker hits two sign prize indicators A, which in this example generates a prize, and since the marker hits prize indicator 200, which gives a prize of 200 SEK.

It is easily understood that the number of possible combinations of parameters, such as for instance different drawings sequences, different appearances of the playing counters, different start positions and different positions of the prize indicators 10, 11 is large, for which reason the number of possible combinations must be limited somehow in the generation of playing counters and drawing sequences. In addition, the generation process should provide the above mentioned predetermined dividend.

In the following will be described one embodiment of a method and a system for generating playing counters whereby these problems are handled in a most resourceful way. In accordance with the example given 10 000 playing counters are to be generated and the draws are to be performed from 1000 drawing sequences.

In order to obtain a predetermined dividend with respect to the prize indicators 10 in the end column and to yet make a manageable generation process possible, initially a difference of a total number of sections S vertically between the start and end positions is determined. In accordance with the shown example S = 0. In accordance with one preferred embodiment S is the same for all playing counters, a feature that naturally facilitates the generation process further. Because S is known it is easy to select, preferably at random, a number of playing counters presenting a prize in the end column. These counters should be formed with a start position the state of which, i.e. the vertical position
in the column, generates a predetermined end position in
the end column, independently of the selected drawing
sequence. A prize indicator is then arranged in the end
position. All other playing counters that should not have
a prize in the end column have no prize indicator in the
end position. Alternatively, the system may be based on a
predetermined prize indicator state in the end column,
for instance in the form of pre-printed prizes in certain
sections of the end column, and the state of the start
position is adapted to this situation in such a manner
that certain, preferably random-selected prize playing
counters are generated.

Once S is established, the playing counters are
divided into parts, such as 2, 3, 4, in order to further
facilitate the generation process. For each part is
determined, preferably at random, the desired difference
in heights $S_i$, known as small steps, between the sections
in the first and the last columns in the direction of
marker moves with respect to each part 2, 3, 4. The sum
of the small steps should be $S$, i.e. $S_1 + S_2 + \ldots + S_4 = S$.
In accordance with the shown example the small step $S_1 = -2$ in the first part. In the second part the small step
$S_2 = +1$ and in the third part the small step $S_3 = +1$
(i.e. $S = S_1 + S_2 + S_3 = -2 + 1 + 1 = 0$). In accordance
with a preferred embodiment, $S_1$ is common to the first
part 2 of all playing counters (for instance $-2$) and $S_4$
is common to the second parts 3 of all playing counters
(e.g. $+1$) and $S_4$ is common to the third parts 4 of all
playing counters (for instance $+1$), all playing counters
thus having the same small step in mutually corresponding
parts, which naturally facilitates the generation process
further. In accordance with the preferred embodiment, the
small steps are chosen within the range $-2$ to $+2$ and $S$ is
chosen within the range $-6$ to $+6$. The chosen small steps
are stored in a first register.

The marker moves in each part are referred to herein
as draw series. Each part in accordance with the example
comprises 729 ($3^6$) possible different draw series which may comprise marker moves from the left to the right on the playing counter in the direction diagonally upwards, diagonally downwards, or horizontally. The various draw series for each playing counter part jointly form different drawing sequences with respect to that playing counter. In accordance with a preferred embodiment certain non-desired draw series and/or drawing sequences are sorted out. For example, in accordance with one embodiment such drawing sequences and/or series comprising more than three identical marker moves in sequence are sorted out, since such drawing sequences and/or draw series may be felt as less exciting by the player. For the same reasons, in accordance with the preferred embodiment such drawing sequences are sorted out as in total comprise more than seven identical marker moves.

