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- (71) **Applicant (for all designated States except US):** INNOVENTION TOYS, L.L.C. [US/US]; 3500 Inwood Avenue, New Orleans, Louisiana 70131 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** HOOPER, Luke, Jackson [US/US]; 2916 Castlewood Drive, Norman, Oklahoma 73072 (US). SEGURA, Del, Alan [US/US]; 25441

Rearwood Court, Denham Springs, Louisiana 70726 (US). LARSON, Michael, Charles [US/US]; 3500 Inwood Avenue, New Orleans, Louisiana 70131 (US).

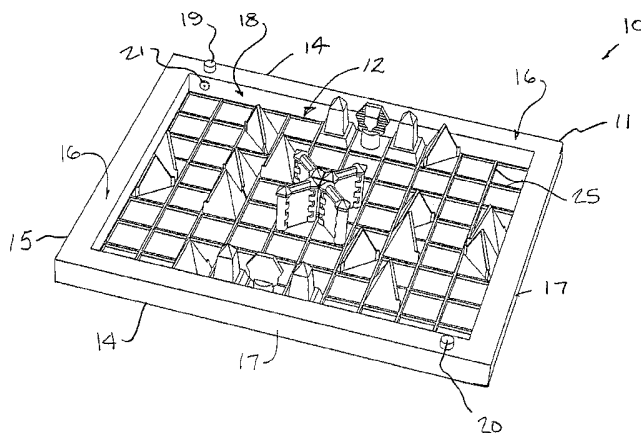
(74) **Agent:** LANDO, Peter C.; Lowrie, Lando & Anastasi, LLP, One Main Street, Cambridge, Massachusetts 02142 (US).

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[Continued on next page]

(54) **Title:** LIGHT-REFLECTING BOARD GAME



(57) **Abstract:** A board-type game to be played by two or more players. The game includes lasers where players selectively divert the path of the laser beams. The board apparatus comprises a surface, bounded by a frame, over which laser beams are directed down symbolic rows and columns which constitute a matrix of squares. Each square is a subregion of the surface piece, and is bounded along its four sides by raised edges which are parallel and perpendicular rows and columns of the board. The raised edges, creating recessed squares, assist in orienting the playing pieces. Playing pieces may contain no mirror, one mirror, or two mirrors (oriented back-to-back to produce separate surfaces reflecting in opposite directions). Playing pieces are placed in a predetermined "starting" configuration on the squares of the gridded surface piece. Depending on whether a playing piece contains a mirror or not, said piece may reflect an incident laser beam from a row to a column or from a column to a row. A laser is placed in a predetermined position, in front of each player. The players alternate in moving pieces from square to square or rotating pieces in place, on the gridded surface, with the object of either directing their laser beam toward the opponent's "key" piece or preventing their opponent's laser beam from reaching their own "key" piece.



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TITLE OF THE INVENTION

“Light-Reflecting Board Game”

5 INVENTORS: HOOPER, Luke, Jackson, a US citizen, of 2916 Castlewood Drive,  
Norman, OK 73072, US;  
SEGURA, Del, Alan, a US citizen, of 25441 Rearwood Court, Denham  
Springs, LA 70726, US; and  
LARSON, Michael, Charles, a US citizen, of 3500 Inwood Avenue,  
10 New Orleans, LA 70131, US.

ASSIGNEE: DEFLEXION, L.L.C. (a Louisiana, US, limited liability company), of  
3500 Inwood Ave, New Orleans, LA 70131, US

CROSS REFERENCES TO RELATED APPLICATIONS

Our US Provisional Patent Application No. 60/652,533, filed 14 February 2005,  
15 our US Provisional Patent Application No. 60/679,821, filed 11 May 2005, and our US  
Patent Application No. 11/\_\_\_\_\_, filed 13 February 2006, are incorporated herein  
by reference. Priority of those applications is hereby claimed.

In the US, this is a continuation of our US Patent Application No.  
11/\_\_\_\_\_, filed 13 February 2006.

20 STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR  
DEVELOPMENT

Not Applicable.

REFERENCE TO A "MICROFICHE APPENDIX"

Not Applicable.

25 BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to board type games played on a game board or  
surface, preferably a substantially orthogonally gridded, planar surface, and more  
particularly to a game which selectively diverts a beam (e.g. laser beam) by user-placed  
30 mirrored game pieces that are moved laterally or rotated during play.

2. Description of the Related Art

Many board games have been provided which use paths across their surface as

part of the game. An example of such a game is chess. In addition, games exist that depend on the deflection or reflection of objects off of other objects to "score" points.

The following US Patents are examples of board games, each hereby incorporated herein by reference: US Pat. No. 3,516,671; US Pat. No. 5,145,182; and US Pat. No. 6,702,286.

US Pat. No. 3,516,671 (the '671 patent) describes a board game that combines the features of the players creating paths and deflection of the paths. The '671 patent shows a board game, having a matrix comprised of rows and columns, and an energy source, which is electricity in the preferred embodiment, that can be selectively positioned to direct energy along a selected column, thereby creating an energy path. The energy path may be diverted to a row and then back to a column by deflecting pieces. The deflecting pieces may be small mirrors. However, the '671 patent does not contemplate a plurality of styles for pieces, directing energy toward a mobile game piece of an opponent, nor the unique elements and rules of the instant invention.

US Pat. No. 5,145,182 (the '182 patent) describes a board game that combines the features of the players creating paths with laser beams and deflection of the laser beam paths. The '182 patent shows a board game, having a matrix comprised of rows and columns, multiple laser beams that can be selectively directed along a selected row or column, thereby creating a laser beam path. The energy path may be diverted to a row and then back to a column by selectively-placed deflecting pieces. The deflecting pieces may be small mirrors. The object of each player is to direct their laser beams toward the opponent's light-detecting scoring module while preventing the opponent's laser beams from reaching their own scoring module. The '182 patent does not contemplate providing a separate single beam for each player, instead of multiple lasers per player. The '182 patent also does not contemplate a game played without a light-detecting scoring module. Importantly, the '182 patent does not describe a game wherein players begin the game with playing pieces placed in a predetermined "starting" configuration on the playing surface, or wherein players take turns moving said pieces on the surface to change their position or orientation; instead, the '182 patent contemplates turn-by-turn *addition* of playing pieces to the game board.

US Pat. No. 6,702,286 (the '286 patent) describes a war strategy board game that combines the features of player-initiated playing piece movement with illumination of

the playing grid. The '286 patent describes illumination of radial and latitudinal paths adjacent to playing pieces, said illumination provided by electric circuitry and lights. The stated purpose for illumination is to help players know when two pieces are flanking (thus surrounding, and capturing) an opposing piece. The '286 patent does not  
5 contemplate using a beam to illuminate playing pieces or mirrors to deflect light and thereby illuminate playing pieces. The '286 patent contemplates a game in which the object is to maneuver one's pieces to flank (or surround) those of the opposing player.

Strategy games may differ in a variety of ways. For example, the boards may contain different layouts or fields of positions. Each player may have the same or a  
10 different number of playing pieces. Each player may have the same or different kinds of playing pieces with superior strengths or capabilities. Playing pieces may be placed on the board at the start of the game or throughout the game. The playing pieces may move in a wide variety of ways on their respective boards. Players may capture the opposing pieces by moving their pieces to jump, surround, occupy the same position as,  
15 or otherwise affect the opposing pieces. Some games are limited to two players, while others allow two or more players. Each of these variations affects the strategy of play and the degree of skill required to play the game against a knowledgeable opponent.

Game designs should produce a balance between opposing players or sides. Neither player should have a significant advantage over the other simply based on which  
20 side or set of pieces they are playing, or who moves first. The combination of board size and geometry, the types and number of playing pieces, the layout of the interconnecting playable positions, the manner each piece moves on the board, the manner of capture and the number of allowable players should all be taken into consideration when designing a strategy game.

Game designs should involve a desired degree of skill and variation of possible  
25 moves and outcomes. They should reward strategy and thought. If the board layout, types and number of pieces, rules of movements, rules of capture and criterion for completion are overly simplistic, the game is too easy, will usually end in a draw or a predictable manner, and quickly become uninteresting for the average player. An  
30 example is "tic-tac-toe," which (although often played with pen and paper, could also be played on a board) usually ends in a draw. Conversely, if the board size and layout, number and kinds of pieces, and rules of movement and capture are overly complicated,

the game takes too long to learn is frustrating and uninteresting for the average player.

The following US Patent Documents are each hereby incorporated herein by reference: US Patent Nos.: 4,017,072; 4,182,514; 4,376,538; 6,488,583; 6,609,307; US Patent Publication No. 2004/0080107.

5 BRIEF SUMMARY OF THE INVENTION

The present invention is a game that employs a game board or playing surface, over which beams (e.g. laser beams) are directed in one embodiment down symbolic rows and columns that constitute a matrix of squares (each square being formed at the intersections of said rows and columns), and game playing pieces, some possessing  
10 surfaces which reflect the said laser beams.

The present invention combines the strategy of traditional board games with modern technology, for an engaging experience. The rules are simple enough to be learned in minutes, but the options during play are plentiful enough so as to be neither dull nor predictable.

15 The game of the present invention has the universal and enduring appeal of classic games, such as chess, checkers and go, in an embodiment which incorporates lasers.

The game of the present invention generates a "beam" for each player, which can be a low-powered laser diodes to emit a beam of colored light. These beams are  
20 reflected and deflected around the playing field by mirrored surfaces of pieces, or stopped by non-mirrored surfaces of pieces.

The game is won by a player who strategically maneuvers pieces to reflect a laser beam so as to illuminate a key piece belonging to his opponent, e.g., a "Pharaoh" or  
"King" piece.

25 With each turn, a player may move one of his pieces to one of the potentially eight, unoccupied adjacent squares (front, back, left, right or diagonal) or may rotate (re-orient) one of his pieces.

After moving or rotating a piece, that player presses a fire button that triggers the emission of a beam above and parallel to the playing surface. If the beam hits a non-  
30 mirrored surface of a playing piece, that piece is removed from the board and eliminated from further play, unless it is the key piece, e.g., "King" or "Pharaoh" piece, in which case the game ends.

The pieces can vary in design and setup, with mirrors being located on multiple (e.g. one, two or more) sides or no sides.

