

[54] **THREE-DIMENSIONAL BOARD GAME APPARATUS**

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273/136 D, 273/136 G, 273/136 K

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[58] Field of Search ... 273/130, 131, 132, 133, 134,
273/135, 136; 350/103

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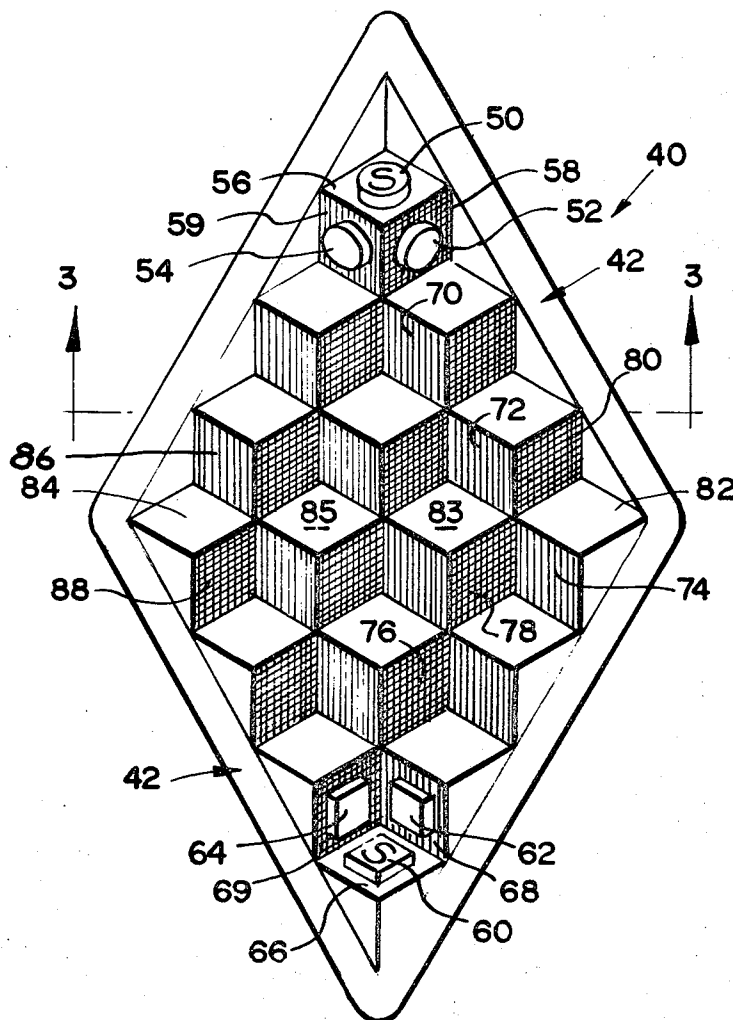
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[57] **ABSTRACT**

A game of skill including a three-dimensional playing board and opposing playing pieces adapted to be moved according to predetermined rules on said playing board to achieve a winning objective. The board is generally diamond shaped and includes three groups of square playing spaces, the playing spaces of each group having surfaces located in parallel planes perpendicular to the planes of the playing spaces of the other two groups. Each playing space is joined to at least a playing space of each of the other groups at two of its edges to form a multiplicity of cube corners. The game pieces and game board cooperate to hold the game pieces in playing spaces regardless of the orientation thereof.