Each counter part 2, 3, 4 in accordance with the shown embodiment comprises an indicator zone, generally indicated in Fig. 2 by reference 13. In the case illustrated the indicator zone 13 has a width of three columns and a height of five rows, but the size may be varied. Preferably, the indicator zone preferably has such a size that it covers only one section in its associated playing counter part, e.g. some of the sections in the associated parts 2, 3, 4, in order to facilitate the generation process for reasons to be discussed further on. For the director zone 13 of each part is generated a list of director patterns 14, showing different possible ways of positioning the directors 9 in the director area 13 of the sections 5. The list is stored in a second register, one for each counter part. Fig. 2 illustrates one example of indicator positions in an indicator pattern 14 relating to area 13. The number of indicators in each indicator pattern 14 preferably is restricted to ensure that the directors 9 will not be too close to one another. In accordance with the example
illustrated the number of directors in each director
pattern is limited to one, two, or three.

Fig. 4 illustrates one example of a playing counter
in which three indicator patterns 14, 14', 14'' are set
out. Each one of these patterns has three indicators.
Indicator pattern 14'' comprises only two columns. A very
large number of different combination possibilities
exists between different patterns. In order to make the
generation process manageable, the number of pattern
combinations should be restricted.

The list of indicator patterns 14 for the first
playing counter part 2 is sorted in such a manner that
the patterns 14 producing small step S₁ comprising the
largest number of draw series appear first. The list of
indicator patterns 14' relating to the second playing
counter part 3 is sorted in such a manner that the
patterns 14' generating small step S₂ comprising the
largest number of draw series appear first and the list
of indicator patterns 14'' relating to the third part 14
is sorted in such a manner that the pattern 14'' generat-
ing small step S₃ comprising the largest number of draw
series appears first. The result is stored in a third
register for each part.

A number of patterns is then randomly drawn from
each one of the three sorted lists, the drawn patterns
being stored in a fourth register. It should be noted
that the lists in each third register are sorted in such
a manner that the patterns that may be combined with the
largest number of draw series appear first. These are the
best draw series for reasons that will appear further on.
The draw preferably thus is performed using a random-
number distribution which is not linearly in the
population but configured in such a manner that the
first, best draw series have the best chance of being
drawn.

Thereafter is generated a list of the draw series
which, when applied to the patterns in the fourth
register relating to the first counter part 2, continues to produce the above-mentioned small step $S_1$. The generated list is stored in a fifth register relating to part 2. In the same manner is generated a list of the draw series relating to the second and third counter parts respectively, which when applied to the associated pattern in the fourth register produces the above-mentioned small steps $S_2$ and $S_3$, respectively. Since the number of draw series is thus restricted it is advantageous to be able to combine patterns with many associated draw series to obtain a list containing a sufficient number of draw lists to produce correct small steps in all patterns of the part. This is the reason behind the non-linear random-number distribution mentioned above.

In this manner a list of patterns and draw series is produced for each part of the playing counters which together produce marker moves corresponding to the small steps of the part.

Three patterns from the fourth registers of the different playing counter parts are now combined and positioned on a playing counter. The positioning takes place in accordance with the example of Fig. 4. The pattern of the first part is centred about a preferably randomly selected row comprising start position 7. In the first part the small step $S_1$ is -2. Since the draw series in the first part all start in the same start position 7 and all draw series of the first part are restricted to produce marker moves extending through the pattern 14 and since all draw series of the first part have the same small steps $S_1$, all these draw series have a common end point for the first part of this playing counter, which end point is indicated by a cross in the right-hand column in the first playing counter part. The pattern 14' of the second part thus is also given a common starting point (position of the cross) on this playing counter, about which the pattern 14' is centred. Since the draw
series of the second part all start in the same point
(the cross) and since also all draw series for the second
part are restricted to produce marker moves extending
through the pattern 14', and since all draw series for
the second part have the same step S2 all these draw
series also have a common end point on this playing
counter, which is marked by a cross in the right-hand
column of the second playing counter part. The pattern
14" of the third counterpart is centred in a similar
manner and since corresponding restrictions apply in the
third playing counter part, the end position pre-
determined in relation to the starting position is always
generated, which position in this case is marked by a
cross in the end column in the fifth row from the top,
i.e. in the same row as the start position, since in this
case S = 0.

