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[54] **BOARD GAME APPARATUS**

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Related U.S. Application Data

[63] Continuation of Ser. No. 119,673, March 1, 1971.

[52] **U.S. Cl.** ... **273/131 AC**, 273/130 F, 273/131 B, 273/136 E

[51] **Int. Cl.** **A63f 3/00**

[58] **Field of Search** 273/130, 131, 134, 273/135, 136

[56] **References Cited**

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[57] **ABSTRACT**

A game including a game board having a plurality of recesses preferably defined by upstanding pegs and a plurality of spherical playing pieces which are of a diameter such that they can be placed in adjacent recesses in diagonal rows but not in adjacent recesses in orthogonal rows. The purpose of the game is to form all of the playing pieces into squares with the playing pieces in the diagonal corners of the square, these squares being designated as crown squares. An alternative way of winning is to capture all but a designated number of the opponent's spherical playing pieces by enclosing them in capture squares. Capture squares are squares in which the playing pieces are arranged in alternate squares along orthogonal rows so that a captured piece will fit between the four playing pieces of the square.

9 Claims, 6 Drawing Figures

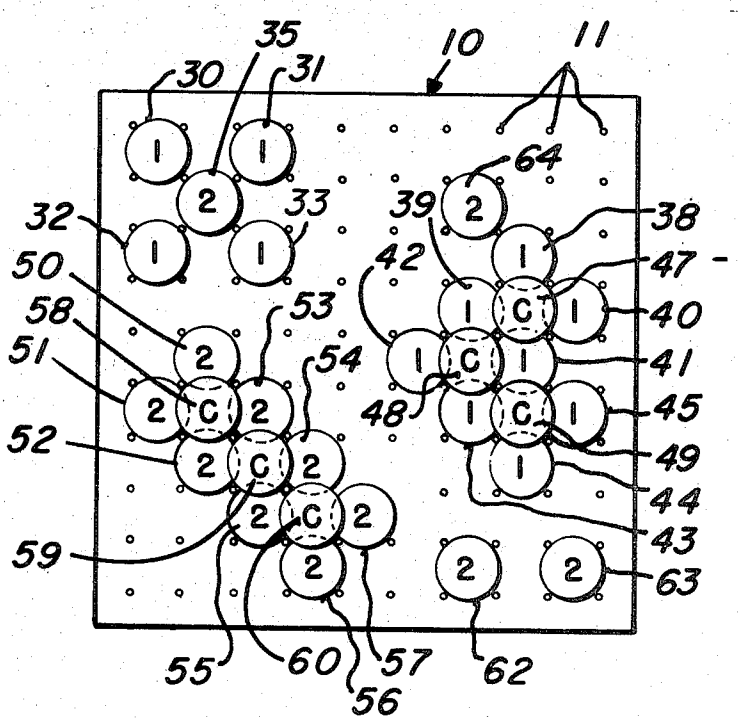


FIG. 1.

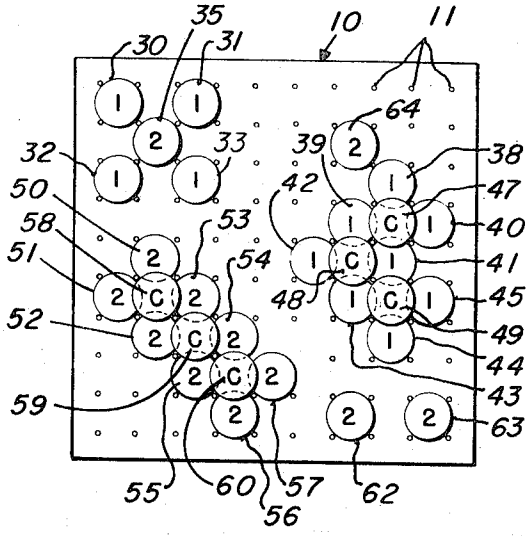


FIG. 2.