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

For a further understanding of the nature, objects, and advantages of the present invention, reference should be had to the following detailed description, read in  
5 conjunction with the following representative drawings, wherein like reference numerals denote like elements and wherein:

FIGURE 1 is a perspective view of the preferred embodiment of the apparatus of the present invention;

10 FIGURE 2 is a plan view of the preferred embodiment of the apparatus of the present invention;

FIGURE 3 is a partial perspective view of the preferred embodiment of the apparatus of the present invention showing the game board with game pieces removed;

15 FIGURE 4 is a partial perspective view of the preferred embodiment of the apparatus of the present invention showing the game board with no playing pieces and illustrating hidden electrical components and wiring;

FIGURE 5 is a bottom perspective view of the preferred embodiment of the apparatus of the present invention showing electrical game board components;

20 FIGURE 6 is a perspective view of one of the game pieces, a "key" game piece in the form of a Pharaoh playing piece having no mirrored surfaces;

FIGURE 7 is a top view of the game piece of figure 6;

FIGURE 8 is a perspective view of one of the game pieces in the form of an Obelisk playing piece having no mirrored surfaces;

FIGURE 9 is a top view of the game piece of figure 8;

25 FIGURE 10 is a perspective view of one of the game pieces in the form of a Pyramid playing piece having one mirrored surface;

FIGURE 11 is a perspective view of the game piece of figure 10 in the form of a Pyramid playing piece having one mirrored surface;

FIGURE 12 is a top view of the game piece of figures 10-11;

30 FIGURE 13 is a perspective view of one of the game pieces in the form of a Djed Column playing piece having multiple mirrored surfaces;

FIGURE 14 is a top view of the game piece of figure 13;

FIGURE 15 is a partial perspective view of the preferred embodiment of the apparatus of the present invention illustrating a lateral movement of one of the game pieces to an adjoining or adjacent square;

5 FIGURE 16 is a partial perspective view of the preferred embodiment of the apparatus of the present invention illustrating a rotating move of one of the game pieces;

FIGURE 17 is a partial perspective view of the preferred embodiment of the apparatus of the present invention illustrating a mirrored game piece reflecting a laser transmission;

10 FIGURE 18 is a partial perspective view of the preferred embodiment of the apparatus of the present invention illustrating a mirrored game piece receiving the laser beam on a non-mirrored surface;

15 FIGURE 19 is a partial plan view of the preferred embodiment of the apparatus of the present invention illustrating a transmission of the laser beam to multiple mirrored game pieces and then to a non-mirrored surface of a game piece resulting in removal of that game piece; and

FIGURE 20 is a plan view of the preferred embodiment of the apparatus of the present invention illustrating transmission of the laser to multiple mirrored game pieces and to the non-mirrored key game piece ending the game;

20 FIGURE 21 is a schematic plan view of the game board portion of the preferred embodiment of the apparatus of the present invention and illustrating each square using a column and row number.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

25 Figures 1-4 show the laser game board apparatus of the present invention, designated generally by the numeral 10. Laser game board apparatus 10 provides a game board 11 having an upper playing surface 12 and a lower surface 13. Board 11 has a periphery 14. Raised border 15 is positioned at periphery 14.

30 The raised border 15 includes a plurality of sections or flanges that can be flat or planar as shown. The raised sections includes horizontal section 16, outer vertical section 17, and inner vertical section 18. A playing area 23 is defined by a plurality of smaller areas or squares that can be recessed areas 23A, each preferably being square in shape.

There are a pair of laser activating buttons 19, 20 positioned at opposing sides of



game board 11 as shown in figures 1-2. Each of the laser activating buttons 19, 20 activates a laser. Each of two players has control of a button 19 or 20 during a game. The laser activating button 19 activates laser 21 for a first player. The laser activating button 20 operates laser 22 for a second player.

5 Each of the recessed square areas 23A is surrounded by a raised border 25 that can be square in shape as shown. The raised border 25 can be comprised of a plurality of raised elements 24.

In the bottom peripheral view of figure 5, lower section 13 of game board 11 reveals cavity 26 that is defined by the sections 16, 17, 18 of raised border 15. Cavity 10 26 provides one or more battery compartments 27. The cavity 26 can be used for containing wiring 28 that interconnects a battery (or batteries) and lasers 21, 22 so that power supplied by a battery that occupies battery compartment 27 can be used to power the lasers 21, 22.

During play, a beam 29 is selectively emitted by each laser 21, 22 when activated 15 by a player's control button 19 or 20. The laser beam 29 that is emitted by a laser 21 or 22 provides a visible indication of whether or not a particular game piece 30, 35, 40, 50 has been hit by the beam 29. An illumination appears on the particular game piece 30, 35, 40, 50 such as for example a red or orange circular illumination or dot. However, some of the game pieces (40, 50) provide mirrored surfaces so that while the beam 20 strikes the mirrored surface 45 or 55 or 56 of that particular game piece, it is also reflected toward another game piece 30, 35, 40, 50.

In figures 6 and 7, the game piece 30 is the key game piece, namely that game piece that ends the game when it is hit with beam 29. Game piece 30 provides a base 31 having a periphery 32. Vertically extending portion 33 of game piece 30 extends 25 upwardly from base 34. In the embodiment shown in figures 6 and 7, the game piece 30 is in the form of a Pharaoh. However, other forms can be used for key game piece 30 (e.g. King, Queen, etc.).

In figures 8 and 9, another game piece 30 is shown, in the form of an Obelisk. Game piece 35 has a base 36 with a periphery 37. Vertically extending portion 38 30 extends upwardly from base 36. Game piece 35 also provides a generally flat or planar underside 39. Each of the game pieces 35, 40 is non-mirrored so that if either is struck by a laser beam 29, it is removed from the game board playing area 23.

The game piece 40 shown in figures 10-12 has a base 41 with a periphery 42. The base 41 provides a flat or planar underside 43. A vertically extending portion 44 extends upwardly from base 41. The vertically extending portion 44 provides a mirrored surface 45. As shown in figure 12, the mirrored surface 45 forms an angle 46 of about 45 degrees with the sides of base 41 at periphery 42. Thus, the mirrored surface 45 falls upon a reference line 49 that extends from corner 47 to corner 48. When a laser beam 29 strikes mirrored surface 45, it will turn 90 degrees as will be illustrated more fully hereinafter.

The game piece 50 is also a mirrored game piece. Game piece 50 provides a base 51 having an underside 52 and a periphery 53. The underside 52 is preferably flat or planar. A vertically extended portion 54 of game piece 50 provides a pair of mirrored surfaces 55, 56 as shown in figures 13 and 14. Each of the mirrored surfaces 55, 56 forms an angle of about 45 degrees with any side of periphery 53.

Figures 15 and 16 illustrate the moves that are available to a particular game piece 30, 40, 45, 50. In figure 15, the game piece 50 is shown occupying one of the recessed areas 23A. Arrows 57 illustrate that game piece 50 can move to an adjacent square in an orthogonal direction while arrows 58 indicate that game piece 50 can be moved diagonally as well to an adjacent space.

In figure 16, curved arrows 59 illustrate that game piece 50 can be rotated. A rotational move is important for one of the mirrored game pieces 40, 50 in that it changes the position of the mirror 45, 55, 56 relative to the beam 29 that is emitted by either of the lasers 21, 22 (see figure 17).

Figures 1 and 2 show the game board, containing laser fire buttons 19, 20 and lasers 21, 22 having apertures. Two sets of playing pieces are shown, one can be of a dark color (e.g. gold) and one can be light in color (e.g. silver). Figures 1 and 2 shown one possible configuration to start a game. The particular configuration and combination of pieces, i.e., Pharaohs 30, Obelisks 35, Pyramids 40, and Djed columns 50, shown works very well for beginners and seasoned players, creating a challenging scenario at the onset.

The rules for moving and taking turns work well for a wide variety of starting configurations, and it is anticipated that players may begin with any starting configuration for which there is mutual agreement.

Game board 11 can consist of a playing surface 23, with a recessed grid of rows and columns, and a bounding frame or border 15. Each of the squares 23A at the intersections of the rows and columns on the board surface are recessed so as to ensure proper alignment of playing pieces. Correspondingly, the bases 31, 36, 41, 51 of the pieces 30, 35, 40, 50, which fit into the recessed squares 23A have the same shape so as to ensure proper alignment.

The raised border or frame 15 houses two laser diodes 21, 22, or any other collimated light source(s). If diodes 21, 22 are used, they will be of low power, being either class I, class II or class III lasers 21, 22. The light sources are oriented such that the beams 29 are parallel to the playing surface 23 or the floor of the game board 11 and are aligned with column 1 and column 10, as shown in figure 21. The raised border frame 15 also acts as a bounding surface to prevent the laser light beams 29 from extending beyond the boundaries of the game board, i.e., the beam 29 doesn't leave the confines of the playing surface 23.

In the preferred embodiment, the lasers 21, 22 are powered by a battery or batteries which are housed in a compartment(s) 27 in the frame cavity 26. Also contained in frame cavity 26 are the wires which make two parallel electrical connections, each making serial links between the batteries, a laser fire switch button 19, 20 and a laser diode 21, 22. The laser fire buttons switch can each be a normally open switch which activates the laser 21, 22 closest to it, for the duration the button 19, 20 is depressed. Once a button 19 or 20 is released, the laser is deactivated.

The game pieces 30, 35, 40, 50 can be made of translucent plastic so as to glow when struck by the laser beam on any non-mirrored surface.

The game piece 30 (i.e. Pharaoh or key piece), have no mirrored surfaces. The loser of the game is the first to have his or her key game piece 30 (e.g. Pharaoh) illuminated by a light beam 29, which signifies the end of a game.

The game piece 40 possesses one surface which is a mirror 45 that reflects impinging laser light. Other surfaces of the piece 40 are non-mirrored. The mirror or mirrored surface 45 is oriented perpendicular to the base 41, and along a diagonal line which passes through opposite corners 47, 48 of the base 41. This mirror 45 orientation, coupled with the square base 41 seating into a recessed square 23A of the game board 11, ensures that when the piece 40 is in any space 23A that puts

the mirrored surface in the path of a laser beam 29, the beam reflects at a right angle. This results in a change of the beam path in one of two ways, either (1) beams 29 traveling parallel to columns on the game board are reflected to be parallel to rows on the game board 11, or (2) beams 29 traveling parallel to rows are reflected to be parallel  
5 to columns. If the piece 40 is in any space that puts one of its non-mirrored surfaces in the path of a laser beam 29, the piece 40 is illuminated and removed from play at the end of a player's turn.

The double-mirrored piece 50 can be shaped as an Egyptian Djed column. The piece 50 has two surfaces 55, 56 which are mirrors to reflect impinging laser light. These  
10 mirrored surfaces 55, 56 may be totally reflective mirrors mounted back-to-back and oriented perpendicular to the base 51, and along a diagonal line which passes through opposite corners 60, 61 of the base 51 (see figure 14). The mirrored surfaces 55, 56 may be opposite sides of a single beam-splitting, partial mirror (also known as a "one-way mirror", "two-way mirror", or "beam-splitter".) This mirror surface orientation, coupled  
15 with the square base 51 seating into the recessed squares 23A of the game board 11, ensures that when the piece 50 is in any space 23A that puts it in the path of a laser beam 29, that all or part of the beam 29 reflects at a right angle. This results in a change of the beam path in one of two ways, either (1) beams 29 traveling parallel to columns are reflected to be parallel to rows, or (2) beams 29 traveling parallel to rows are reflected  
20 to be parallel to columns. When partial mirrors are used, a portion of the impinging beam will continue along its original path and will not be diverted, leading to the creation of two beams from a single light source. Since laser beams 29 impinging upon a double-mirrored Djed piece 50 will always strike a mirrored surface, these pieces are never illuminated and therefore never removed from play.