23 Claims, 4 Drawing Figures



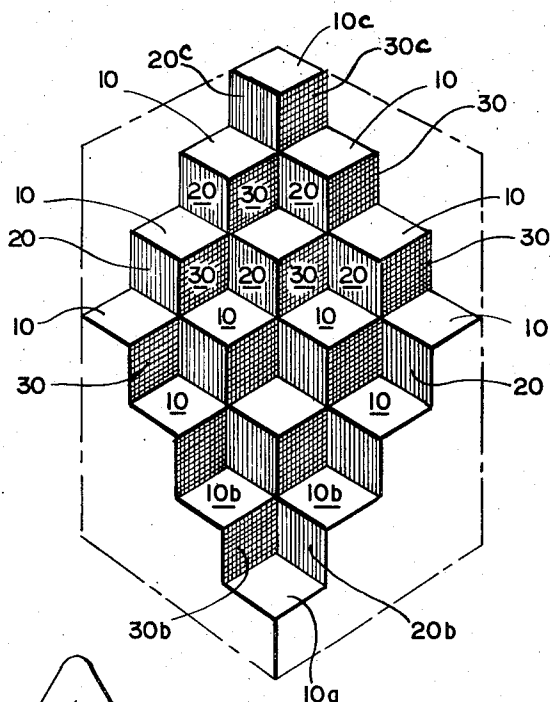


FIG. 1

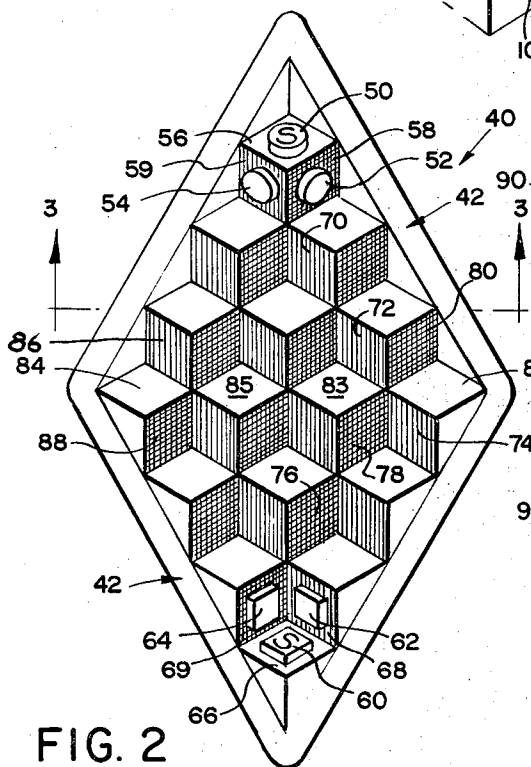


FIG. 2

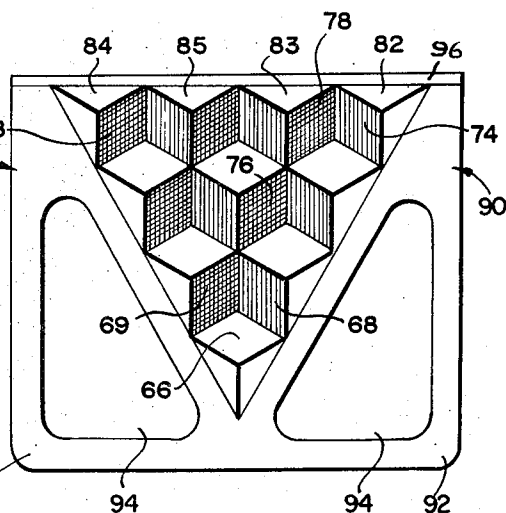


FIG. 4

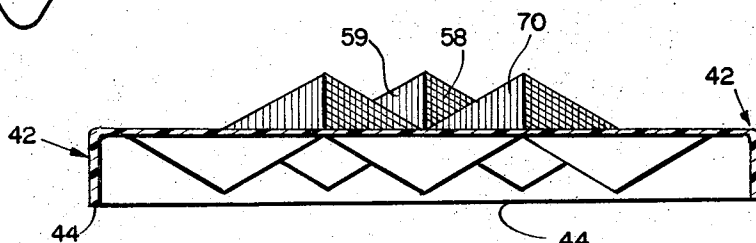


FIG. 3

THREE-DIMENSIONAL BOARD GAME APPARATUS

BACKGROUND OF THE INVENTION

The present invention is concerned with a game of skill such as checkers or chess, in which opposing game pieces are moved according to predetermined rules with respect to playing spaces on a "game board." The complexity, skill, challenge and variations in strategy of such games depend upon the number of game pieces and the rules governing their movements relative to the "board" on which the game is played as well as the relationship of each piece to every other piece. The complexity, challenge and strategy considerations of such games are considerably increased by adding a third dimensional relationship or consideration to a game involving sets of game pieces each movable into two dimensions, e.g., three-dimensional tic-tac-toe, checkers, chess, etc. in which the "game board" or structure on which the game pieces are played comprises a plurality of two-dimensional areas having playing spaces and in each of which each player controls the movement of a separate set of game pieces.