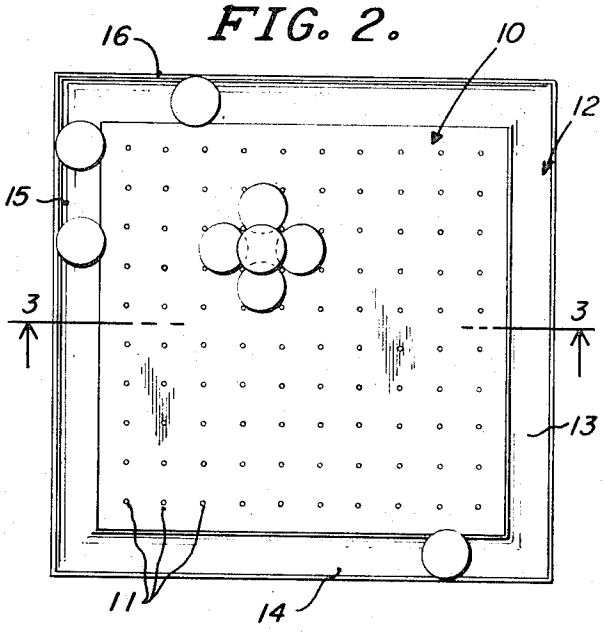


FIG. 3.

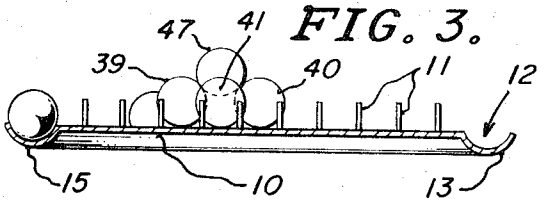


FIG. 4.

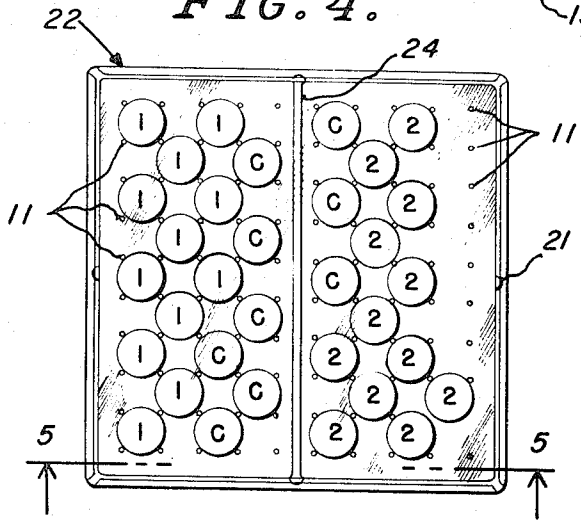


FIG. 5.

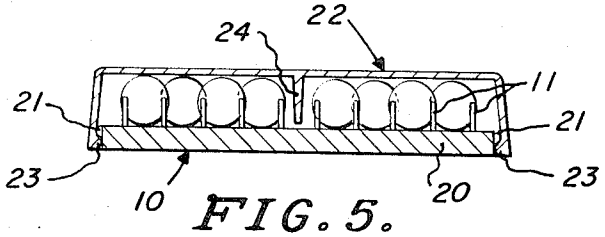
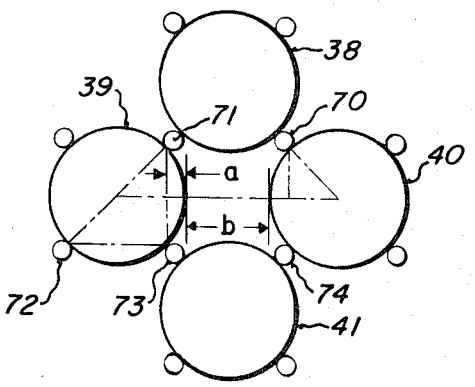


FIG. 6.



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BOARD GAME APPARATUS

This is a continuation of application Ser. No. 119,673, filed Mar. 1, 1971.