A turn can consist of a player moving one of his or her pieces 30, 35, 40, 50 to  
25 an adjacent, unoccupied square (see figure 15). One variation permits Djed Column pieces to move into adjacent squares which are occupied by either Obelisks 35 or Pyramids 40 belonging to either player. If this is done, the displaced piece is moved, retaining its rotational orientation, to the square which the Djed Column piece 50  
30 vacates.

Figure 16 illustrates that a player may rotate one of his or her pieces (such as game piece 50 shown) one-quarter turn (i.e., 90 degrees) either clockwise or counter-

clockwise (see arrows 59).

Figure 17 shows a laser beam 29 reflecting off surface 45 of game piece 40 (e.g. a Pyramid in this case).

5 Figure 18 shows a laser beam 29 terminating on a non-mirrored surface of a typical piece 40 (a Pyramid in this case). This game piece 40 would be removed from play in this illustration of figure 18.

10 Figure 19 shows a top view of the game board 11 with a possible configuration of pieces 30, 35, 40, 50 to represent a game in-progress. A heavy line represents a laser beam 29 which reflects from multiple mirrored surfaces on five pieces 50, 40, 50, 40, 50 before terminating on the non-mirrored surface of the key game piece 40 (e.g. a Pyramid), which would be removed from the game board at the end of this turn.

15 Figure 20 shows a top view of the game board 11 with a possible configuration of pieces to represent a game in-progress. The heavy line represents a laser beam 29 which reflects from four mirrored surfaces on four pieces 50, 40, 50, 40 before terminating on the non-mirrored surface of key game piece 30 (e.g. a Pharaoh). Such a situation would mark the end of the game. The player whose key game piece 30 (e.g. Pharaoh) was hit by the beam is the loser.

20 Figure 21 shows a numbering scheme for the rows and columns of the game board 11, for the purpose of aiding the description of play. While a specific composition of pieces comprising each set, along with a specific starting configuration, is discussed below, it is important to note that the pieces composing each set at the beginning of the game can be any number and combination of types agreed upon by the two contestants, as long as there is one Pharaoh (key piece) each. Likewise, at the start of a game, the pieces can be arranged in any agreed upon configuration, as long as the placements of  
25 pieces in each player's set has the same arrangement when viewed from one side of the board as the arrangement of the opponent's pieces has when viewed from the opposite side of the board. (This arrangement holds true in traditional chess, with the exception of the placement of the king and queen, which are symmetric about the chess board's  
30 of the queen, while black has the queen on the left of the king.)

Assuming the two colors used to differentiate the players' sets of pieces are gold and silver, the following table provides a guide to the starting positions for those players'

pieces. This configuration is shown in a perspective view in Figure 1 and in a top view in Figure 2. The square designations for column and rows are given in Figure 21. For this specified arrangement, the gold-player's laser fire button is the one closest to the C10R1 square, while the silver-player's button is closest to the C1R8 square.

	Play-er	Piece type	Quan-tity	Starting location specified in Figure 21 by column and row numbers. When applicable, mirror surface is toward corner designated by A, B, C or D.						
5	gold	Pharaoh	1	C5R1						
	gold	Obelisk	2	C4R1	C6R1					
	gold	Pyramid	7	C3R1	C8R2	C3R4	C10R4	C3R5	C10R5	C4R6
				D	C	D	A	A	D	D
10	gold	Djed Column	2	C5R4	C6R4					
				D	C					
	sil-ver	Pharaoh	1	C6R8						
	sil-ver	Obelisk	2	C5R8	C7R8					
15	sil-ver	Pyramid	7	C7R3	C1R4	C8R4	C1R5	C8R5	C3R7	C8R8
				B	B	C	C	B	A	B
	sil-ver	Djed Column	2	C5R5	C6R5					
				C	D					

Players alternate turns. A turn consists of a player moving one of his pieces (all the pieces move in the same way, unlike in chess where each piece type is governed by a different rule for moving) either: (1) to one of the potentially eight squares which are contiguous to the presently occupied square, forward, backward, left, right, or diagonally, as long as the new square is unoccupied, while preserving the orientation of the piece, or (2) by a clockwise or counterclockwise quarter turn (i.e.,  $\pm 90$  degrees about the vertical centerline of the piece) while remaining in the presently occupied space. (There will be fewer than eight spaces available to pieces located at the periphery of the playing board.) The pieces may not, however, occupy a space in the column which corresponds to the opponent's laser location, e.g., for the starting configuration of Figures 1, 2 and using the space and corner designations of Figure 21 with the silver player operating the laser button 19 and the gold player operating the laser button 20. Silver pieces are not permitted to occupy any space in column 10 and gold pieces are not permitted to occupy

any space in column 1.

After a player moves a piece, he presses his laser fire button 19 or 20. Any piece 30, 35, 40, 50 which is illuminated on a non-mirrored surface is removed from the board, no matter to which player the piece belongs, and the turn shifts to the other player  
5 (opponent).

#### PARTS LIST:

The following is a list of parts and materials suitable for use in the present invention:

	<u>Parts Number</u>	<u>Description</u>
	10	laser game board apparatus
10	11	game board
	12	upper surface
	13	lower surface
	14	periphery
	15	raised border
15	16	horizontal section
	17	outer vertical section
	18	inner vertical section
	19	laser activating button
	20	laser activating button
20	21	laser
	22	laser
	23	playing area
	23A	recessed square surface area
	24	raised element
25	25	raised square border
	26	cavity
	27	battery compartment
	28	wiring
	29	laser beam
30	30	key game piece
	31	base

	32	periphery
	33	vertically extending portion
	34	underside
	35	game piece
5	36	base
	37	periphery
	38	vertically extending portion
	39	underside
	40	game piece
10	41	base
	42	periphery
	43	underside
	44	vertically extending portion
	45	mirrored surface
15	46	angle
	47	corner
	48	corner
	49	reference line
	50	game piece
20	51	base
	52	underside
	53	periphery
	54	vertically extended portion
	55	mirrored surface
25	56	mirrored surface
	57	orthogonal arrow
	58	diagonal arrow
	59	curved arrow
	60	corner
30	61	corner
	A	corner of game board 11
	B	corner of game board 11



C corner of game board 11

D corner of game board 11

5 It will be understood that each of the elements described above, or two or more together may also find a useful application in other types of methods differing from the type described above. Without further analysis, the foregoing will so fully reveal the gist  
10 of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention set forth in the appended claims. The foregoing embodiments are presented  
by way of example only; the scope of the present invention is to be limited only by the following claims.

## CLAIMS

1. A board game apparatus, comprising:
  - a) a game board having a playing surface and a cavity for holding electronic components;
  - 5 b) a plurality of game pieces, each having a base with a periphery and an under surface;
  - c) the playing surface being segmented into a plurality of smaller spaces, each defining a location that can be occupied by one of the game pieces;
  - d) a first beam emitting device mounted to the game board;
  - e) a second beam emitting device mounted to the game board;
  - 10 f) a first control button that enables a first player to activate and deactivate the first beam emitting device;
  - g) a second control button that enables a second and opposing player to activate and deactivate the second beam emitting device;
  - h) mirrored surfaces being provided upon multiple of the game pieces, some of the pieces
  - 15 having more than one mirrored surface; and
  - i) the game pieces, smaller spaces and beam emitting devices being so configured that when a beam emitted by the beam emitting device strikes a mirrored surface on a game piece that occupies a smaller space, the beam reflects along a line that traverses one or more other smaller spaces.
- 20 2. The game board apparatus of claim 1 wherein the beam emitting devices are each laser diodes.
3. The game board apparatus of claim 1 wherein one of the game pieces is a key game piece that enables a game to be ended when a beam strikes the key piece of one of the players.
- 25 4. The game board apparatus of claim 1 wherein there are two key game pieces, enabling a key game piece to be associated with each of two opposing game players.
5. The game board apparatus of claim 3 wherein the key game piece is non-mirrored.
6. The game board apparatus of claim 4 wherein the key game pieces are non-mirrored.
7. The game board apparatus of claim 1 wherein each of the smaller spaces is recessed.
- 30 8. The game board apparatus of claim 1 wherein each of the smaller spaces is surrounded by a raised border.
9. The game board apparatus of claim 7 wherein each game piece has a base that is sized

and shaped to fit a recessed smaller space.

10. The game board apparatus of claim 8 wherein each game piece has a base that is sized and shaped to fit inside the raised border of a smaller space.

5 11. The game board apparatus of claim 1 wherein some of the mirrored pieces have a mirror that forms an angle of about 45 degrees with the beam emitted by a beam emitting device.

10 12. The game board apparatus of claim 1 wherein at least one mirror has a surface that reflects a beam emitted by the beam emitting device an angle of about 90 degrees when the game piece occupies a smaller space traversed by a beam emitted by a beam emitting device.

13. The game board apparatus of claim 1 wherein the beam control buttons are positioned on opposite sides of the game board

14. The game board apparatus of claim 1 wherein the game board has a raised periphery that disallows transmission of a beam beyond the periphery of the game board.

15 15. A game board apparatus, comprising:

a) a game board having a playing surface and one or more receptacles for holding electronic components;

20 b) a plurality of game pieces, each having a base with a periphery and an under surface, some of the game pieces being mirrored and some of the game pieces being non-mirrored;

c) the playing surface being segmented into a plurality of smaller spaces, each defining a location that can be occupied by one of the game pieces;

d) one of the electronic components being a first beam emitting device mounted to the game board;

25 e) another electronic component being a second beam emitting device mounted to the game board;

f) a first control button that activates and deactivates the first beam emitting device;

g) a second control button that activates and deactivates the second beam emitting device;

30 h) the game pieces, smaller spaces and beam emitting devices being so configured that when a beam emitted by the beam emitting device strikes a mirrored surface on a game piece that occupies a smaller space, the beam reflects along a line that traverses one or

more other smaller spaces.

16. The game board apparatus of claim 15 wherein the beam emitting devices are each laser diodes.

17. The game board apparatus of claim 15 wherein there are two key game pieces,  
5 enabling a key game piece to be associated with each of two opposing game players.

18. The game board apparatus of claim 15 each of the smaller spaces is surrounded by a raised border.

19. The game board apparatus of claim 15 wherein some of the mirrored pieces have a mirror that forms an angle of about 45 degrees with the beam emitted by a beam  
10 emitting device.

20. The game board apparatus of claim 15 wherein at least one mirror has a surface that reflects a beam emitted by the beam emitting device an angle of about 90 degrees when the game piece occupies a smaller space traversed by a beam emitted by a beam emitting device.

21. The game board apparatus of claim 15 wherein each smaller space is recessed and each game piece has a base that is sized and shaped to fit inside the recessed smaller space.  
15

22. The game board apparatus of claim 15 wherein the game board has a raised periphery that disallows transmission of a beam beyond the periphery of the game board.