It is understood that the appearance of the playing
counter changes when different patterns are combined and
when different start positions are selected. If the total
number of playing counters having different pattern
positions still is less than the desired number, which in
this case is 10 000, some of the combinations are re-used
to give the desired number of playing counters. Playing
counters having identical patterns and start positions
yet are likely to be given different appearances, owing
to the set out of e.g. prize indicators 10, sign prize
indicators 11 and directors 9 which are positioned
externally of the patterns as will be described in the
following.

The three lists comprising draw series having a
length of six steps in the respective fifth registers are
then combined in order to produce a set of drawing
sequences having a length of 18 steps which are stored in
a sixth register. Owing to the generating method all
these drawing sequences produce the same $S$ for each
playing counter produced. In accordance with a preferred
embodiment, an extra run-through of the drawing sequences
is made, maximising the number of steps of the same kind to seven and ensuring that no more than three identical marker moves in succession exist. If the number of generated drawing sequences is less than the desired number, in this case 1000, the generating process must be re-started from the beginning.

In accordance with a preferred embodiment is ensured that the marker will not be positioned outside the playing counter. This may be achieved for instance by applying all drawing sequences to each playing counter and sorting out drawing sequences producing the above problems.

As already mentioned the drawing sequences produce a predetermined dividend with respect to the prize indicators in the end column. It is understood that it is preferable to arrange prize indicators also in sections that are not hit by the marker in both prize and blank playing counters in order to increase the player's excitement. Examples of such indicators/markings appear from Fig. 1 in which for instance the sum SEK 500 is not scored.

The shown embodiment also comprises sign prize indicators 11. These may generate a prize, should an indicator be hit by the marker or if several indicators are hit by the marker. Obviously, it is preferable that these prizes should also have a predetermined dividend. This does, however, raise a problem since at the time the playing counter is printed the drawing sequence to be selected is still unknown. Also this problem is however, solved in an advantageous manner by the present invention in that all drawing sequences in the sixth register are applied to each playing counter. For each drawing sequence, data on which section that is hit by the marker on each playing counter is then stored in a seventh register. Meanwhile, the system counts the number of marker hits in each section. Also these data are stored in the seventh register.
In this manner the system knows which sections that are hit on each playing counter and the number of hits in each section of all playing counters. Fig. 3 illustrates schematically a distribution of hits by percentage of all drawing sequences with respect to a part, such as the first part, of all playing counters.

In the most simple case it suffices that the marker hits a sign prize indicator in order to produce prize-winning situation. Initially is selected, preferably at random, a column in which the prize-producing sign is to be positioned. We assume that column 4 in Fig. 3 is selected. In this column there are two hit sections. For the sake of simplicity we assume that only one marker-related prize is to be set out. A first playing counter therefore could be selected, preferably at random, for example one having at least one or several marker hits in the upper one of the two hit sections of column 4, and a second playing counter could be selected preferably at random, which has at least one or several marker hits in the lower one of the two hit sections of column 4, a sign being arranged on the first playing counter in the upper one of the two hit sections of column 4 and a sign being arranged on the second playing counter in the lower one of the two hit sections of column 4. Thus a marker prize is ensured in column 4, independently of the drawing sequence that is drawn in the lottery draw.

Let us now instead assume that a sign prize is obtained if two indicators are hit by the marker. Initially is selected, preferably at random in the same manner as above, two columns in which prize-producing signs are to be set up. We assume that columns 2 and 5 in Fig. 3 are chosen. In each one of these columns two sections are hit. This gives rise to four possible drawing sequence combinations, with preferably random selection of four playing counters and set out of signs on these playing counters in the hit sections of these playing counters in such a manner that a first playing counter will exhibit
signs in the two upper hit sections of columns 2 and 5, such that a second playing counter has signs in both the two lower hit sections in columns 2 and 5, such that a third playing counter exhibits signs in the upper hit section of column 2 and the lower hit section in column 5, and such that a fourth playing counter exhibits signs in the lower hit section of column 2 and the upper hit section in column 5.