BACKGROUND OF THE INVENTION

There are numerous games employing playing boards and movable playing pieces. The present invention is directed to an improved version of a game in which there is a playing board and movable playing pieces which are moved one turn at a time but in any distance or direction. The present invention is concerned with improvements in that type of game.

SUMMARY OF THE INVENTION

The present invention is particularly concerned with a game in which the playing areas are of such size with respect to the playing pieces that it is impossible to put two playing pieces in adjacent playing areas along orthogonal rows. It is only possible to dispose the playing pieces adjacent each other along diagonal rows. The object of the game is to form as many squares as possible, in which the squares are formed by playing pieces disposed in adjacent playing areas in diagonal rows. Such squares are designated as "crown" squares. The crown square may be marked by placing on the center thereof a further playing piece which rests on the four playing pieces but does not fit between them. Where it is desired to capture a piece, the playing pieces are arranged in a square constituted by pieces disposed in alternate playing spaces along orthogonal rows. The opponent's piece is captured when such a square is formed around the playing piece to be captured.

The playing spaces may be defined by posts arranged to form a plurality of squares, the distance between the adjacent posts being less than the maximum transverse dimension of the playing pieces and the distance between diagonal posts in any square being at least as great as the maximum transverse dimension of the playing pieces. The posts define recesses therebetween into which the playing pieces extend when placed between the posts.

Specifically, the playing pieces are spherical in shape. There are a plurality of groups of playing pieces, one for each player and each group being different in appearance from every other group. The pieces which are used on top of the "crown" squares may be pieces of the same size. Such crown pieces may or may not be contrasting in appearance to the main playing pieces.

Other objects and features of the invention will be apparent from a consideration of the accompanying specification, claims and drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a plan view of my game board showing spherical playing pieces arranged in various combinations which they can be made to assume during the game;

FIG. 2 is a plan view of one form of playing board;

FIG. 3 is a vertical sectional view taken along the line 3—3 of FIG. 2;

FIG. 4 is a plan view of another form of my game board showing the board with a cover thereon and with the playing pieces in the position they assume when the game is in storage;

FIG. 5 is a vertical sectional view taken along the line 5—5 of FIG. 4; and

FIG. 6 is a detailed view illustrating the manner in which the relative dimensions of the crown playing pieces and the main playing pieces may be determined.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, I have shown my improved game with the pieces in the position which they assume while they are being played. The board provides for a large number of playing areas arranged in a series of rows with any playing area in one of the rows adjacent to and coextensive with the playing areas in the adjacent rows so that there are a plurality of rows of playing areas parallel to one side edge and an equal number of rows of playing areas perpendicular to the previously named rows, all of the same size. These two groups of rows may be referred to as the orthogonal rows. Because of this arrangement, there are also formed two groups of diagonal rows, one extending upwardly when moving from the left to the right and the other extending downwardly when moving in the same direction. Referring more specifically to the drawing, the game board itself is designated by the reference numeral **10.** The playing areas are in the form of recesses defined by a series of posts **11.** In the example shown, there are ten posts in each of the orthogonal rows and there are ten such rows. These posts thus define nine playing spaces in each of the orthogonal rows so that there are **81** playing areas each defined by four posts. It will be noted that since any group of four posts forms a square, the recesses are of symmetrical cross section about any line in the cross-sectional plane extending through the center of the recess.

Also provided are at least two groups of playing pieces. These are specifically shown in the drawing as spheres which may be in the form of marbles. The playing pieces in one group have been designated by the reference numeral **1** and those in the other group by the reference numeral **2.** This is intended to designate the first and second players. In actual practice, the playing pieces in one group would probably be colored in a different manner than those in another group. The numeral designations have been employed for purposes of facilitating in the drawing the differentiation between the two groups without the necessity of color coding. The playing pieces designated by the reference numerals **1** and **2** constitute the main playing pieces. Preferably, with a board having the number of playing spaces indicated in the drawing, there are 12 main playing pieces in each group so that each player has 12 main playing pieces. There is also a third group of playing pieces designated by the reference character "C". These are the so-called "crown" playing pieces and are used to indicate the "crown" squares when they have been successfully arranged. Again, while the letter "C" has been used as a convenient method of differentiating the crown pieces in the drawing, these would actually be in a color contrasting with the "**1**" and "**2**" playing pieces. For example, the so-called "crown" marbles could be clear. In fact, it is even possible to have the crown marbles of the same color as the main playing pieces.

