ABSTRACT

A board game whose game pieces contain a gas or mixture of gases. The gas inside the game pieces is electrically excited to illuminate the game piece. This illumination is achieved by inductive coupling the game piece to a high-voltage radio-frequency source located in or in the vicinity of the game board.
FIG. 4
PLASMA ILLUMINATED GAME PIECES

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to board games using a board and illuminated game pieces. The particular aspects of this invention relate to the illumination of the game pieces.

[0002] The game pieces of this invention employ design aspects, including shape, color, and material, to suit their role according to the game rules. Game pieces employ design aspects to facilitate visual recognition and differentiation to designate the respective players or "sides" participating in the game through a varying visual display within the game pieces.

[0003] Game pieces whose design aspects are not crucial to play of the game are free to have these design aspects presented in any manner expression of these design aspects draws interest to the game, and can be custom made to enhance the value of a game board and the game pieces played thereon. This provides added economic value and selling price to a game over and above a game with conventional game pieces and/or board.

[0004] Various methods for illumination of game boards and game pieces exist in the prior art but none utilize the features of this invention which facilitate a changing visual image and coloration of game pieces. U.S. Pat. No. 3,579,856 discloses a game board whose game pieces are illuminated when placed over the lens of light transmitting fibers strategically placed across the underside of a game board. U.S. Pat. No. 3,854,725 discloses game pieces having incandescent lights therein that are selectively illuminated by inserting the game piece into electrical connections under each square of a chess board. U.S. Pat. No. 3,888,491 discloses a chessboard where, instead of game pieces moving across the board, each of the 64 regulation squares on the game board has a flush, transparent surface with a display tube thereunder whose appearance can be changed to represent one of the six figures used in chess, pawn, rook, knight, bishop, king and queen. U.S. Pat. No. 3,964,100 describes translucent chess pieces, each piece containing its own battery and light wherein the light in the piece is selectively actuated by remote control to indicate when the time to play that piece is close at hand. Published U.S. Patent Application 2009/0184468 dated Jul. 23, 2009 discloses egg-shaped game pieces with an internal LED which is energized by electromagnetic induction.

SUMMARY OF THE INVENTION

[0005] All of the above approaches to illuminating game pieces are largely monochromatic and emit a steady light. By contrast, the present invention discloses game pieces that can emit a colored light unique to each participant and wherein the emitted light is vibrant and can be varied in intensity.

[0006] Briefly, the aforementioned objects of the present invention are satisfied by providing game pieces illuminated by gas sealed within the game pieces which is excited to a plasma state.

[0007] A further object is the generation of this illumination through inductive coupling to a high-voltage radio-frequency source.

[0008] Another object provides for the game pieces to be constructed of clear or translucent material having the quality to contain and hold captive gas or mixture of gases to be excited electrically to a plasma state.

[0009] A further object is the freedom of motion and placement of the game pieces, which movement is typically accompanied by a change in color and intensity of the excited plasma within the game piece.

[0010] A further object of the invention is provision of means for exciting the plasma within the game piece.

DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a cross-sectional view of a game piece prior to gas filling and final processing;

[0012] FIG. 2 is a cross-sectional view of a game piece that has been filled with gas and is ready for use on the game board;

[0013] FIG. 3 is an example of a system used to fill game pieces with gas and seal them;

[0014] FIG. 4 is a schematic of the circuit used to excite the gas in the game pieces;

[0015] FIG. 5 is a cross-sectional view of a game board and game pieces wherein the electrical components used for gas excitation within the game pieces are mounted inside a box-like structure with a game board integrated into the upper surface of that structure;

[0016] FIG. 6 is a cross-sectional view of a game board and game pieces wherein the electrical components are mounted in a self contained box-like structure unattached to the game board but located in proximity to the game board and game pieces so as to illuminate the game pieces;

[0017] FIG. 7 is a perspective view of a chess board and chess pieces as an example of how the illuminated game pieces of the invention can be freely moved anywhere on a game board.

DETAILED DESCRIPTION OF THE INVENTION

[0018] The illuminating glow of excited gas (plasma) contained within the game pieces 1 of this invention provides a fascinating and striking visual effect. The visual qualities of plasma produced by excitation of gases, or mixtures of gases, vary greatly. The shape of the game pieces, the gases used within the pieces and the means used to excite the gases within the pieces contribute to this visual effect.

[0019] The material used in the construction of the game pieces 1 of this invention impacts the production and durability of the game pieces. Glass is the most effective material for this invention given its clear or translucent properties, its inert properties, its rigidity, and its properties as an impervious container of gas.