It is understood that it is advantageous to arrange for "blind" sign prizes not yielding prizes in some sections that are not hit in any drawing sequence, or in such a manner that not all signs required for a prize are hit, in order to enhance the player's excitement. According to a preferred embodiment recording and storage are made also of the sections that contain directors 9 in the patterns of each playing counter, no signs being arranged in such "occupied" sections. It is likewise advantageous to arrange for "blind" directors in some sections not hit in any drawing sequence. Such directors are shown e.g. in Fig. 4 exteriorly of the patterns. However, it is likewise possible to arrange such "blind" directors in sections of the patterns not hit in any drawing sequence. When setting out these "blind" indicators it is preferable to register also which sections have become "occupied", in order to ensure that indicators and signs are not positioned on top of one another. Preferably, the "blind" signs and the directors are arranged at random on the non-"occupied" sections.

Preferably, the above-mentioned generating process is carried out at least partly in a system comprising a computer.

The inventive system and method ensure a predetermined dividend. Owing to the division of the playing counter into parts comprising definite small steps and owing to the division of the parts in accordance with a preferred embodiment into zones in the form of patterns in which indicators may be positioned and by means of
which the marker is moved by the draw series, the number of possible combinations in the generation process becomes manageable, which furthers rapid generating in a system comprising a computer while at the same time the requirement for a random quality in the draw of winning playing counters remain.

It shall be understood that certain changes of the inventive method and system are possible. For instance, the appearance of the playing counter, the size of its parts and the patterns etc. illustrated in the drawing figures are to be regarded as non-restricting embodiments. It is also easily understood that a larger or smaller number of playing counter parts than the first, second and third parts illustrated may be used. Nor is it necessary to generate directors on the playing counter. However, the generation of directors is preferable, since such directors increase the player's thrill and makes the game more interactive. All varieties and modifications that are comprised by the basic inventive idea should however, fall within the scope of protection of the appended claims.
CLAIMS

1. A method of generating playing counters and drawing sequences, said playing counters being used in a lottery with a predetermined dividend for said drawing sequences, according to which method a player's marker is directed from a start position to an end position on each playing counter by way of moves determined by a drawing sequence selected at random from said drawing sequences, characterized by the steps of determining a mutual relationship between the states of the start and the end positions for each playing counter, dividing the playing counters into parts, and preferably at random generating marker moves for each part in the form of draw series which in conjunction, when applied to a playing counter result in said end position state relatively to the start position state and which form said drawing sequences.

2. A method as claimed in claim 1, characterized by the step of determining the mutual relationship between the start and end position states such that it is equal for all playing counters.

3. A method as claimed in claim 1 or 2, characterized by the step of varying the start position state, e.g. in the form of its position vertically on the playing counters, such that it is different at least in a number of the playing counters.

4. A method as claimed in any one of the preceding claims, characterized by the steps of:
- selecting, preferably at random, a number of playing counters having a start position or selecting, preferably at random, a number of playing counters and arranging a start position thereon, and providing on said selected playing counters a prize indicator relating to the end position state determined by the start position, or selecting, preferably at random, a number of playing counters having a prize indicator in an end
position or selecting, preferably at random, a number of
playing counters and arranging a prize indicator in an
end position thereon, and providing on said selected
playing counters a mark indicating a start position in
the area of the start position determined by the prize-
indicated end position.

5. A method as claimed in any one of the preceding
claims, characterized by the steps of establish-
ing an area within each part, said area comprising a
section of that part, and generating, preferably at
random, said draw series in such a manner that the marker
moves on each individual playing counter extend through
said areas when said draw series are applied to the
playing counter.