Before proceeding with an explanation of the purpose of the game and the manner in which it is played, two or three alternative forms of game boards will be described. In FIG. **2,** I have shown a board having a gutter **12** therearound. It will be noted that the gutter is

generally U-shaped in cross section. As best shown in FIG. 3, the gutter has four separate portions 13, 14, 15 and 16 forming a support for the board 10 to hold it spaced above the supporting surface. The gutter member 12 is used to hold the playing pieces before they are placed on the board. The gutter 12 is of sufficient extent as to provide ample storage space for all of the playing pieces. While I have shown the gutter 12 as being formed as an integral continuation of the board 10, the portions 13, 14, 15 and 16 could be separate sections similar to the sections of a picture frame and secured in any suitable manner to the board 10.

In FIGS. 4 and 5, I have shown a slightly modified board. In this case, the various pins 11 are molded on a plastic base 20 to provide the board 10. On each side wall of the base 20, there is molded a slight protuberance 21. Cooperating with the board 10 is a cover member 22. This cover member is preferably formed of clear plastic material and has an internal area and configuration substantially conforming with the external configuration of the base 10 so that the cover member 22 can be placed over the base 20 in telescopic relation therewith. The cover member preferably has an internal flange 23 on each side thereof. These flanges 23 are so located that when the cover member is placed over the base 20, the flanges 23 snap over the protuberances 21 projecting from the side walls of the base 20 to hold the cover 22 in position. The cover member 22 has a central inwardly projecting wall 24 which divides the cover 22 into two compartments. As is evident from the plan view of FIG. 4, all of the playing pieces can be disposed on the board between the various pins 11 with all of the playing pieces of group "1" on one side of the partition wall 24 and all of the playing pieces of group "2" on the other side. The "C" or crown pieces can be partly disposed on one side and partly disposed on the other. When it is desired to play the game, the assembled unit is tipped upside down from the position shown in FIG. 5 and the board 20 is removed therefrom by pulling the base 20 away from the cover 22. The board can then be tipped back so that it is in the position shown in FIG. 5 and the inverted cover 22 will retain the various playing pieces until they are needed.

Referring now to the relationship between the playing pieces and the playing areas on the board 10 and to the manner in which the game is played, it will be noted that the distance between any two of the pins 11 when measured along any orthogonal row is less than the diameter of the playing pieces 1 and 2. On the other hand, it will be noted that the diagonal spacing of any two diagonally disposed pins 11 is such that one of the playing pieces 1 or 2 can be interposed therebetween. Thus, referring to the upper left-hand corner of FIG. 1, I have designated certain of the "1" playing pieces by the reference numerals 30, 31, 32 and 33 and one of the "2" playing pieces by the reference numeral 35. Playing pieces 30, 31, 32, and 33 are arranged in what is termed a "capture" square which will be discussed in more detail later. It will be noted that playing piece 35 is disposed between playing pieces 31 and 32 in one diagonal row and between pieces 30 and 33 in another diagonal row. It is also obvious that playing piece 35 could not have been disposed between playing pieces 30 and 31 which are disposed in one orthogonal row or between playing pieces 30 and 32 in a further orthogonal row perpendicular to the one orthogonal row.

Referring now to the right-hand side of FIG. 1, I have designated various "1" playing pieces by the numerals 38, 39, 40, 41, 42, 43, 44 and 45. Playing pieces 38, 39, 40 and 41, as will be noted, are grouped to form a square. Here, the playing pieces 38, 39, 40 and 41 are disposed diagonally with respect to each other. As will be explained later, such a grouping of playing pieces forms a "crown" square and it is one of the purposes of the game to form as many crown squares as possible. It will also be noted that playing pieces 39, 42, 43 and 41 also form a crown square, playing pieces 39 and 41 being common to the first crown square. Playing pieces 41, 43, 44 and 45 form a third crown square, pieces 41 and 43 being common to the second crown square. Thus, with a total of eight main playing pieces, it is possible to form three crown squares.