[0020] The process for forming the game pieces 1 can be generalized as four steps. The first step is to form the general shape of the game piece 1, leaving a disposable tube 2 attached to the game piece as shown in FIG. 1. The second step in forming the game pieces 1 is to evacuate the air from within the game piece 1 by a vacuum pump 5 through the attached disposable tube 2 as shown in FIG. 3. The third step is to fill the game piece with a pure gas or mixture of gases from pressurized containers 3a and/or 3b (See FIG. 3). The fourth step in producing the game pieces of this invention is to seal the gas within the game pieces by sealing the juncture of tube 2 and game piece 1. This step will result in the separation of the game piece 1 from the tube 2 used for evacuation and filling. This tube 2 may be discarded, leaving a sealed outer envelope 6 of game piece 1 (FIG. 2).

[0021] The shape of the envelope 6 of game piece 1 can be any that is appropriate to the game for which the pieces are
created such as pawn, rook, etc. used in classic chess. However, a unique aspect of this invention is that the shape of the game pieces’ envelope and the gas therein can be selectively mated to create highly attractive combinations that enhance the game playing experiences of the game in which the game piece is used.

[0022] This invention has infinite application in any number of board games. The game of chess with game pieces used in that game is illustrated in the Figures. However, any number of board games would benefit from use of the game pieces of this invention, for example, checkers, backgammon or any other board game. The game piece can be formed in any shape to complement the rules of each board game in which it is used.

[0023] In addition to the infinite variations in shape and color, the excitation of the gas within the piece can be changed/modulated to give the appearance of movement within the piece as described in more detail below. This is particularly effective in low light where the pieces seem to take on an animated appearance as they are moved across the board.

[0024] The preferred gases used to fill the game pieces are neon, argon and krypton. Other gases that produce a visible aura when excited can also be used, for example, a mixture of carbon dioxide and air. Neon by itself generally emits a red aura; argon a gray blue color and krypton a gray steel green color. When neon is mixed with argon it can emit a blue/red effect that borders on a light purplish color. By varying proportions of these gases, an infinite variety of colors emitted from the game pieces is possible. In a preferred embodiment of the invention the area within envelope of game pieces for each player is filled with the same gas but which is different from the other player. Thus, for example, in chess one player’s game pieces would be filled with neon to emit a red glow and the other player’s pieces filled with argon to emit a gray/blue color.

[0025] The gases will not actually mix as such, but rather the smaller molecules, usually neon, will migrate to the smaller areas of the game piece envelope, while larger molecules, for example argon and krypton, will spread out and monopolize the larger, open areas of the envelope. This will create multicolored displays. By designing pieces with a combination of thoughtfully created open, and more contained areas, the display can be visually enhanced.

[0026] The design aspects of the game piece itself are implemented with the foremost intent to satisfy the rules of the game. Secondary design aspects of the game piece provide for aesthetics in the considerations put towards manipulating the intricacies of plasma. Other secondary design aspects may be thoughtfully constructed or incidental.

[0027] For purposes of this invention, the second step, evacuation, is necessary for two reasons. The first reason being the elimination of atmosphere from within the game piece to facilitate a complete exchange of ambient air for the selected gas or gases. The second reason is the need to regulate the pressure within the final sealed game piece envelope to maximize the generation of plasma discharge within the piece.

[0028] Variation in the third, gas filling, step leads to a variety of visual effects. Gases will emit unique colors of light and mixtures of gases will create multicolored illuminations. These variations in color are intended to be used as features of the game piece when differentiation by color is crucial, preferred, or arbitrary. The pressure or partial pressures of the contained gases will affect the efficiency of illumination due to subtle interactions among the gaseous molecules.

[0029] To excite the gases within game piece 1, just about any circuit providing high frequency and high voltage for promotion of plasma from unexcited gas can be used. The circuitry shown in FIG. 4 uses an AC to DC wall adapter to provide a low-voltage direct current. Direct current is oscillated by oscillator 7 into radio-frequency alternating current at low-voltage. Low-voltage radio-frequency alternating current is directed through a transformer 8 with the output being the radio-frequency alternating current at high-voltage. The output, an electromagnetic field, can be directed via antenna 9 to the proximity of the game board.

[0030] Differences in electrical circuitry, as well as antenna characteristics, will affect the efficiency of illumination. This invention relates to illuminated game pieces and any electrical circuitry capable of exciting a gas or mixture of gases contained within the sealed envelope of game piece 1 to a plasma state will be considered acceptable.

[0031] The illumination produced is related directly to the proximity of the game piece to the high-voltage radio-frequency antenna 9. But, unlike the prior art noted above, there is no direct electrical connection between game piece 1 and an electrical source. Thus, the game pieces are in no way physically connected to any source of illumination and are thus free to be moved at will.