23. The game board apparatus of claim 15 wherein the smaller spaces are arranged in a matrix.  
20

24. The game board apparatus of claim 16 wherein the smaller spaces are arranged in a matrix of rows and columns.

25. A laser game board apparatus, comprising:

25 a) a game board having a playing surface and a cavity for holding electronic components;

b) a plurality of game pieces, each having a base with a periphery and an under surface, some of the game pieces being mirrored and some of the game pieces being non-mirrored;

30 c) the playing surface being segmented into a plurality of rows and columns and small squares spaces at the intersection of each row and column, each small square defining a location that can be occupied by one of the game pieces;

- d) a first beam emitting device mounted to the game board;
  - e) a second beam emitting device mounted to the game board;
  - f) a first control button that activates and deactivates the first beam emitting device;
  - g) a second control button that activates and deactivates the second beam emitting device;
  - h) the beam emitting devices being mounted to emit a beam along a column and the small squares being positioned so that when a beam emitted by the beam emitting device strikes a mirrored surface on a game piece that occupies a small square, the beam reflects along a line that traverses one or more of the small squares of a row.
26. The laser board game apparatus of claim 25 wherein each small square provides a recess that is receptive of a game piece.
27. The laser board game apparatus of claim 26 wherein some of the game pieces have multiple surfaces that are mirrored.
28. The laser board game apparatus of claim 25 wherein there are two sets of game pieces, one set for each of two players and the sets being identical sets of game pieces but the sets being of different color.
29. The laser board game apparatus of claim 25 wherein some of the game pieces have multiple surfaces that are mirrored.
30. The laser board game apparatus of claim 25 further comprising a raised peripheral border and wherein each beam emitting device is positioned to emit a beam along a line that extends between the beam emitting device and the border.
31. A board game for two opposing players or teams of players, wherein alternate turns are taken to move playing pieces for the purpose of deflecting beams of light, from a laser or other source, so as to illuminate a key playing piece of the opponent.
32. The board game of claim 31, wherein pieces are moved so as to prevent the opponent from illuminating a key playing piece.
33. The board game of claim 31, wherein the pieces are placed in square recesses on a board with a column and row grid surface, to ensure proper alignment for reflecting the light beam.
34. The board game of claim 31, comprising:
- a) a checkerboard-style game board having first and second ends, a pair of opposed sides, and a playing surface comprising a plurality of squares to form a checkerboard pattern,

said squares forming a plurality of columns extending between said sides, and a plurality of rows extending between said ends;

b) two sets of game pieces, each set possessing a different color, one set for each of the said opposed players; each said set of game pieces consisting of one or more pieces without mirror surfaces, one or more pieces possessing a single mirror surface, and one or more pieces possessing two mirror surfaces;

c) said game pieces having initial locations in respective squares in said game board; and

d) a board which houses two or more laser diodes.

35. The board game of claim 31, comprising:

a) a checkerboard-style game board having first and second ends, a pair of opposed sides, and a playing surface comprising a plurality of squares to form a checkerboard pattern, said squares forming a plurality of rows extending between said sides, and a plurality of columns extending between said ends;

b) two sets of game pieces, including a set of light colored pieces for one of said opposed players, and a set of dark colored pieces for the other of said opposed players; each said set of game pieces consisting of one Pharaoh, two Obelisks, seven Pyramids, and two Djeds;

c) said Pharaoh, said Obelisks, said Pyramids, and said Djeds of said set of light-colored game pieces having initial locations in respective squares in said game board; said Pharaoh, said Obelisks, said Pyramids, and said Djeds of said set of dark-colored game pieces having initial locations in respective squares in said game board; and

d) two laser diodes.

36. The board game of claim 35, wherein the game board includes eight rows.

37. The board game of claim 35, wherein the game board includes ten columns.

38. The board game of claim 35, wherein the game board includes eighty squares.

39. A method of playing a board game by opposed players; said game consisting of two sets of distinguishable playing pieces, one set for each player, each set having pieces with no mirrored surfaces, of which one is a key piece, pieces with one mirrored surface, and pieces with two mirrored surfaces, a game board consisting of a first end, a second end, and a plurality of rows and columns, said rows and columns intersecting to form a plurality of squares, the method comprising the steps of:

a) placing each player's set of playing pieces on the game board in a pre-determined

starting configuration;

b) said players alternating turns, each turn consisting of moving, either a translation or a rotation, a piece followed by activation of a laser; said alternating moves continuing until one player illuminates the opposing player's key piece; and

5 c) the moves of said pieces consisting of a movement one square in any horizontal, vertical, or diagonal direction to any unoccupied adjacent square.

40. A method of playing a board game by opposed players; said game consisting of two sets of distinguishable playing pieces, one set for each player, each set having pieces with no mirrored surfaces, of which one is a key piece, pieces with one mirrored surface, and  
10 pieces with two mirrored surfaces, a game board consisting of a first end, a second end, and a plurality of rows and columns, said rows and columns intersecting to form a plurality of squares, the method comprising the steps of:

a) placing each player's set of playing pieces on the game board in a pre-determined starting configuration;

15 b) said players alternating turns, each turn consisting of moving, either a translation or a rotation, a piece followed by activation of a laser; said alternating moves continuing until one player illuminates the opposing player's key piece; and

c) the moves of said pieces consisting of a movement one square in any horizontal, vertical, or diagonal direction to any available adjacent square, or of remaining in the  
20 same square and rotating the piece.

41. A board game for multiple opposing players or teams of players, wherein alternate turns are taken to move playing pieces for the purpose of deflecting beams of light, from a laser or other source, so as to illuminate a key playing piece of the opponent.

42. The board game of claim 41, wherein there are multiple, horizontal playing surfaces  
25 which are parallel and arranged in a vertically-stacked arrangement. The light beams may be directed from one level to another.

43. The board game of claim 41, wherein there are pieces which reflect the light at a 90 degree angle while keeping the beam parallel to the playing surface.

44. The board game of claim 41, wherein there are pieces which reflect the light at an  
30 arbitrary, even adjustable angle, while keeping the beam parallel to the playing surface.

45. The board game of claim 43, wherein there are pieces which reflect the light at an angle to reflect the light from one game board level to another.

46. The board game of claim 41, wherein there are pieces which can split an incident beam into multiple beams, such as with a "beam-splitter."
47. The board game of claim 41, wherein there are pieces which can allow an incident beam to pass through from one direction while reflecting a beam from another, such as  
5 with a "one-way mirror."
48. The board game of claim 41, wherein there are pieces which illuminate when in the path of a light beam. This may be accomplished by either an active system containing a powered light, such as a light emitting diode, which is energized after a sensor, such as a photo diode, detects the impinging beam, or by a passive system containing photo  
10 luminescent or fluorescent material.
49. The board game of claim 41, wherein there are moveable pieces which emit light beams, such as from laser diodes.
50. The board game of claim 41, wherein there are pieces which have multiple component parts. The component parts may be removed from play independently.
- 15 51. The board game of claim 41, wherein means are incorporated to visually reveal the path of the light beams, such as mechanisms found in fog machines, misters, vaporizers, atomizers, or compartments for evaporating substances, such as dry ice.
52. The board game of claim 41, wherein the board and pieces magnetically attract.
53. The board game of claim 41, wherein switches control the illumination of the light  
20 beam sources either independently from one another or in sets of lights.
54. The board game of claim 41, wherein a sound is generated when the light sources are illuminated. One way of accomplishing this is with a sound generator wired to the switch/light source circuit.
55. The inventions substantially as shown and described.