SUMMARY OF THE INVENTION

Objects of the present invention are: to provide a game of the type described in which each player has a single set of game pieces and each game piece is movable in three dimensions; to provide a three-dimensional game board that is simple, easy and inexpensive to construct, yet, in combination with a very few game pieces, provides a game of skill having numerous variations and degrees of complexity of strategy limited only by the imagination and innovativeness of the players in devising the rules of play; and to provide a three-dimensional game in which the playing "board" or structure can be formed of sheet material; in which the number of playing spaces can be varied; in which the number of playing pieces per player is as few as two or three depending upon the rules and number of players; and which can be played by two, three or four players simultaneously depending upon the number of sets of game pieces and the rules governing play.

These and other objects of the invention are realized in a game utilizing a novel game board similar to a chess board in that it is composed of square, contiguous playing spaces, but differing in a novel and unobvious way which adds to the complexity and interest of the game, by virtue of the fact that each playing space is adjoined by two mutually perpendicular playing spaces cooperating therewith to form a cube corner. Thus the playing "board" or surface is composed of a multiplicity of cube corners combined to form a generally diamond-shaped structure adapted to be formed of sheet material and supported on a horizontal surface with the playing spaces nominally disposed in three mutually perpendicular planes each at an angle relative to the horizontal playing surface. The game base formed, for example, of a ferromagnetic material (sheet steel) is designed to cooperate with the game pieces, which in the same example include magnets for retaining the game pieces in the playing spaces regardless of the orientation of the surfaces of the playing spaces.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the apparatus possessing the construction, combination of elements and arrangement of parts which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing wherein:

FIG. 1 is a perspective view illustrating the form and development of the game board of the invention;

FIG. 2 is a plan view of a game board embodying the invention;

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

FIG. 4 is a plan view, similar to FIG. 2, showing another embodiment of the game board of the invention.

Reference is now made to FIG. 1 of the drawing wherein there is shown an assembly of three-dimensional parallelepipeds illustrating the configuration of the three-dimensional playing surface of the game board of the invention. While the structure shown in FIG. 1 can be employed as a component of and in playing the game of the invention, it is shown for the primary purpose of facilitating understanding of the development and shape of the three-dimensional playing "surface" rather than the preferred structure which is illustrated in FIGS. 2 and 3. The playing surface illustrated in FIG. 1 is composed of a multiplicity of square surfaces termed "playing spaces" divided into three groups with the surfaces of the playing spaces of each group located in a plurality of sub-groups disposed in parallel planes perpendicular to the planes of the surfaces of the other two groups. Nominally, the planes may be horizontal and vertical with each square playing space of any group being joined at at least two edges by playing spaces of the other two groups to form a multiplicity of cube corners, i.e., three sides of a cube. For the purpose of description and to facilitate understanding, the surfaces of one group are shown as horizontal and the surfaces of the other two groups vertical, one facing left and the other right.

As will be seen from FIG. 1, the playing surface is generally diamond shaped having a horizontal playing space at each corner with the maximum number of horizontal playing spaces in the two longest (corner-to-corner) rows being equal. Thus, the playing board shown for purposes of illustration may be described as a 4×4 board containing 16 4×4 playing spaces of one group and 12 (3×4) playing spaces of each of the other two groups. Although the 4×4 board is preferred for one version of the game contemplated to be played on the board, a 3×3 board could be employed and would contain about the minimum number of playing spaces, i.e., 21, that would provide an interesting and challenging game for two players. Of course, the board size, in terms of playing spaces, can be increased substantially and this may prove necessary when more than two persons are to play. The minimum size will depend upon the number of playing pieces and the rules governing their movement as will appear hereinafter.

For the purposes of description, the horizontal-appearing playing spaces are designated 10, the left-facing vertical appearing playing spaces are designated 20 and the right-facing spaces are designated 30. In FIG. 2, the playing spaces corresponding to spaces 10

are shown as being white, spaces 20 as grey and spaces 30 as black. The number of playing spaces 10 is equal to n^2 where n is an integer, e.g., 4, as shown, while there are $n(n-1)$ of each of playing spaces 20 and 30 so that the total number of playing spaces is equal to $3n^2-2n$.

