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GAME APPARATUS WITH MAGNETICALLY ACTUATED GAME PIECES

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Sheet 2 of 2

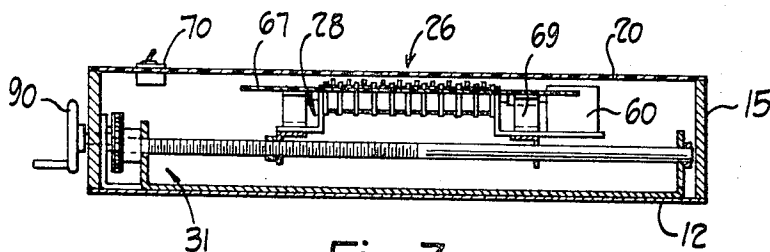


Fig. 3

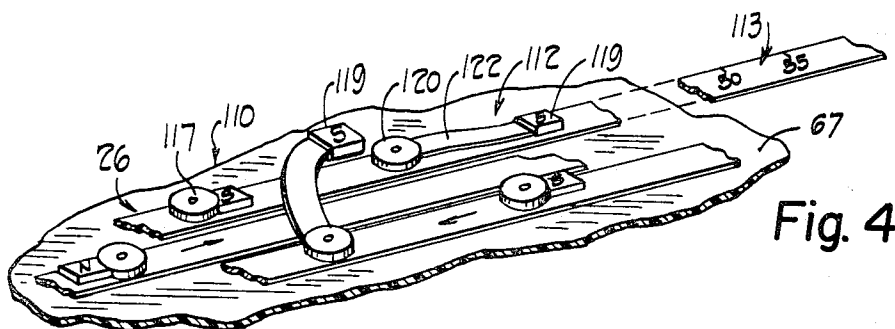


Fig. 4

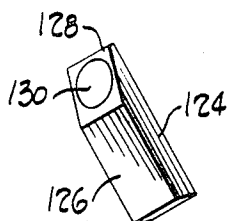


Fig. 6

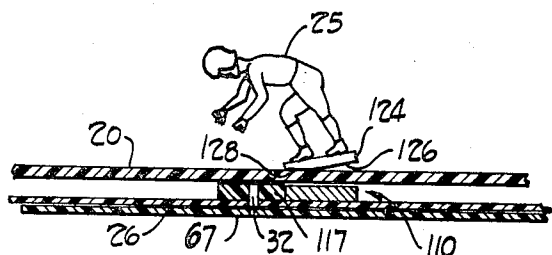


Fig. 5

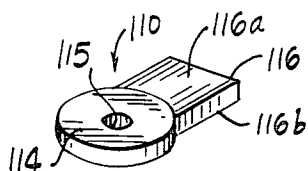


Fig. 7

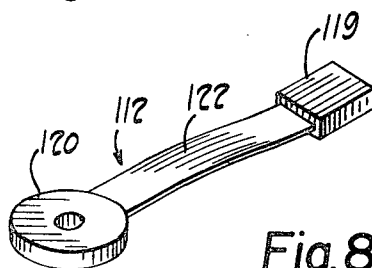


Fig. 8

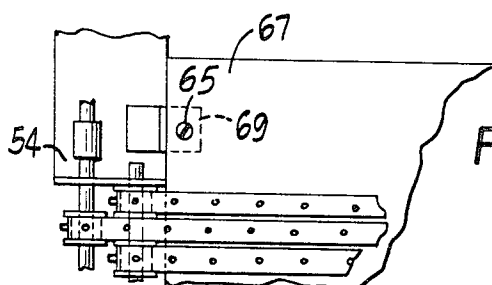


Fig. 9

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**GAME APPARATUS WITH MAGNETICALLY
ACTUATED GAME PIECES**

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ABSTRACT OF THE DISCLOSURE

A game apparatus using miniature actuated game pieces that are moved across a playing surface by indirect manual control through magnets supported on endless belts beneath the playing surface, which belts can be moved together in a sideways or transverse direction from the longitudinally-driven direction of the belts. The game pieces are mounted on bases having upwardly sloping frontal areas so that by magnetic attraction the pieces appear to assume a running or crouching position.

This invention relates to a game apparatus.

More particularly, this invention relates to a game apparatus that simulates activities, such as sports or battles, using miniature actuated players, warriors or the like. The apparatus includes a plurality of game pieces representing miniature players or the like, a playing surface representing an activity field, battle field or other area of conflict, and movable means for actuating the game pieces controlled by a player.