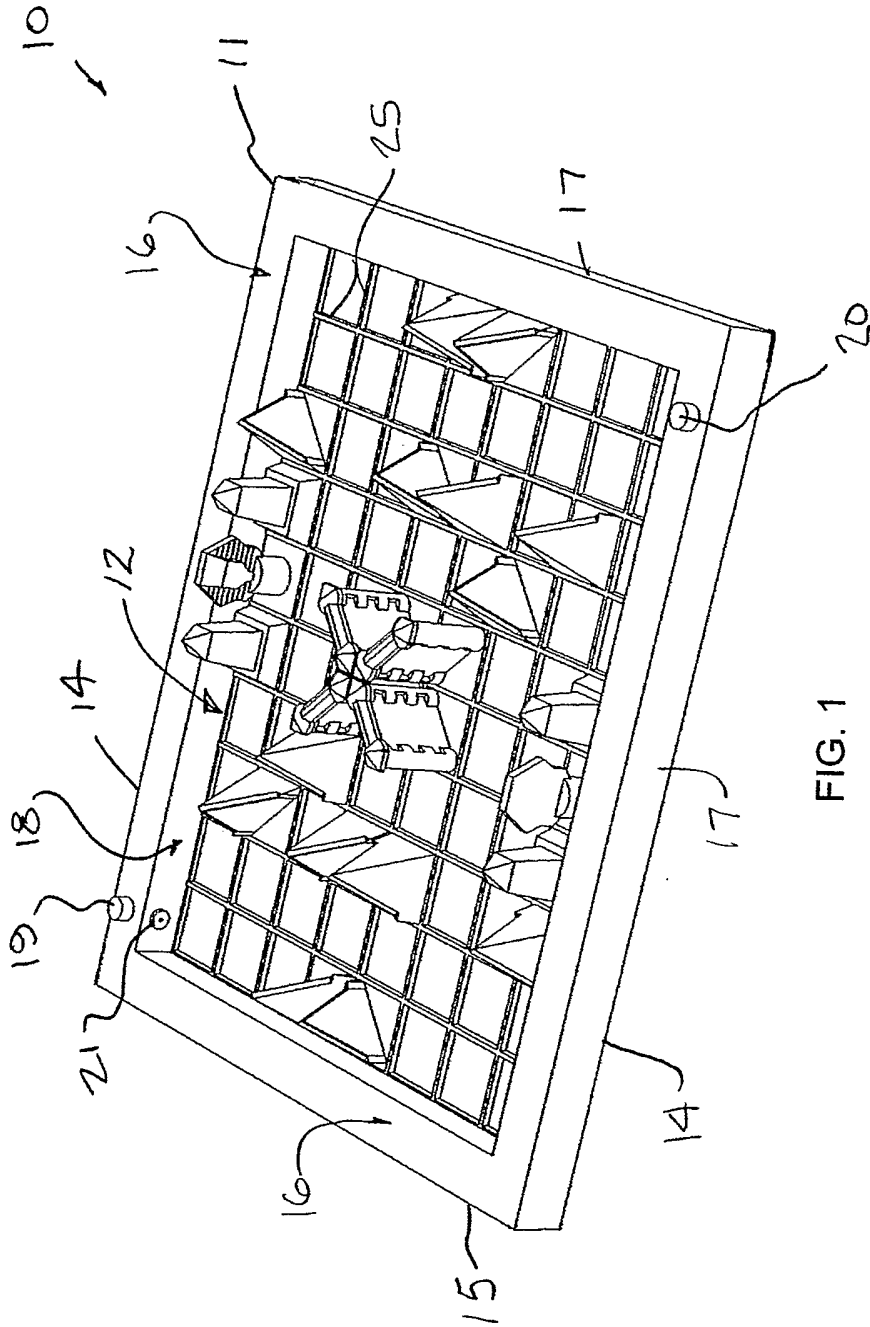


FIG. 1

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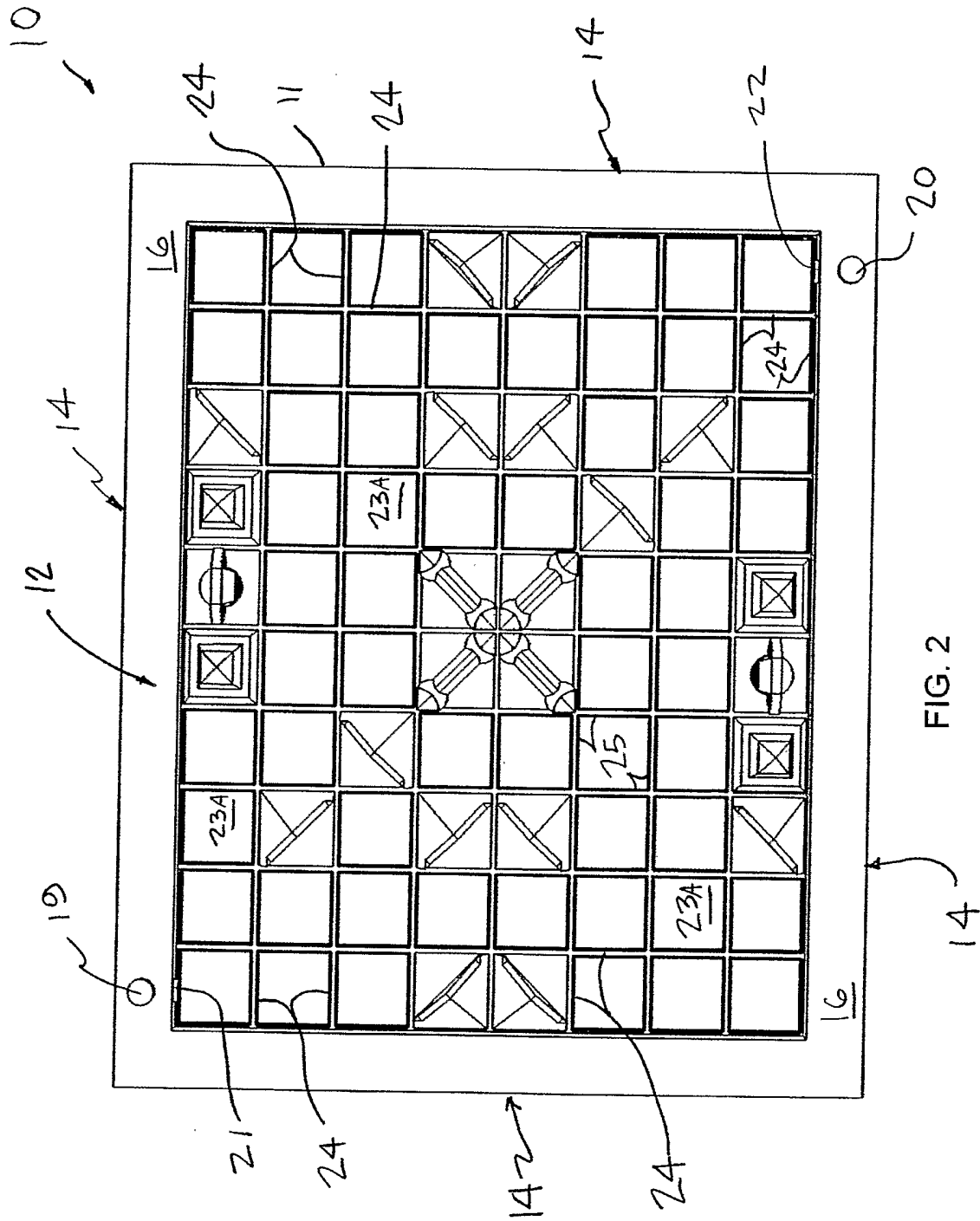
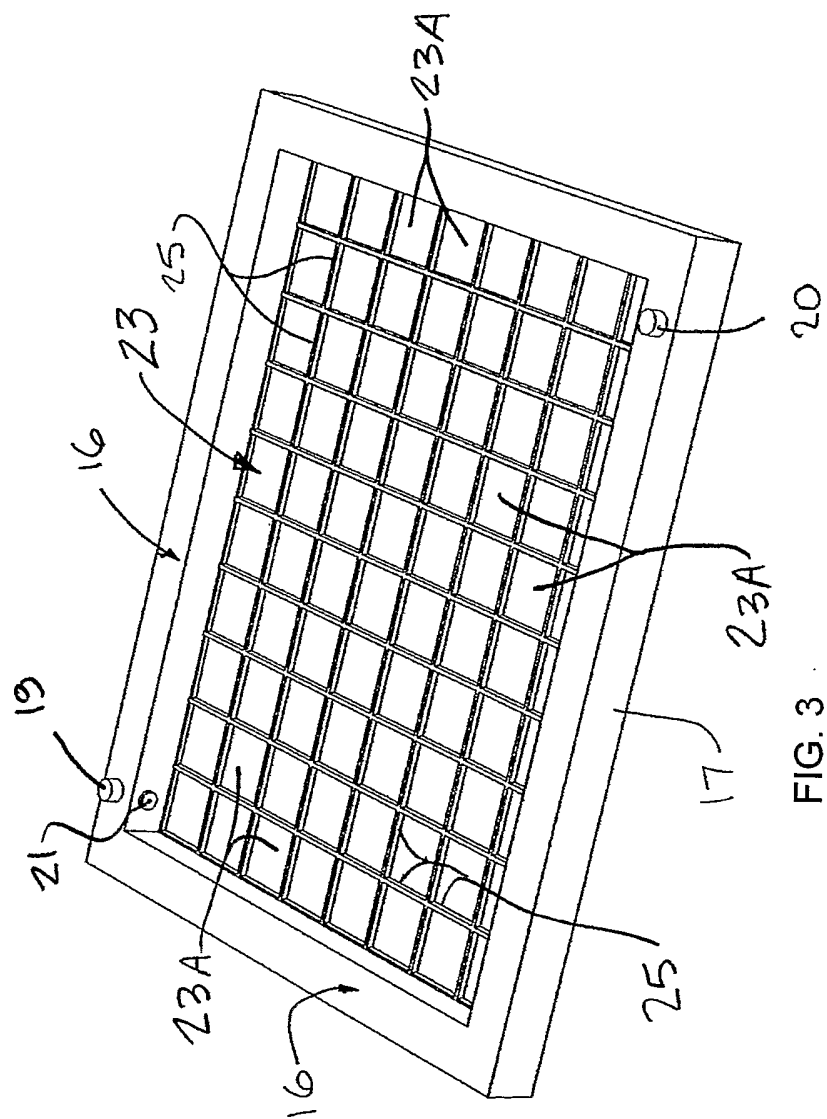


FIG. 2

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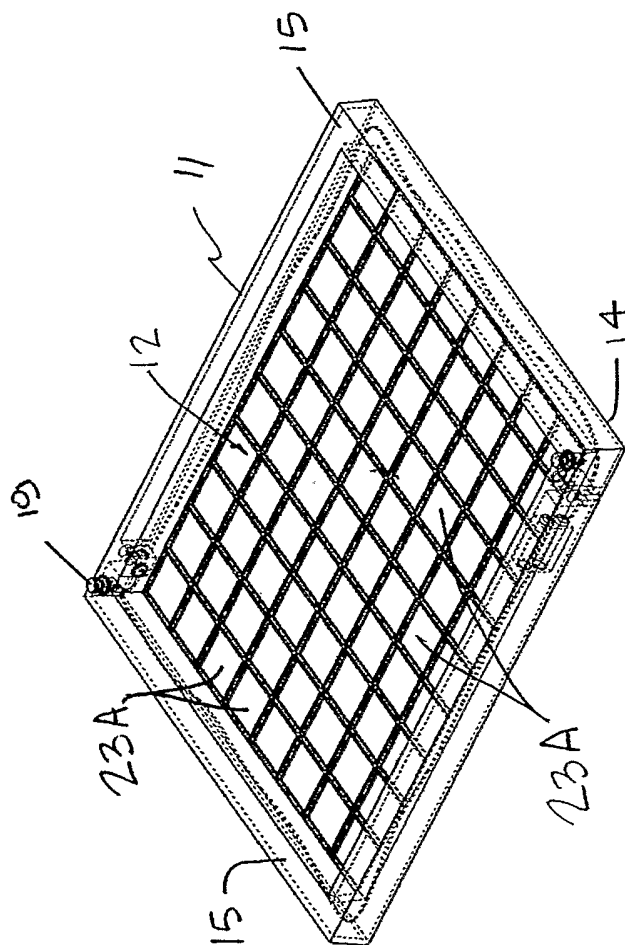
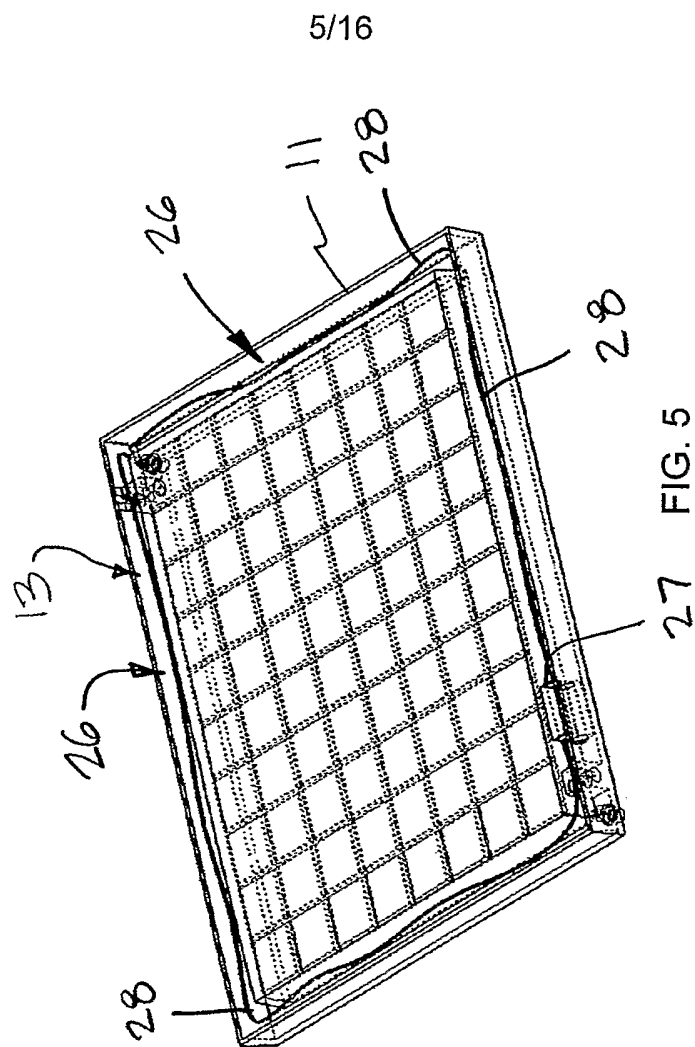