6. A method as claimed in claim 5, characterized by the steps of providing, for each area,
a number of marker move directors, for instance in the
form of arrows, and generating said draw series in
response to marker moves occasioned by said indicators,
in order to bring about said predetermined state change
between the start and the end positions.

7. A method as claimed in any one of the preceding
claims, wherein each playing counter (1) comprises
essentially parallel columns which are divided into sec-
tions (5), such as squares, said columns forming a
playing board in the form of a grid, a start column (6)
in one section comprising the start position (7) and an
end column (8) in one section comprising the end posi-
tion, and wherein the marker moves in the drawing
sequences comprise moves between juxtaposed columns from
the start column (6) towards the end column (8),
characterized by the steps of
determining the end position state in relation to
the start position by determining the total difference in
numbers of sections vertically (5) between said positions
on the playing counter (1)
- dividing the playing board into said parts (2, 3, 4) such that each part comprises a predetermined number of columns,
- and preferably at random generating marker moves in the form of draw series for each part, resulting in a difference in the number of sections vertically \((S_1, S_2, S_3)\), so called small steps, between the first and last columns in the marker move direction in each part, said differences jointly in all parts forming the above-mentioned total difference in number of sections vertically \((S)\) between the start point and the end point.

8. A method as claimed in any one of claims 1-6, wherein each playing counter \((1)\) comprises essentially parallel columns which are divided into sections \((5)\), such as squares and which form a playing board in the form of a grid, a start column \((6)\) in one section comprising the start position \((7)\) and an end column \((8)\) in one section comprising the end position, wherein the marker moves in the drawing sequences comprise moves between juxtaposed columns from the start column towards the end column, and wherein said marker moves also are produced vertically within each column by means of directors \((9)\) arranged on the playing counter, for instance in the form of arrows, characterized by the steps of
- determining the end position state relatively to the start position by determining the total difference in numbers of sections vertically \((S)\) between said positions,
- dividing the playing board into said parts \((2, 3, 4)\) in such a manner that each part comprises a predetermined number of columns,
- preferably at random determining and in a first register storing the total difference in number of sections vertically \((S_1, S_2, S_3)\), so called small steps, between the first and last columns in the direction of marker moves in each part in such a manner that said
small steps jointly for all parts produce the above-
mentioned total difference in the number of sections
vertically (5) between the start point and the end point,
- providing for each part a director area (13) which
contains at least a number of the sections of that part,
- generating possible directors (9) within the area
(13) and storing the various directors in the form of
patterns (14, 14', 14'') in a second register,
- sorting for each part (2, 3, 4) the patterns in
the second register in dependence on the number of
combinations of marker moves between juxtaposed columns
in the form of draw series for the part in question that
generates said small steps, and storing the sorted set of
patterns with respect to each part in a third register,
- from the third register provided for each part
drawing, preferably at random, a number of patterns, said
draw preferably being produced with a non-linear distri-
bution in such a manner that those patterns that may be
combined with the largest number of draw series that
result in said small steps with respect to the part have
the better chance of being drawn, and storing the drawn
patterns in a fourth register for each part,
- generating for the fourth register of each part
draw series, said series resulting in the small steps of
the part in all patterns in the fourth register, and
storing the results in a fifth register for each part,
- generating playing counters by combining patterns
from the fourth register for the various parts of the
playing counter and arranging a pattern combination on
each playing counter in such a manner that each part is
assigned a pattern from the third register of the part,
the pattern in a first part (2) adjacent the start column
(6) being centred vertically about a preferably randomly
selected first row of sections, the pattern of a second
part (3) following the first part in the direction of
marker move being centred vertically about a second row
of sections, said row disposed at a distance vertically
that corresponds to the small steps of the first part relatively to the first row, the patterns of any other parts (4) being correspondingly centred vertically in relation to a pattern disposed in an adjacent previous part as seen in the marker move direction, in dependence of the small steps of the part of that pattern,

- and combining the draw series in the fifth register for each part and storing the combinations in the sixth register, each combination in the sixth register forming one of the above-mentioned drawing sequences.