There are three "C" playing pieces in the group just discussed, these being specifically designated by the reference numerals 47, 48 and 49. Piece 47 is interposed on top of and between main playing pieces 38, 39, 40 and 41. As will be fairly clear, these crown playing pieces do not drop between the main playing pieces but, as shown in FIG. 3, they extend only partly between the members 38, 39, 40 and 41. As indicated previously, these crown pieces may desirably contrast in appearance with the main playing pieces. For example, the main playing pieces may be colored marbles, the "1" and "2" playing pieces being of contrasting colors, and the crown playing pieces may be clear. The purpose of the crown pieces is to designate when a crown square has been completed so that it is possible to quickly determine how many crown squares any one player has obtained. As pointed out previously, in the arrangement shown in the right-hand side, the player possessing the "1" pieces has obtained three crown squares. Consequently, there are three crown pieces 47, 48 and 49 used to designate these crown squares.

Referring to the lower left-hand corner of the board of FIG. 1, the numerals 50, 51, 52, 53, 54, 55, 56 and 57 are used to designate a number of "2" pieces. It will be noted that these pieces used by the opponent of the player possessing the "1" pieces are likewise grouped into three crown squares. One of these is formed by main playing pieces 50, 51, 52 and 53, another is formed by the main playing pieces 52, 53, 54 and 55, and the third by pieces 54, 55, 56 and 57. Each of these crown squares has on top of it a crown piece, these crown pieces being designated by the reference numerals 58, 59 and 60. Both of the two players have an equal number of crown squares. Both also use eight of their 12 playing pieces in forming these crown squares. As previously referred to, there are also shown on the board four additional "1" playing pieces 30, 31, 32 and 33. These playing pieces are placed in alternate playing spaces in orthogonal rows at the four corners of a square. As a result, it is possible for playing piece 35 to be between the four pieces 30, 31, 32 and 33. The pieces 30-33 are arranged in what is termed a "captive" square. The piece 35 disposed between them, it will be noted, is a "2" piece. This piece 35 disposed between the pieces 30—33 is thus captured by the player possessing the "1" pieces and is then removed from the board. In addition to the "2" pieces previously named, there are also three further "2" pieces designated by the reference numerals 62, 63, and 64. Thus, including captured piece 35, there are twelve "2" pieces shown on the board.

As previously noted, the purpose of the game is to "square out" by forming all of the main playing pieces into crown squares. The game can also be won by capturing all but a designated number, for example, five, of the opponent's marbles by enclosing them in captive squares. The game is initially started by placing the marbles on the board one at a time, each player taking a turn. Once the marbles are on the board, they can be moved in any direction and any distance. Each player is attempting to move his pieces so that he can either form as many crown squares as possible or capture as many of his opponent's pieces as possible. The game requires considerable skill and strategy is very important in determining the outcome. For example, if one is able to capture all but six of the opponent's pieces and is not able to capture any more, the opponent has only six left to arrange in crown squares. Thus, the capturing of an opponent's piece may actually give him an advantage. Similarly, if any one player finds himself in a situation where by getting rid of one playing piece, he could arrange all of the rest of the pieces into crown squares and if the opponent's pieces are grouped so as to present a capture square, the player may drop his existing piece into his opponent's capture square and have it removed from the game. It will be obvious that much of the strategy centers around blocking an opponent from forming crown squares without being captured. In any event, as pointed out above, the game is finally terminated by one player either capturing all but five of the opponent's pieces or by getting all of his pieces, not captured by the opponent, arranged in crown squares. In order for a player to win by grouping his pieces into crown squares, he must complete at least two crown squares. This requires a minimum of six playing pieces, It is for this reason that when a player has lost all but five of his playing pieces, he automatically loses the game.