FIG. 4



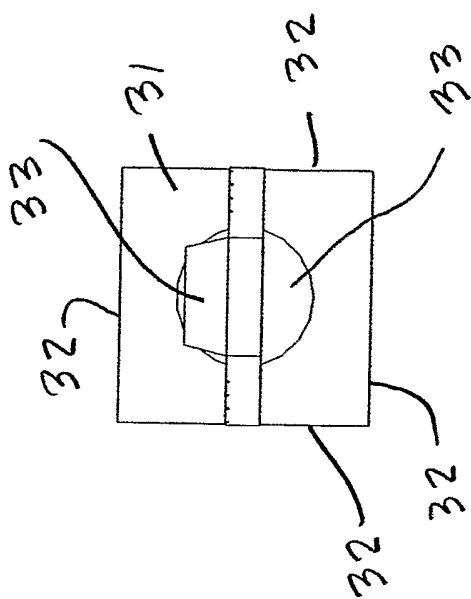


FIG. 7

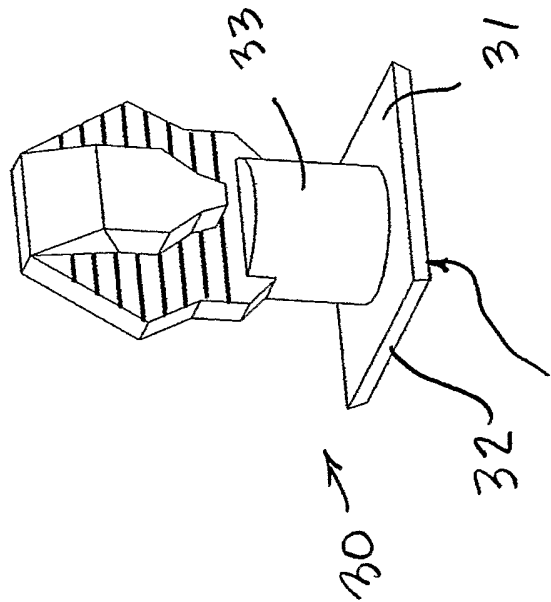


FIG. 6

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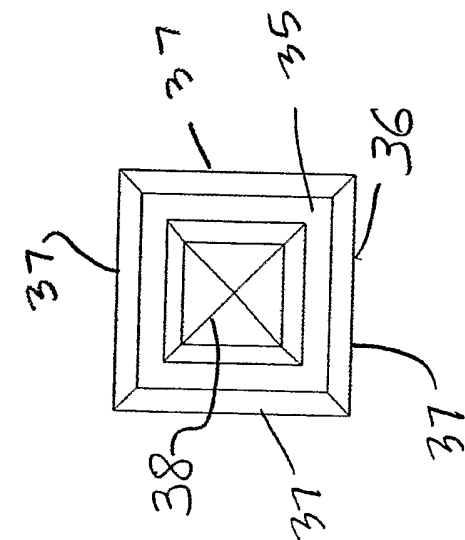


FIG. 9

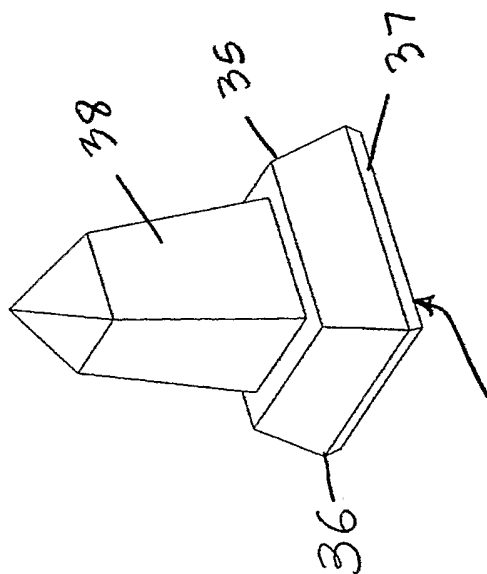


FIG. 8

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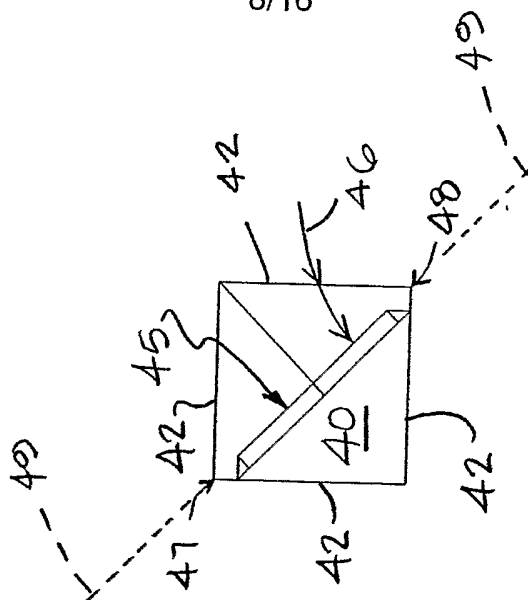