Games of this general type have, of course, been known. Many games have been devised where miniature pieces, representing the players of a particular sport, are positioned and moved on a game board to simulate a game, such as football. Such games often suffer, by virtue of their construction and arrangement, from too direct a control by the player over the game pieces. In such instances the playing of the game is a little different from manually pushing the game pieces about the board. The result is more often than not a game that fails to maintain player interest.

While attempts have been made to avoid direct control over the game pieces, there has been an accompanying loss of flexibility during play that detracts from the desired realism. Such games tend to lose the close analogy to the actual sport or activity represented because no opportunity is provided to modify movements of pieces once play has started. One attempt at avoiding direct control has been to incorporate chance devices, such as spinners or dice to partially or completely direct the progress of play. This is not desirable because it detracts from the appeal of such games to many people. The outcome is too dependent upon chance and too little dependent upon skill.

In accordance with the present invention, an apparatus is provided in which one or more objects or game pieces are moved upon a playing surface under the control of the players while yet avoiding (1) direct manual control, (2) the use of a chance device to determine the principal movements or plays, and (3) inflexibility in the movements and formations of the game pieces.

To achieve the above characteristics, the game pieces are moved in a controlled manner, but the control is remote or indirect, rather than direct. This places the primary emphasis upon pre-positioning of the playing pieces and planning a sound offense and defense before play is begun. A degree of control is provided that permits the general progress of play to be influenced after play has begun, but without selective or individual control over particular pieces totally apart from the other pieces. This introduces a tactical aspect to the game that supple-

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ments the initial planning. It helps sustain a high degree of continuous participation and skill throughout the entire game.

A preferred embodiment of this invention utilizes a plurality of separate game pieces, the number depending upon the particular game represented or agreed upon by the players. A generally flat, horizontal, playing surface is provided to support the game pieces. The playing surface and game pieces are constructed so that the game pieces readily move, as by sliding, across the playing surface. A plurality of movable actuating members are located beneath the playing surface. An indirect mechanism for moving the actuating members relative to the playing surface is provided, and means are provided on the actuating members to cause the game pieces to move in response to movement of the actuating members.

Most advantageously, movable elongated strips, such as endless belts extend beneath the playing surface. Magnets are supported at spaced locations on the elongated strips, movable with the strips longitudinally of an activity area on the playing surface that represents, an activity area, such as a football field. The strips supporting the magnets are arranged parallel, adjacent one another, with the alternate strips controlled by different players. The strips controlled by each player are movable together, in either of two opposite directions, longitudinally of the playing field.

The game pieces, which, in the case of a football game, represent football players, include a ferromagnetic portion, such as a metal base plate, that is attracted to the magnets carried by the movable strips.

For best results, the playing surface is opaque to conceal the location of the magnets on the movable actuating means. It should have a smooth surface to facilitate movement of the game pieces in response to movement of the magnets beneath the game surface, and should be non-magnetic. Stiff card stock or plastic sheet material is especially suitable.

One important feature of the game apparatus is that the longitudinally moving actuating members are movable together in a sideways or transverse direction under the control of one of the players, such as the player having the offensive team. Thus, the entire play may be shifted to one side while in progress and as the pieces on opposite teams move longitudinally along the designated play area. This provides a high degree of flexibility and an unknown surprise factor to the defensive player without providing such direct control over the game pieces as to minimize the value of the initial planning of the offense and defensive positions. It also provides a further feature of realism in simulated sporting games such as football or soccer, where play very often moves from one initial position toward a side line during play. It also simulates flanking maneuvers in war games.

A further important feature is provision of spaced magnets along each elongated actuating member. This allows players of one team to be aligned with each other. For example, in a football game, a player can run interference for a ball carrier moved by the same actuating means. Furthermore the spacing of the magnets allows for many variations in game piece movement, which may be planned for when placing the pieces initially upon the playing surface. For example, a piece may be initially placed so as not to overlie a magnet. That piece will not move until a magnet arrives beneath it after the beginning of a play. Thus, even though all the actuating members are moved simultaneously in a common direction, the exact moment at which a particular game piece is moved can be varied.