In the drawing, the crown pieces are shown as marbles of the same size as the main playing pieces. They are preferably, as pointed out above, of a different color to contrast in appearance. The crown pieces may, however, be larger or smaller than the main playing pieces. It is preferable that these crown pieces be of a size such that they will not drop down between the playing pieces. Where the playing pieces are all spherical, this condition results when the crown pieces have a diameter substantially more than $(\sqrt{2}-1)d$, where d is the diameter of the main playing pieces. The diagram of FIG. **6** shows why this condition is true. For illustrative purposes, it is assumed that the four playing pieces depicted therein are playing pieces **38, 39, 40** and **41** shown in FIG. **1.** The letter "*b*" is used to designate the distance between the pieces **39** and **40** when measured along a line extending between the centers of the two pieces **39** and **40.** It will be obvious that this distance is the same as the distance between pieces **38** and **41** measured along a line between the centers of those pieces. In order for a crown piece not to drop down between the playing pieces **38, 39, 40** and **41,** it must be of a diameter in excess of the distance *b*. The value of distance *b* with respect to the diameter varies somewhat depending upon the diameter of the posts **11.** The figure given above, $(\sqrt{2}-1)d$, is the value of *b* when the posts are infinitesimally small in diameter. Under these conditions, the distance between the points of engagement of playing piece **39** with posts **72** and **73** would be equal to the distance between the centers of posts **72** and **73,** and hence also between the centers of posts **73** and **74.** This distance is equal to $d \cos 45°$ where *d* is the diameter of the playing pieces **38, 39, 40** and **41.** The distance a represents the distance between a vertical line drawn between the points of contact of playing piece **39** with pins **71** and **73** and the edge of the sphere along the line extending between the centers of spheres **39** and **40.** This distance a is the difference between the radius of the sphere and $\frac{1}{2} d \cos 45°$ ($r \cos 45°$, where *r* is the radius of the sphere). The distance *b*, assuming the pins **72, 73** and **71** to be infinitesimal in diameter, is determined by subtracting from the distance between any two pins ($d \cos 45°$) twice the value of *a*. In other words, this distance becomes:

$$d \cos 45° - 2(r - r \cos 45°).$$

The cosine of 45° is $1/\sqrt{2}$. Thus, one gets the following equation:

$$b = d\ 1/\sqrt{2} - 2r + 2r\ 1/\sqrt{2}.$$

From this can be derived the following equations:

$$b = 2d\ 1/\sqrt{2} - d$$

$$b = d(2/\sqrt{2} - 1)$$

$$b = d\ (\sqrt{2} - 1)$$

As stated above, the value of *b* determined in this way is actually the value when the pins **11** have an infinitesimal diameter. As the diameter increases, the distance *b* between the points of contact of the sphere with adjacent pins becomes increasingly less than the distance between the centers of the pins. Hence, the figure derived above for *b* becomes increasingly less than the actual minimum value necessary. It will be apparent from FIG. **6** that the distance *b* with pins of the size shown in FIG. **6** begins to approach the distance between the points of contact with pins **72** and **73** of a sphere placed between pins **70–74.** Under these conditions, the distance *b* would be $d \cos 45°$, or $.707d$.

In any event, it is obvious that the crown sphere can be substantially less than the diameters of the main playing pieces but should never be as small as $(\sqrt{2}-1)d$, where *d* is the diameter of the main playing pieces, if the crown piece is to rest on the playing pieces of the crown square. Of course, if the game is played so that the crown piece, instead of resting on top of the playing pieces, is placed between them there is no such lower limit to the diameter of the crown pieces. It will furthermore be obvious that the diameter of the crown piece may be in excess of twice the diameter of the playing pieces.

It will be seen that the game tests the ingenuity of the players. There are several features that contribute to its fascination. In the first place, the use of two different types of squares, one the crown square which is the goal of the game and the other, the capture square which is used to capture the opponent's pieces. Another feature is the fact that any piece can move through any distance and in any direction. This can result in the game changing rather rapidly. Another factor that is of help is the fact that a player need not play all of his pieces so long as he gets them into "crown" squares. Thus, it may be to his advantage to actually surrender certain pieces. For the same reason, while capturing enough of the opponent's pieces will win the game, capturing a lesser number may actually help the

opponent because he does not have as many pieces to place in crown squares.