FIG. 12

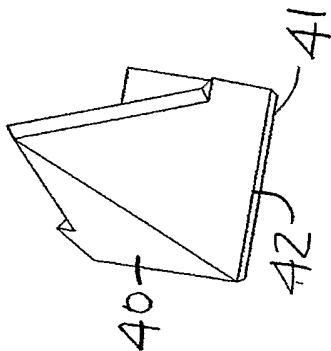


FIG. 11

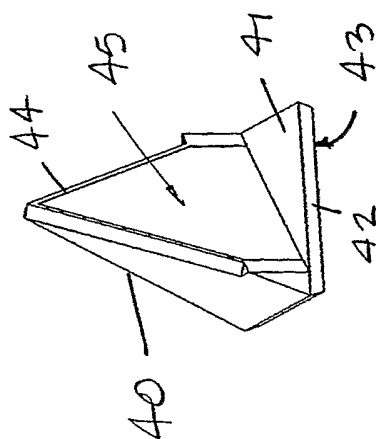


FIG. 10



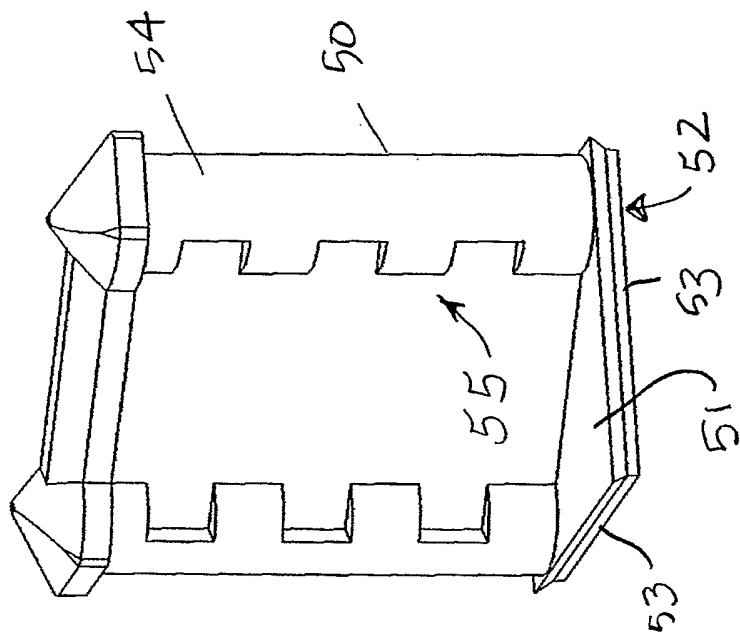


FIG. 13

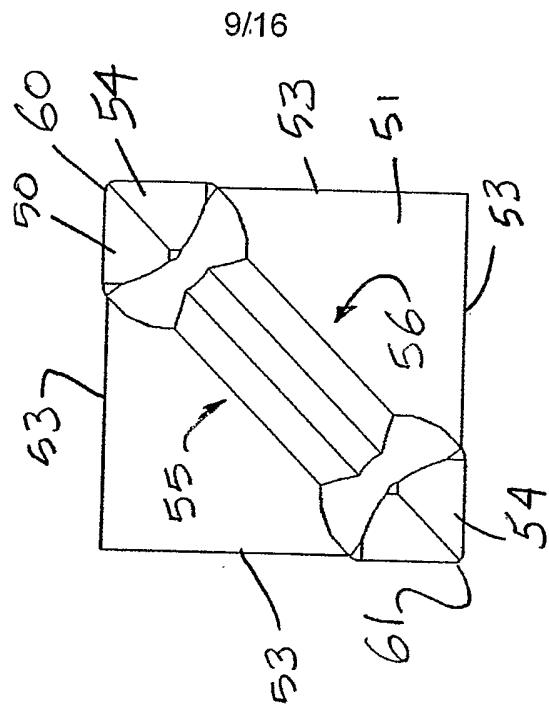


FIG. 14

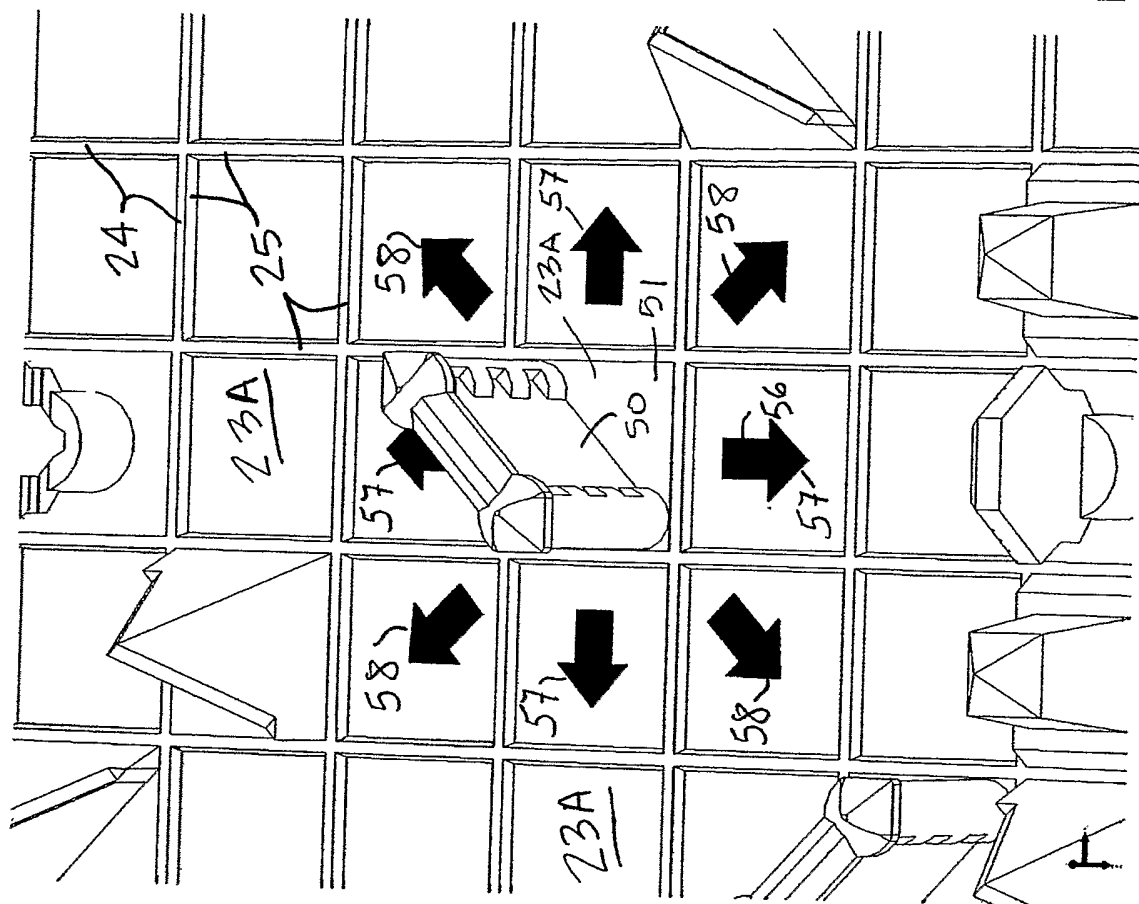
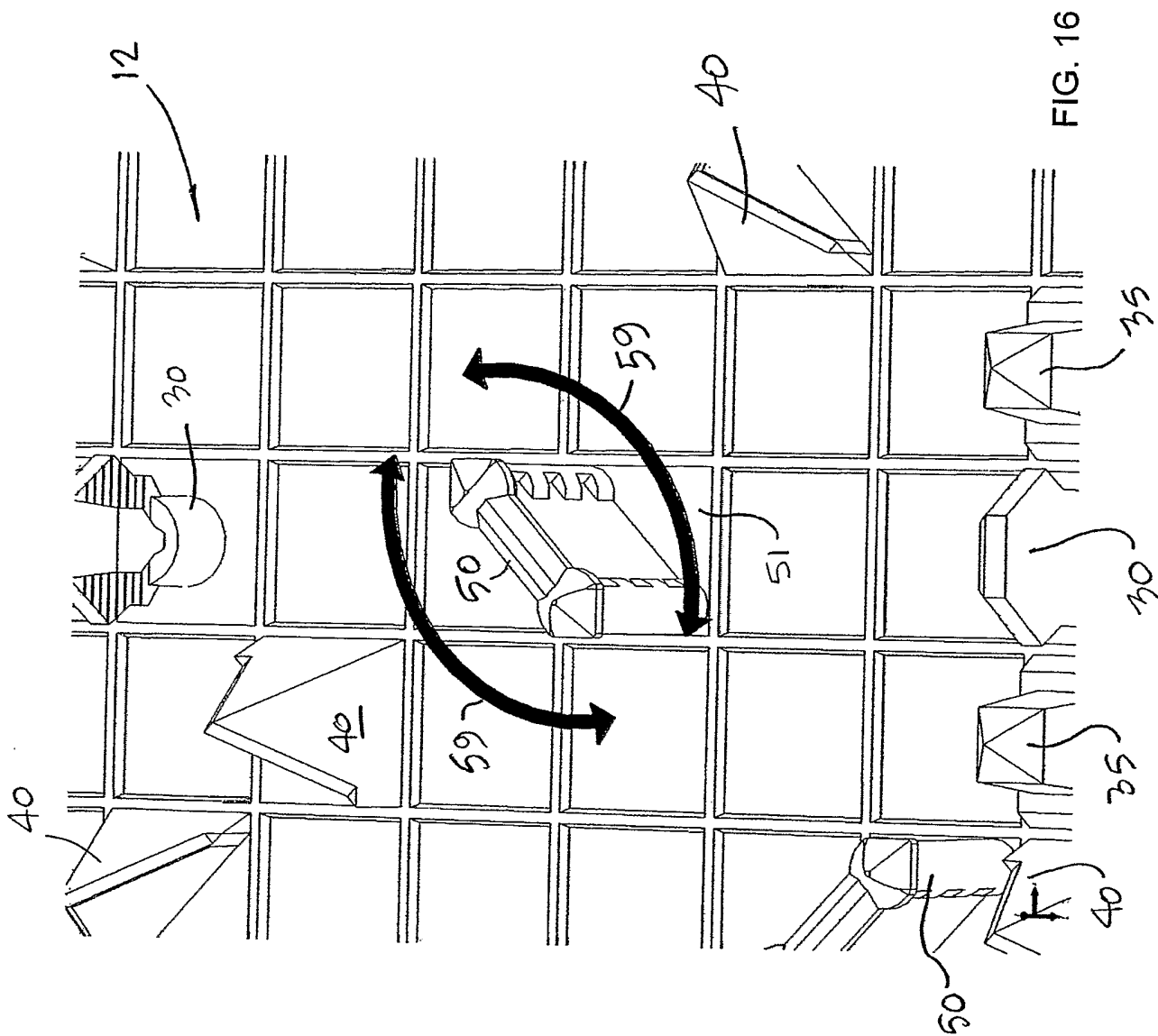
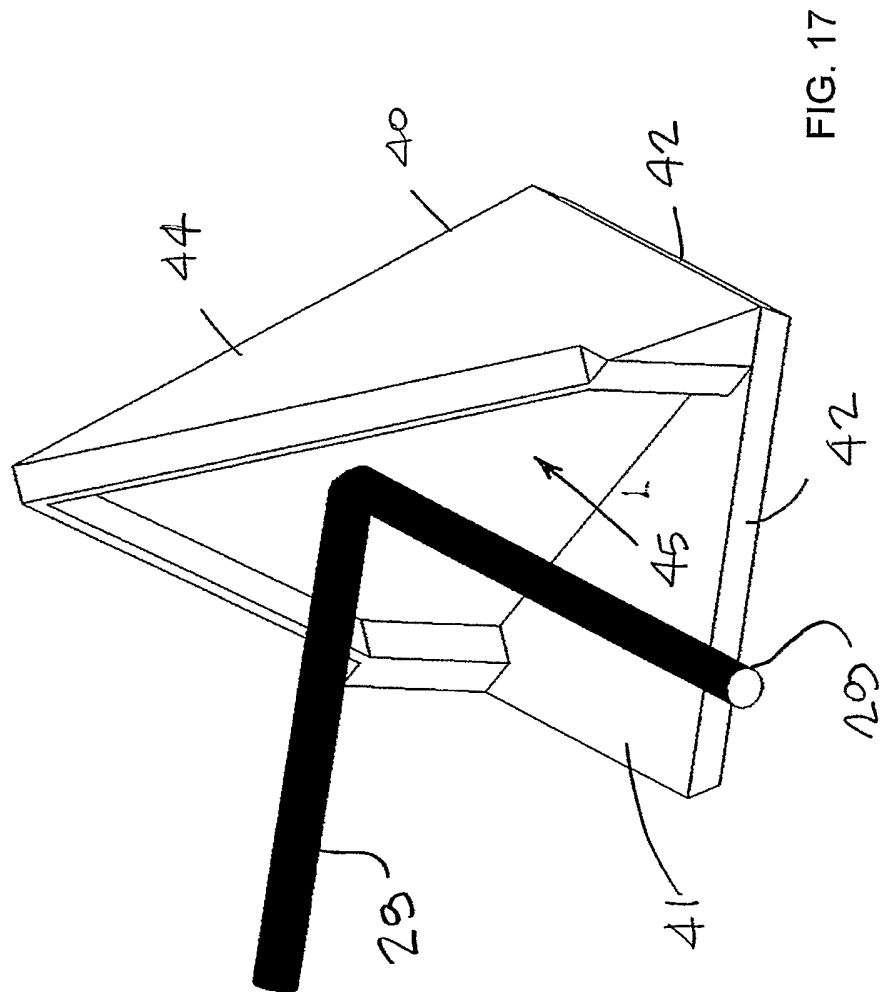


FIG. 15

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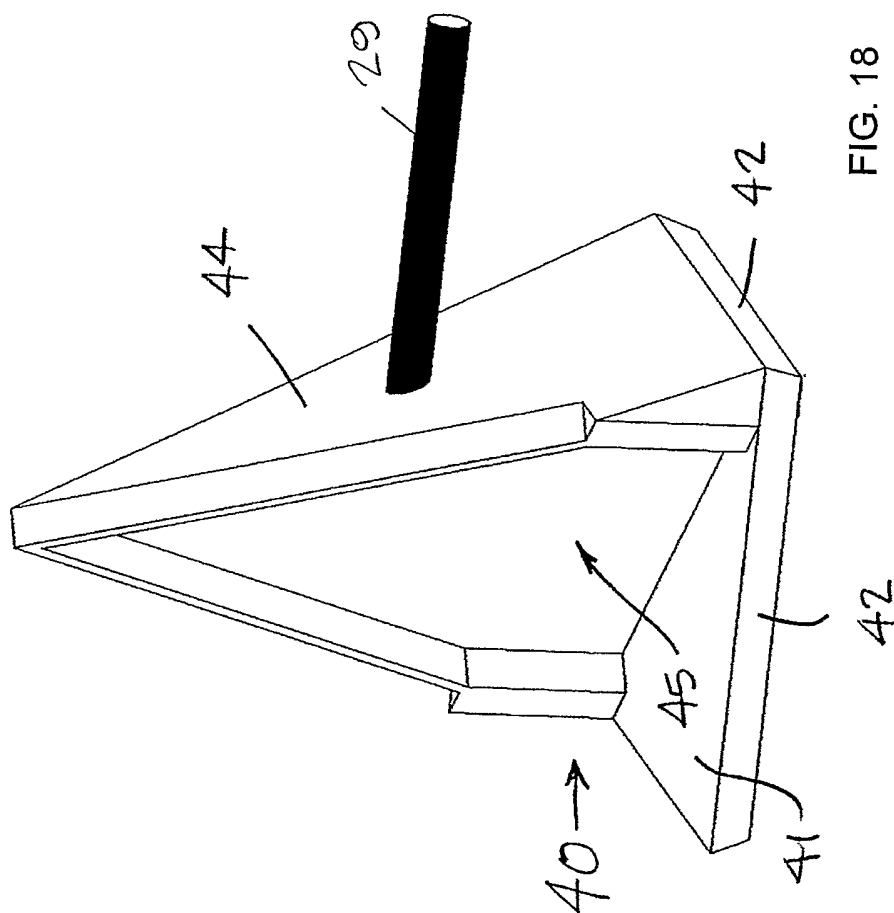