9. A method as claimed in claim 8, characterized by the step of centring the pattern in the first part (2) that is juxtaposed to the start column (6), vertically about a first row of sections that comprises the start position (7).

10. A method as claimed in any one of claims 7-9, characterized by the step of selecting a common small step for a first part (2) of all playing counters, selecting a common small step for a second part (3) of all playing counters and so on, whereby all playing counters will exhibit the same small step in corresponding parts.

11. A method as claimed in any one of claims 7-10, wherein also prize indicators in the form of signs (11) are present in the sections and wherein a prize is obtained if the marker hits one or several of these signs during its movement between the start and end positions, characterized by the steps of

- applying all drawing sequences to each playing counter,

- for each playing counter, storing in a seventh register data as to which sections that are hit by a marker in each drawing sequence,

- selecting on the playing counters, preferably at random, one or several columns in which said sign prize indicators (11) are to be placed,
- selecting, preferably at random, playing counters and based on data in the seventh register positioning on the selected playing counters in said columns one or several signs in sections hit by the marker during at least some of the drawing sequences, whereby the playing counters are selected and the signs on the selected playing counters being so positioned that at least one sign prize is produced always, independently of the drawing sequence that is selected during the lottery draw.

12. A system for generating playing counters and drawing sequences, said playing counters being used in a lottery with a predetermined dividend for said drawing sequences, wherein a player’s marker is directed from a start position to an end position on each playing counter by way of moves determined by a drawing sequence randomly selected from said drawing sequences, a mutual relation between the start and end position states for each playing counter being determined prior to a generation operation, which state preferably is the same for all playing counters, characterized in that the playing counters are divided into parts, and in that the system comprises a computer arranged to generate and register, preferably at random, marker moves for each part in the form of draw series which jointly, when applied to a playing counter generate said state of the end position relatively to the start position and form said drawing sequences.

13. A system as claimed in claims 12, characterized in that each part has a zone comprising a section of the part, and in that the computer is arranged to generate, preferably at random, said draw series in such a manner that the marker moves on each playing counter extend through said zones when the draw series are applied to the playing counter.

14. A system as claimed in claim 13, characterized in that each zone has a number of marker
move directors, e.g. in the form of arrows, and in that the computer is arranged to generate said draw series in response to the marker moves caused by said directors in order to establish said predetermined state changes between the start and end positions.

15. A system as claimed in any one of claims 12-14, wherein each playing counter comprises essentially parallel columns which are divided into sections (5), such as squares, and which form a playing board in the form of a grid, a start column (6) in one section comprising the start position (7) and an end column (8) in one section comprising the end position, wherein the marker moves in the drawing sequences comprise moves between juxtaposed columns from the start column towards the end column, wherein the end position state relatively to the start position state is determined by the total difference in the number of sections vertically (S) between these positions on the playing counter, and wherein said playing counter is divided into said parts (2, 3, 4) in such a manner that each part comprises a predetermined number of columns, characterized in that the computer is arranged to preferably at random generate and in registers store the marker moves in the form of draw series for each part that result in a difference in the number of sections vertically ($S_1$, $S_2$, $S_3$), so called small steps, between the first and last columns of the part as seen in the direction of marker moves, said differences jointly with respect to all parts giving the above-mentioned total difference in the number of sections vertically (S) between the start point and the end point.