The game surface illustrated in FIG. 1 can be formed in a number of ways, for example, of a multiplicity of parallelepipeds each having a square cross section and a length which is a multiple of a side of the square. Thus horizontal playing space designated 10a is the upper surface of a cube while spaces 10b are upper surfaces of parallelepipeds two squares high and spaces 20b and 30b are each a square portion of a side of the last mentioned parallelepipeds. Similarly, for example, playing spaces 10c, 20c and 30c are the upper surface and square portions of two side vertical surfaces, respectively, of a parallelepiped seven squares (or cubes) high.

The preferred form of playing board is adapted, for the sake of convenience, to be supported on a horizontal surface such as a table and is illustrated in FIGS. 2 and 3. The playing board, designated 40, is designed to be fabricated of sheet material by conventional processes such as pressed sheet metal or an artificial plastic formed, for example, by conventional vacuum forming or molding techniques. The actual playing surface of board 40 is substantially the same as that shown in FIG. 1 and comprises three sets of square playing areas shown as white, grey and black, with planar surfaces lying in parallel planes, each adjoined at two edges by mutually perpendicular playing surfaces of two other sets. As previously noted, the playing spaces combine to form a game surface comprising a multiplicity of internal and external, contiguous cube corners. Board 40 is generally diamond shaped with the playing surfaces or areas surrounded by a skirt 42 terminating in an edge 44 lying in a plane and adapted to support the individual playing space surfaces disposed at an angle with respect to the plane of edge 44.

Another embodiment of the game board of the invention is illustrated in FIG. 4 which shows one half of the board, the playing surface of which is substantially the same as that shown in FIG. 2. The board is divided along a line or plane intersecting the playing surface at the corners of cube faces 82, 83, 85 and 84 so that the two halves of the playing surface can be pivoted about the dividing line into superposed, face-to-face relation. The board is rectangular and includes a peripheral section generally designated 90 having a dependent skirt (not shown) with a lower edge or surface similar to edge 44 located substantially in a plane for supporting the board on a plane surface. The peripheral section includes four corner portions designated 92 formed with triangular recesses 94 for holding game pieces.

The two halves of the board are preferably pivotally connected to one another by conventional hinge means, e.g., a flexible strip of material 96, permitting the halves to be pivoted into a closed or folded position in which the playing surfaces as well as the upper surfaces of the peripheral sections of the two halves are disposed in face-to-face, contiguous relation. In this closed or folded position, the board is not only substantially smaller and compact, but the recesses 94 cooperate to form containers or compartments for holding and carrying the playing pieces. Suitable latch means

(not shown) of a conventional type may be provided for retaining the two halves in the folded position.

In the form shown, the game includes and is adapted to be played with at least two sets of playing pieces by two opposing players. Each set includes three playing pieces, the pieces of one set being shown as circular discs designated 50, 52 and 54 and the pieces of the other set being shown as square discs designated 60, 62 and 64. Of course, the playing pieces of each set may be distinguished from one another and from the pieces of another set by any number of conventional means in addition to shape, such as size, color, and/or indicia, etc; or by other means which will be described hereinafter. Distinguishing the individual pieces of a set enables the players to prescribe rules for the movement of each piece as well as its relationship to all other pieces.

The board and playing pieces include mutually cooperative means of a conventional type for retaining the playing pieces in place within playing spaces. For example, the board may be formed of a ferromagnetic material (i.e. steel) and each playing piece may incorporate a magnet. In the case of a plastic or nonferrous board, each playing space may be formed with a hole or recess for receiving a projection on the underside of each playing piece. Other well known attachment or fastening means may also be employed and are considered to fall within the scope of the invention.

In a typical two player game illustrated, each player has three playing pieces initially arranged as shown, with pieces 50 and 60, each designated with the letter "S," disposed in playing spaces 56 and 66, respectively, located at opposite ends of the board. The object of the game is to move pieces 50 and 60 to the space (56 or 66) initially occupied by the opponent's piece at the opposite end of the board, the player first to arrive being the winner. It will be noted that pieces 52 and 54 are located in spaces 58 and 59 adjoining space 56 on two sides and pieces 62 and 64 are similarly located in spaces 68 and 69 adjoining space 66.