FIG. 18

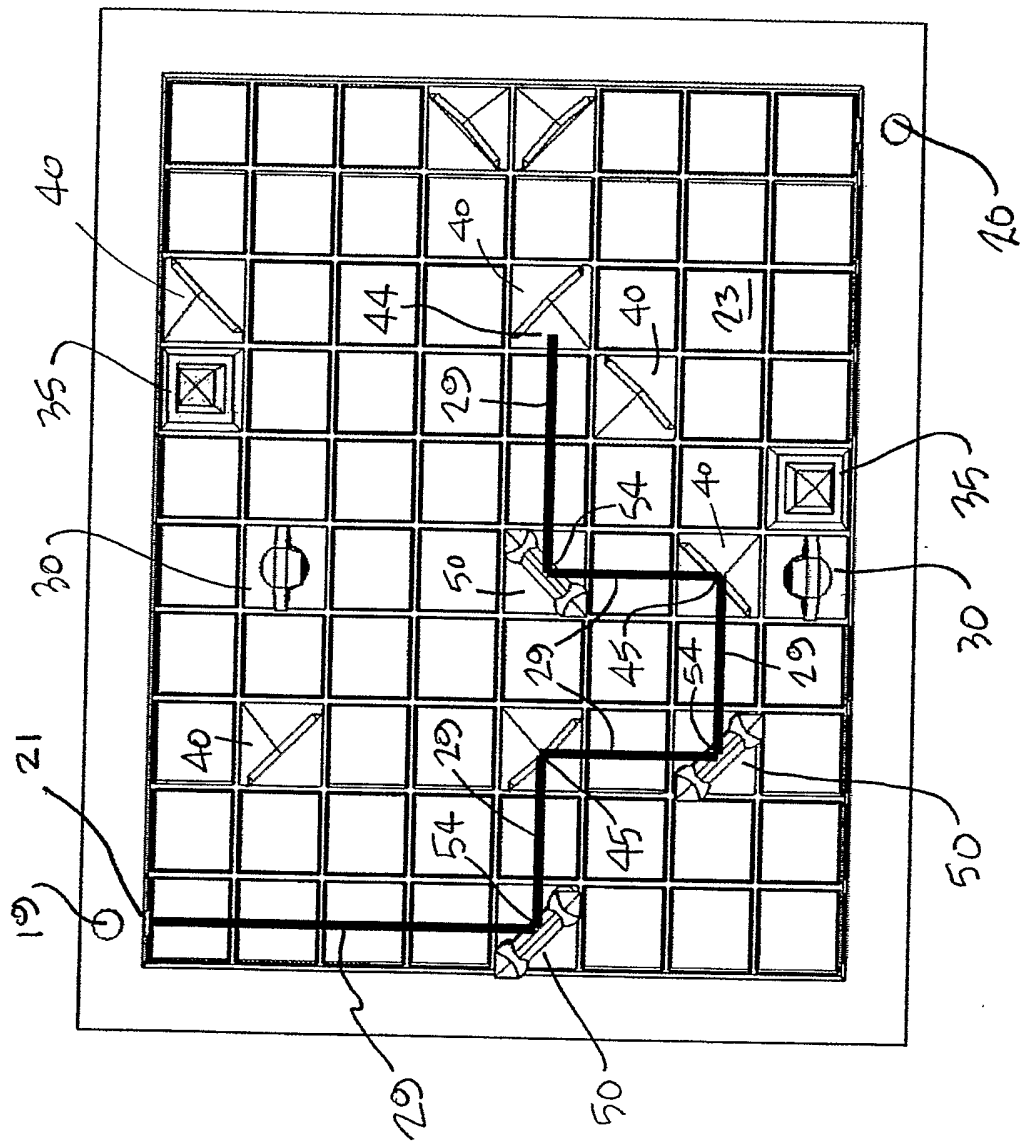
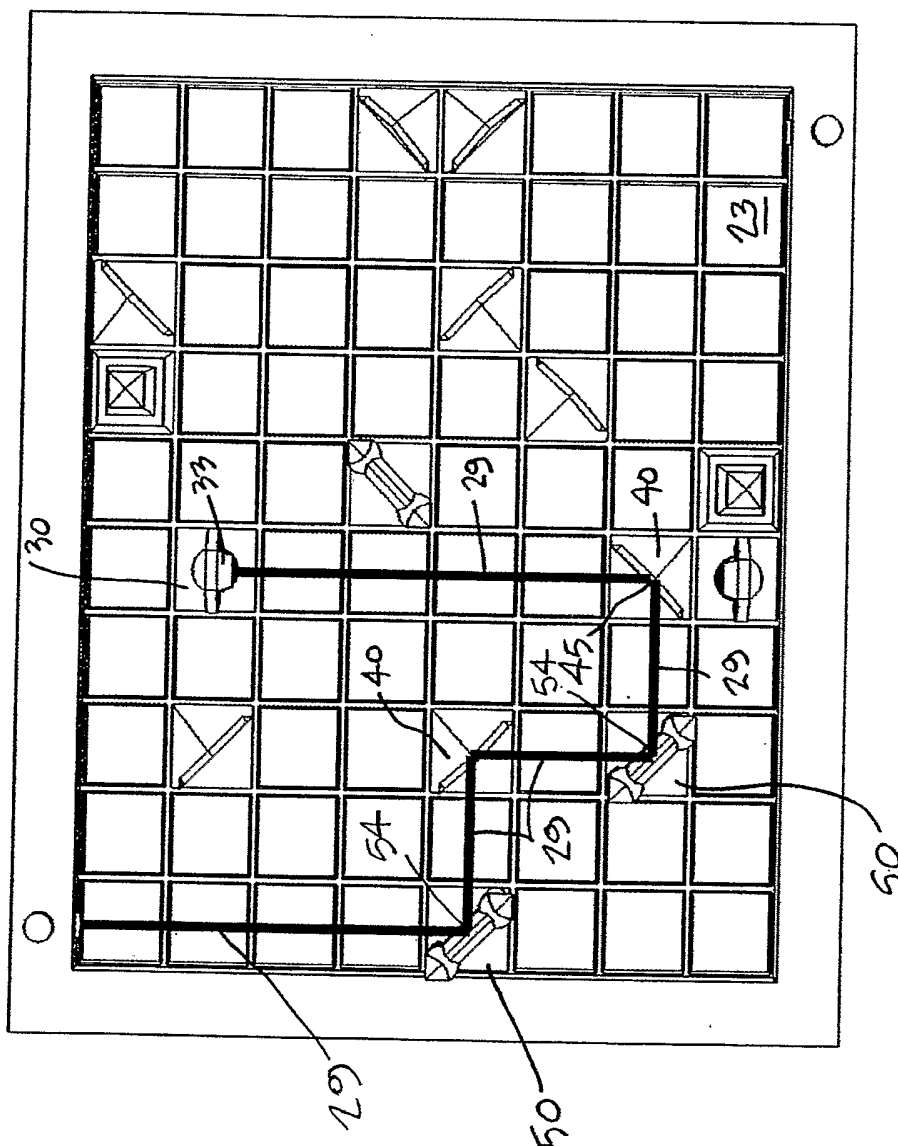


FIG. 19

FIG. 20



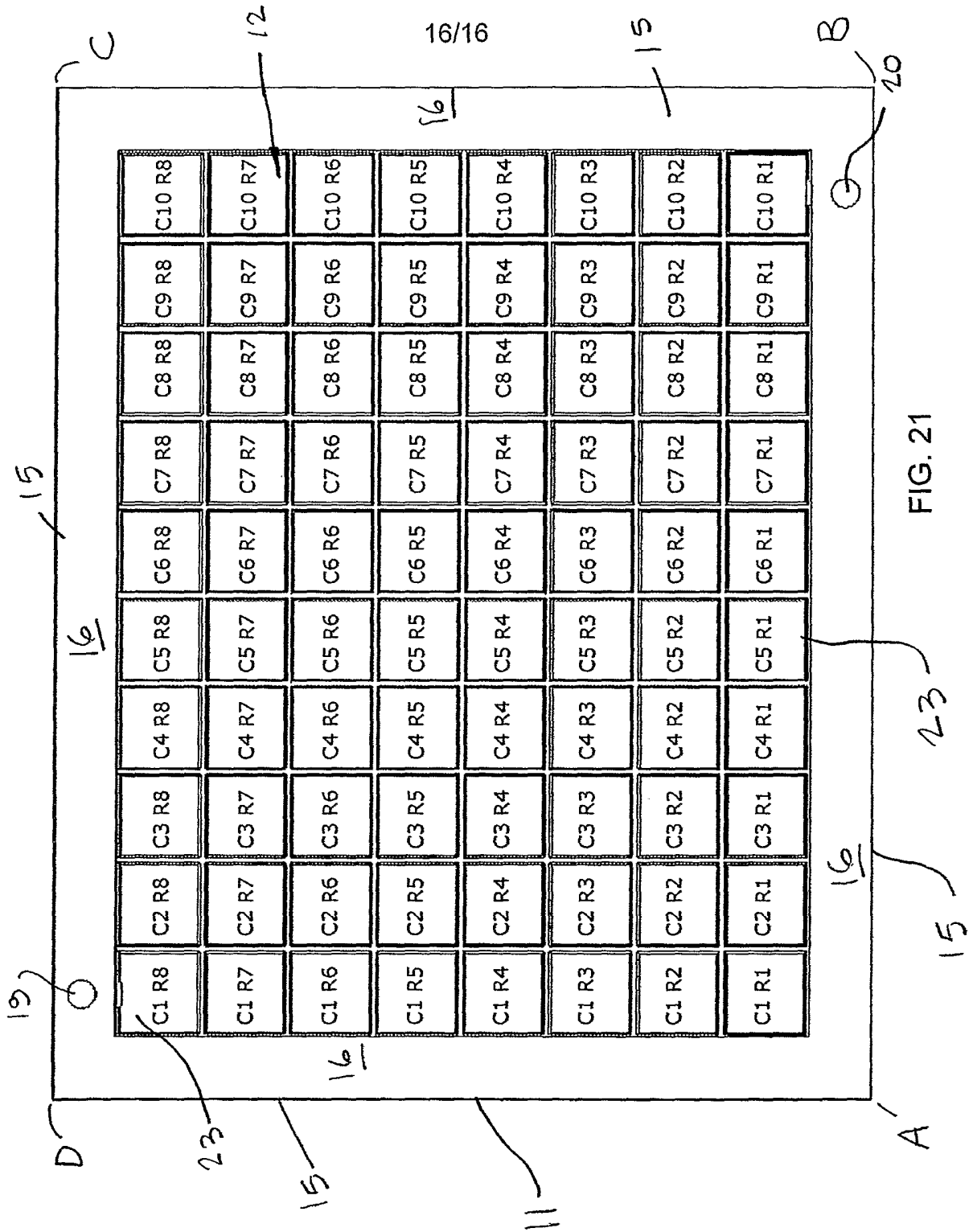


FIG. 21