As noted above, the pieces used to indicate crown squares may take any of various forms. These crown pieces may be spheres of the same color and size as the playing pieces; they may be of the same size but of contrasting color with respect to the main playing pieces; and they may be nothing more than markers which go on top of the main playing pieces and remain in position. For example, these pieces could be sculptured so that their lower portions conform exactly with the space between the four playing pieces of a crown square. While I have shown the playing areas as defined by pegs and while I have found this method to have definite advantages, it is still possible to provide the recesses by actual depressions in the playing board. If flat playing pieces were to be used, the playing area could be simply defined by lines drawn along the board as in checkers. The difference in such case between the board of the present invention and the board in checkers would be that in checkers, the playing pieces do not extend outside the playing areas. Thus, in checkers, two playing pieces can be disposed in adjacent playing areas without obstructing each other. In general, while I have shown a specific embodiment of my invention, it is to be understood that this is for purposes of illustration only and my invention is limited solely by the appended claims.

I claim as my invention:

1. In a game including a game board and a plurality of playing pieces which are movable thereon to various positions,

a plurality of playing pieces of uniform size including at least two groups of playing pieces of contrasting appearance,

a game board having a plurality of playing recesses of uniform size each defined by at least three playing piece contacting surfaces equally spaced from the center point of the recess, said recesses being arranged uniformly in first rows with any playing recess in any one of said first rows adjacent to and coextensive with playing recesses in adjacent rows so that said playing recesses are also disposed in a second set of rows perpendicular to said first rows and in third and fourth diagonal rows disposed diagonally with respect to said first and second rows, the spacing between the centers of said playing recesses being greater along said diagonal rows than along said first or second rows, and

said playing recesses and said playing pieces being of such relative size and shape that playing pieces when placed in the recesses are centered therein by engagement with said contacting surfaces and when so centered can be placed in adjacent playing recesses without obstructing each other only along said diagonal rows so that said playing pieces can be grouped into diagonal squares with each playing piece in a diagonal corner of a square.

2. The game of claim **1** in which the playing recesses are symmetrical in cross section about any line drawn through the center of the recess in the plane in which the cross section is taken.

3. The game of claim **1** in which each playing recess is defined by four posts arranged at the four corners of a square, the distance between adjacent posts being less than the maximum transverse dimension of the playing pieces and the distance between diagonally opposite posts in any square being at least as great as the maximum transverse dimension of the playing pieces.

4. The game of claim **1** in which said two groups of playing pieces are main playing pieces and in which there is a third group of playing pieces contrasting in appearance with the main playing pieces and acting as crown pieces, said crown pieces being of such a size and shape that they can be placed between and retained by any four of said main playing pieces when the latter are grouped into a diagonal square.

5. The game of claim **4** in which each playing recess is defined by four posts arranged at the four corners of a square and in which the main playing pieces are of circular cross section with a diameter greater than the distance between adjacent posts but not greater than the distance between diagonally opposite posts in any one square.

6. The game of claim **4** in which said main playing pieces are of circular cross section with a diameter greater than the spacing between the centers of said recesses along said first or second rows but less than the spacing between said centers along diagonal rows and in which said crown pieces, when retained between four of said main playing pieces when the latter are disposed in four diagonally adjacent recesses, acting to crown the square formed by said four main playing pieces.

7. The game of claim **6** in which the main playing pieces and the crown pieces are both spheres.

8. The game of claim **7** in which the diameter of the main playing pieces is substantially equal to the distance between diagonally opposite posts, and in which the crown pieces have a diameter not less than $(\sqrt{2}-1)d$, where d is the diameter of the main playing pieces.

9. The game of claim **7** in which the crown pieces are of the same diameter as that of the main playing pieces.

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