The rules for movement of the playing pieces and their relationship to one another may be similar to checkers or chess. For example, pieces 50 and 60 can be moved in any direction, one space at a time, and can "take" or capture an opponent's piece by moving into the playing space occupied by the latter, but should not be moved into or remain in a playing space where it may be "taken" or captured. According to a typical set of rules, pieces 52 and 62 may be moved in any direction, one space at a time, around an edge or corner to any adjoining space; and pieces 54 and 64 can be moved in the same manner as pieces 52 and 62, or as far as desired in any single plane. For example, piece 54 can be shifted or moved in a plane from space 59 to any of spaces 70, 72 or 74 in a single move. Similarly, piece 64 can be moved in the same manner, for example, from space 69 to any of spaces 76, 78 or 80 in a single move. Pieces 54 and 64 can also be shifted in one direction as far as desired in the planes which run from left to right (as viewed in FIG. 2), e.g., if piece 54 or 64 were located in space 82, it could be moved to either of spaces 83, 85 and 84. The number of spaces that pieces 54 or 64 can be moved at one time in the above-described planes is limited when an opponent's piece occupies one of the spaces in the plane in which piece 54 or 64 is located. For example, if an opponent's piece were located in playing space 72, piece 54, as shown in

FIG. 2, could only move two spaces in the plane containing playing spaces 59, 70, 72 and 74 and then would have to stop in playing space 72 to capture the opponent's piece.

It will be apparent that the rules governing the movement of each piece, such as whether it can be advanced in only one direction, e.g., toward the goal, or moved in any direction or plane, the number of spaces it can be advanced during each move, etc.; and the relationship between pieces, such as whether they can take opponent's pieces, block or jump over other pieces, etc., are almost infinitely variable and can vastly affect the strategy and complexity of the game. Additional pieces may be added to each set with particular rules governing their moves and relationships. For example, a game similar to so-called "Chinese Checkers" may be played in which the object is to move all of one's pieces into the playing spaces originally occupied by the opponent's pieces. Here again, the three-dimensional configuration of the playing surface heightens the complexity of the game as well as the skill required and the interest generated.

As previously noted, if the board includes a sufficient number of playing spaces, e.g., 96 spaces for a 6 × 6 board, essentially the same game can be played by three persons, the third set of pieces being arranged at a third corner in spaces 74, 80 and 82, for example, with the winning objective being to be the first to move the piece initially occupying each of spaces 56, 66 and 82 into the fourth corner space 84. When a fourth person is playing, his pieces are similarly arranged in spaces 84, 86 and 88 and the object of the game may be for each player to be first to move his corner piece (designated "S") into another corner space.

It will be seen that, with the novel, yet relatively simple, three-dimensional playing board of the invention and a relatively few playing pieces, it is possible to create a complex and challenging game involving an almost infinite variety and number of strategies and game objectives. The variations and complexities of the games which can be played are limited only by the imaginations of the players insofar as they determine the rules of the play. Not only are the game variations almost literally boundless, but more than two persons can play at the same time, further adding to the game complexity and interest and challenge to the players.

Since certain changes may be made in the above apparatus without departing from the scope of the invention herein involved, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A three-dimensional game comprising, in combination:

two sets of game pieces each including a plurality of pieces individually distinguishable from one another and said pieces of said other set;

a game board having a three-dimensional playing surface including three groups of substantially square playing spaces, each group of said playing spaces comprising a plurality of sub-groups, each of said sub-groups lying in one of a plurality of substantially parallel planes, each of said plurality of parallel planes of each group being substantially perpendicular to each of the pluralities of parallel planes of the other two groups, said playing spaces of each

of said sub-groups each having at least a marginal surface portion located substantially in a common plane so that each of said playing spaces includes at least two linear edges joined to the linear edges of adjacent playing spaces belonging to the other two groups to form said playing surface; and means for retaining each of said game pieces within a playing space regardless of the orientation of said plane thereof.

2. A three-dimensional game as described in claim 1 wherein the surfaces of said playing spaces are generally planar and at least two of said surfaces of each of said groups are disposed in spaced substantially parallel planes.