A further feature of flexibility, which provides an element of surprise and allows for a variation in the affect of the magnets upon the game pieces once play has started,

is the manner in which the magnets are secured to the actuating members. In accordance with this invention, the magnets are secured for movement with the actuators, and yet are pivotally or flexibly supported for restricted independent movement relative to the actuating members. Through such restricted movement of the magnets, the magnetic field created by the magnet might be located to one side of the actuating strip. By the use of a lost motion device or flexible connection between the magnet and the actuating belt, the movement of a given game piece can be delayed and the path in which it travels can be varied from the path of the actuator.

A further feature of this invention resides in the arrangement of the magnets with respect to their polarity. The magnets on the actuators for each team are arranged with similar magnetic poles in a common orientation. However, the polarity of the magnets of one team are oriented opposite to the polarity of the magnets of the opposite team. This is important because of the restricted independent movement provided for the magnets relative to the actuating members. Any magnet of one team will repel another magnet of the same team in the event they have moved into a position in which the magnets and the playing pieces controlled by the magnets would collide. At the same time, the opposite polarity of the magnets of the different teams cause adjacent game pieces of opposite teams to move toward each other into conflict. Thus, there is an inherent tendency of pieces on the same team to avoid collision and a tendency of pieces of opposite teams to attract each other. This simulates actual conflict in a realistic manner and facilitates the execution of planned strategy.

In the preferred embodiment of the game apparatus, the actuating members are endless belts that are run by electric motors, preferably variable speed reversible electric motors. One motor controls the belts for one team and another motor controls the belts for the opposite team. With two players each controlling the motor for its team, the game pieces are brought into conflict under remote rather than direct control of the players. This control, coupled with the lateral movement of the belts under the control of one player, provides substantial flexibility of operation and play.

The game pieces of this invention are constructed in a novel manner to facilitate the simulation of various activities performed in the sport or conflict involved. Game pieces are provided with base structures narrow in width to overlie essentially but one actuating member or belt, while being elongated in the direction of belt movement. The bottom surface of the base member of game pieces is provided with a relatively flat rear portion and a relatively upturned forward portion. A ferromagnetic element, such as a small steel plate is placed in the forward portion of the base member. As a result, the game piece tips forward when a magnet is moved beneath the base portion, causing the piece to lean into a position that simulates an actual position and which places the center of gravity of the game pieces forward. This allows it to better perform a function of blocking or conflicting with the game piece of an opposite side. Because the ferromagnetic coupling member is located at the front of the base portion, the piece tends to maintain a forward orientation while moving with the magnet. The game piece readily pivots about the metal portion so as to provide additional flexibility in its movement in response to movement of the actuator or in response to contact with a conflicting piece.

Interchangeable playing surfaces are provided with the apparatus so that playing fields of different design can be used, depending upon the game simulated. Game pieces representing different types of players or men are also contemplated. In this respect, it will be readily appreciated that the flexibility of movements provided by the construction of the apparatus lends itself to many different types of simulated activity.

These and other features and advantages of this invention will become readily appreciated as they become better understood by reference to the following detailed description, when considered in conjunction with the accompanying drawings, in which:

FIGURE 1 is a top plan view of a game apparatus constructed in accordance with this invention showing, by way of example, a football playing field, movable belts beneath the playing surface, game pieces upon the surface and control mechanisms for controlling the operation of the apparatus;

FIGURE 2 is a longitudinal cross sectional view of the apparatus taken along the line 2—2 of FIGURE 1, and looking in the direction of the arrows;

FIGURE 3 is a transverse sectional view taken along the line 3—3 of FIGURE 1 and looking in the direction of the arrows, showing the mechanism for shifting the actuating members transversely of the playing field;

FIGURE 4 is a partial, diagrammatic perspective view of three adjacent belts used to move magnets longitudinally of the playing field;

FIGURE 5 is a partial cross sectional view of the playing field and actuating member beneath the field, showing the relationship of a magnet and a game piece resting upon the playing surface;

FIGURE 6 is a diagrammatic perspective view of the base of a game piece showing a preferred construction;

FIGURE 7 is an enlarged diagrammatic perspective view of a preferred embodiment of a magnet used to create a magnetic field beneath the playing surface and constructed to allow limited independent movement relative to the carrying belts;

FIGURE 8 is a diagrammatic perspective view of another embodiment of a magnet constructed in accordance with the present invention, which provides a large degree of independent restricted movement of the magnet relative to the carrying belt; and

FIGURE 9 is a fragmentary plan view of a corner of the belt support carriage or frame on an enlarged scale, showing a support plate positioned beneath the belts and the manner in which it is secured to the frame.