16. A system as claimed in any one of claims 12-14, wherein each playing counter (1) has essentially parallel columns which are divided into sections (5), such as squares, and which form a playing board in the form of a grid, a start column (6) in one section comprising the start position (7) and an end column (8) in one section
comprising the end position, wherein the marker moves in the drawing sequences comprise moves between juxtaposed columns from the start column towards the end column, wherein marker moves also are performed vertically within each column by means of directors (9), for instance in the form of arrows, arranged on the playing counter, wherein the state of the end position relatively to the start position is determined by the total difference in the number of sections vertically (S) between said positions and wherein said playing counter is divided into said parts (2, 3, 4) in such a manner that each part comprises a predetermined number of columns, characterized in that:

- the computer is arranged to preferably at random determine and in a first register store the total difference in the number of sections vertically (S₁, S₂, S₃), so called small steps, between the first and last columns of each part as seen in the direction of marker moves in such a manner that said small steps jointly for all parts produce the above-mentioned total difference in the number of sections vertically (S) between the start point and the end point,

- each part has a director zone (13) comprising at least a number of the sections of the associated part,

- the computer is arranged to generate possible directors (9) within the zone (13) and to store the various directors in the form of patterns (14, 14', 14'') in a second register,

- the computer is arranged to sort the patterns (14, 14', 14'') in the second register for each part (2, 3, 4) depending on the number of combinations of marker moves between juxtaposed columns in the form of draw series in that part that results in said small steps, and is arranged to store the sorted set of patterns for each part in a third register,

- the computer is arranged to draw, preferably at random, from the third register established for each
part, a number of patterns, said draw preferably being produced with a non-linear distribution such that the patterns that are combinable with the highest number of draw series that result in said small steps for the part possess the best chance of being drawn, and is arranged to store the drawn patterns in a fourth register for each part,

- the computer is arranged to generate, for the fourth register of each part, draw series resulting in the small steps of the part for all patterns in the third register, and is arranged to store the results in a fifth register for each part,

- the computer is arranged to generate playing counters by combining patterns from the fourth register for the various parts of the playing counter and to set up a pattern combination on each playing counter in such a manner that each part is assigned a pattern from the fourth register of the part, whereby the pattern in a first part (2) adjacent a start column (6) is centred vertically about a preferably randomly selected first row of sections, whereby the pattern of a second part (3) following the first part as seen in the direction of a marker moves is centred vertically about a second row of sections which is arranged at a distance vertically that corresponds to the small step of the first part relatively to the first row, and whereby the patterns of any other parts (4) are correspondingly centred vertically relatively to a pattern located in an adjacent, previous part as seen in the direction of movement of the marker, depending on the small step of the part of that pattern,

- and in that the computer is arranged to combine the draw series in the fifth register for each part and to store the combinations in a sixth register, each combination in said sixth register forming one of the above-mentioned drawing sequences.
17. A system as claimed in claim 16, characterized in that the computer is arranged to centre the pattern in the first part (2) adjacent the start column (6), vertically about a first row of sections that comprises the start position (7).

18. A system as claimed in any one of claims 15-17, characterized in that the computer is arranged to select a common small step for a first part (2) of all playing counters, that the computer is arranged to select a common small step for a second part (3) of all playing counters and so on, to ensure that all playing counters exhibit the same small steps in corresponding parts.

19. A system as claimed in any one of claims 15-18, wherein also prize indicators in the form of signs (11) appear in the sections and a prize is obtained if the marker hits one or several of said signs during its move between the start and end positions, characterized in that

- the computers is arranged to apply all drawing sequences to each playing counter,
- the computer is arranged to store in a seventh register for each playing counter the sections hit by a marker during each drawing sequence,
- the computer is arranged to preferably randomly select one or several columns on the playing counters in which said sign prize indicators (11) are to be positioned,
- and that the computer is arranged to preferably randomly select playing counters and on the basis of data in the seventh register on the selected playing counters in said columns position one or several signs in sections hit by the marker during at least some of the drawing sequences, said computer being arranged to select playing counters, ensuring that at least one sign prize is always
produced, independently of which drawing sequence is drawn in the lottery draw.
INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 97/00358

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A63F 3/08, G07C 15/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A63F, G07C, G06F

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

SE, OK, FI, NO classes as above

Electronic database consulted during the international search (name of database and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents
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Date of the actual completion of the international search: 8 July 1997
Date of mailing of the international search report: 09-07-1997

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