3. A three-dimensional game as described in claim 2 wherein said surface of each of said playing spaces of one of said groups joins said surfaces of said playing spaces of said other groups at at least two edges to form a plurality of cube corners.

4. A three-dimensional game as described in claim 3 wherein said game board is formed of a sheet material.

5. A three-dimensional game as described in claim 1 wherein said game board includes means adapted to support said game board on a substantially horizontal surface with all of said surfaces of said playing spaces disposed at an acute angle with respect to said horizontal supporting surface.

6. A three-dimensional game comprising, in combination:

two sets of game pieces each including a plurality of pieces individually distinguishable from one another and said pieces of said other set;

a game board having a three-dimensional playing surface including three groups of substantially square playing spaces each having at least a marginal surface portion located substantially in a plane, said planes of each of said groups of spaces being substantially perpendicular to said planes of the other two groups so that each of said playing spaces includes at least two linear edges joined to the linear edges of adjacent playing spaces belonging to the other two groups to form said playing surface, said playing surface being generally diamond shaped and including a playing space of one of said groups at each of the four corners thereof; and

means for retaining each of said game pieces within a playing space regardless of the orientation of said plane thereof.

7. A three-dimensional game as defined in claim 6 wherein said game board is divided into two sections along a plane through the corners of said playing spaces of said one group including said spaces at opposite corners of said playing surface.

8. A three-dimensional game as defined in claim 7 wherein said sections are connected for pivotal movement into a folded position in which the two sections of said playing surface are in superposed, face-to-face relation.

9. A three-dimensional game as defined in claim 6 wherein said one group is composed of n^2 playing spaces and each of said other groups is composed of $n(n-1)$ playing spaces.

10. A three-dimensional game as defined in claim 9 wherein n equals at least four.

11. A three-dimensional game as defined in claim 6 wherein said playing spaces have substantially planar

surfaces and said surfaces of each of said groups are disposed in substantially parallel planes perpendicular to said planes of said playing spaces of the other two groups.

12. A three-dimensional game as defined in claim 6 wherein said game board is formed of a sheet material.

13. A three-dimensional game board as defined in claim 6 wherein said retaining means includes at least a portion of said game board formed of a ferromagnetic material and each of said game pieces including a magnet.

14. A three-dimensional game as defined in claim 12 wherein each of said playing spaces has a substantially planar surface intersecting the surfaces of adjoining playing spaces at substantially right angles thereto.

15. A three-dimensional game as defined in claim 14 wherein said game board includes means for supporting said board on a substantially horizontal surface with all of said surfaces of said playing spaces disposed at an angle with respect to said horizontal supporting surface.

16. A three-dimensional game as defined in claim 15 wherein the last-mentioned means include a border surrounding said playing surface and having a dependent skirt for supporting said board.

17. A three-dimensional game as defined in claim 16 wherein said border is rectangular.

18. A three-dimensional game as defined in claim 17 wherein said border includes corner portions formed with recesses for holding said game pieces.

19. A three-dimensional game as defined in claim 18

wherein said board is divided into two sections along a plane through corners of said playing spaces of said one group including said spaces at opposite corners of said playing surface, and said sections are pivotally connected to one another for movement into a folded position in which the two sections of said playing surface and the surface of said border are in face-to-face relation and said recessed corner portions cooperate to form at least one container for said game pieces.

20. A three-dimensional game board adapted for use with a plurality of game pieces, said game board having a generally diamond shape and comprising three groups of substantially square playing spaces, said playing spaces of each of said groups having surfaces arranged in substantially parallel planes perpendicular to said planes of said playing spaces of the other two groups; each of said playing spaces being joined along at least two edges to said playing spaces of said other two groups to form a multiplicity of cube corners; and each of said playing spaces including means adapted to cooperate with a game piece for retaining it within the playing space.

21. A three-dimensional game board as defined in claim 20 wherein playing spaces of one of said groups are located near the extremities of said board.

22. A three-dimensional game board as defined in claim 21 wherein said one group is composed of n^2 playing spaces and the other two groups are each composed of $n(n-1)$ playing spaces.

23. A three-dimensional game board as defined in claim 22 wherein n equals at least four.

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