[0032] Additional flexibility of the claimed concept arises from the ability to use a single platform 10 surrounding the electrical circuitry and antenna 9 for multiple games as illustrated in FIG. 6. In this figure a game board 12, for example a chess board, is merely placed on top of the upper surface of platform 10 to facilitate the playing of a game of chess. If the interest of the chess players wanes, a different game board 12, e.g., checkers, can be substituted for the chess game board and play can continue with illuminated game pieces, the same or different from those used in the chess game. Thus a single platform 10 with electronic components can be used for multiple games. Alternately a game board 14 can be integrated into the top surface of the platform 10 as shown in FIG. 5. In the latter embodiment the platform 10 is necessarily dedicated to that game.

[0033] The placements of the game pieces 1 on and near the platform 10 creates inductive coupling that precludes the necessity for exact placement of the game piece to obtain illumination. For example, as shown in FIG. 7 a game piece 10 is shown illuminated in a standard placement on the game board, considering the rules of the game, within the outlined area defined as an individual spot for a game piece involved in game play. The piece 17 is shown illuminated on the game board but not specifically within an area defined as an individual spot for a piece involved in game play. Thus, game pieces remain illuminated as long as they are in general area of the game board and need not be exactly within a square or other physical location on a game board to stay illuminated as is the case with the prior art discussed above.

[0034] The electrical components and antenna do not have a designated preferred configuration. This invention provides that the game pieces will be illuminated by inductive coupling to the high-voltage radio-frequency source. This only requires general proximity of the game pieces to the antenna 9. Any combination of the game piece, game board and antenna that produces an illuminated game piece will be considered acceptable.
[0035] An object of this invention is the high visibility of the plasma generating field to the field of game play providing the illumination of game pieces in play. The light cast by the game pieces, especially in a dark surrounding, can provide a mystical aura to a game. When a player touches the envelope 6 of game piece 1, that player acts as a ground which intensifies the electromagnetic field within the game piece, thereby increasing the intensity of light therein. Distance of game piece 1 from antenna 9 also changes the light intensity within game pieces 1. Thus, the mere act of picking up a game piece 1 and moving it across the game board creates an infinite number of unique visual patterns, or glow, from the envelope of game piece 1.

[0036] The invention described herein provides for variation to all components of the illuminated game pieces on a game board. Variations to the character of the game pieces will be easily achieved by those skilled in the art. Variations to the circuitry integral to producing a plasma state will be easily modified by those skilled in the art. Variation in the choice of board game played and the configuration of all components required by this invention to produce illuminated game pieces will be easily adjusted by those skilled in the art to suit their choice of game and their aesthetic desires. Accordingly, all such variations are provided for within the scope and spirit of the invention as defined by the claim.

1. A game piece movable on, across or over a game board by a player comprising a translucent, sealed envelope from which air has been substantially evacuated and replaced with a gas capable of being excitable to a visible plasma state wherein the envelope of the game piece is shaped to correspond to the shape of game pieces which complement the rules of the game board on which it is to be used.

2. The game piece of claim 1 wherein the gas is selected from the group consisting essentially of argon, neon, krypton, and combinations thereof.

3. The game piece of claim 1 wherein the envelope comprises glass.

4. The game piece of claim 1 wherein the envelope of the game piece is formed in the shape of a classic chess piece.

5. (canceled)

6. The game piece of claim 1 wherein the gas within the envelope is capable of being excited to an illuminated plasma state by an electromagnetic field.

7. The game piece of claim 6 wherein the electromagnetic field is directed to the vicinity of the game piece by an antenna.

8. The game piece of claim 6 wherein the electromagnetic field is generated in an area below the game board and in general proximity to the game piece.

9. The game piece of claim 7 wherein the visible effect of the excited plasma is changeable by movement of the game piece relative to the position of the antenna.

10. The game piece of claim 6 wherein the excitation of the gas within the envelope to a plasma state and resultant light created thereby is intensified when a player touches the game piece.

11. The game piece of claim 9 wherein the game piece remains illuminated as it moves across the game board from one designated location to another.

12. A board game comprising a game board having a playing surface overlying a source of electromagnetic energy, and one or more game pieces movable on, across or over the game board comprising a translucent, sealed envelope from which air has been substantially evacuated and replaced with a gas capable of being excitable to a visible plasma state by the source of electromagnetic energy.

13. The board game of claim 12 wherein the gas is selected from the group consisting essentially of argon, neon, krypton, and combinations thereof.

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