Referring now to the drawings, a preferred embodiment of the game apparatus of the present invention is shown in FIGURES 1 to 3. The apparatus is a box-like affair 10 formed of a flat rectangular base plate 12 and a surrounding frame 13 formed of vertical side members 14, 15 and vertical end members 16, 17. A flat playing surface 20, formed of suitable card stock or plastic sheet, preferably opaque, spans the width of the base 12 and is supported on upper edges of the vertical side members 14, 15. Two opposite ends 21, 22 of the flat, playing surface 20 are spaced inward from the two vertical end members 16, 17, respectively. Four fingers 23 on the upper edges of side members 14, 15 adjacent the ends 21, 22 of the playing surface secure the surface 20 in place and facilitate changing the surface for different games. Suitable markings or designs, such as the grid iron 24, are provided on the playing surface 20 to simulate a playing field, battle field, etc., depending upon the game to be played. Game pieces 25 are shown diagrammatically on the playing surface 20.

Operating mechanisms are supported within the box-like affair formed by the vertical side members and rectangular base. These mechanisms include a plurality of narrow bands, such as belts 26, a movable carriage or frame 28 for the belts, and two lower supports 30, 31 for the movable frame 28.

The belts 26 function as actuating members for the game pieces 25 on the playing surface 20. In the embodiment shown, ten endless belts 26 are provided, each with an upper reach closely adjacent and parallel to the next and located directly beneath the flat playing surface 20. The number of belts provided may, of course, be varied. The belts 26 are relatively narrow and lie beneath the side lines of the playing area delineated by the grid

iron 24. Preferably, the width of the playing area extends beyond the belts 26 to each side when the belts are centrally located, as shown in FIGURE 1. Each belt 26 includes a plurality of extending pins 32 along a portion of the length. These pins are adapted to secure magnets to the belts, as will be explained subsequently.

Two pairs of spaced pulley wheel assemblies 34a, 34b and 36a, 36b support the belts 26 beneath the playing surface 20. The pulley wheels of each assembly 34a and 34b are alternately spaced with respect to the location of the pulley wheels of assemblies 36a and 36b. This is accomplished by providing separate shafts. A shaft 38 is provided for wheels 34a, a shaft 40 for wheels 36a, a shaft 42 for wheels 34b, and a shaft 44 for wheels 36b. The distance between the shafts of 38 and 40 and shafts 40 and 42 is identical and the pulleys are all of the same size so that the bands 26 can be constructed identically. Shaft 38 is a drive shaft connected with pulleys 34a. These pulleys drive belts 26a, c, e, g, i. The alternate belts 26b, d, f, h, j are driven by pulley wheels 36b on shaft 44, which is also a drive shaft.

All shafts 38, 40, 42, 44 are supported on the movable carriage or frame 28. The frame 28 is formed of two spaced longitudinally extending angle bars 47, 48 and two cross pieces at each end formed by plates 50, 51 secured to the bars. Cross plate 50 supports two spaced vertical plates 53, 54 aligned parallel with the belts 26. The shafts 38, 40 are journaled for rotation in the vertical plates 53, 54, and are spaced from each other in a horizontal plane. The pulleys 34a, 36a are between the vertical plates. Shaft 38 connected with the pulley wheels 34a is connected at one end by a coupling 56 to a motor shaft 58 of an electric motor 60. The motor 60 is mounted directly to the cross plate 50 for movement with the frame 28. Shaft 40 is an idler shaft.

The cross plate 51 at the opposite end of the frame 28 has two vertical plates 53, 54. Shafts 42 and 44 are supported for rotation in the vertical plates 63, 64. Shaft 42 is an idler shaft. Shaft 44 is connected by a coupling 66 to a motor shaft 68 of an electric motor 70. The electric motor 70 is supported directly on the cross plate 51 for movement with the frame 28. With this arrangement, the motor 50 drives belts 26a, c, e, g, i and the motor 70 drives the alternate belts 26b, d, f, h, j.

A rigid, flat, support plate 67 of suitable non-magnetic material, such as card stock or plastic, extends beneath the upper reaches of the belts 26. This plate holds the belts close to the underside of the playing surface 20. Opposite ends of the plate 67 are supported on the frame or carriage 28 by brackets 69 secured to opposite ends of cross plates 50, 51. Suitable fasteners, such as screws 65 retain the plate 67 in place on the brackets. As will become more apparent subsequently, the support plate 67 also provides a base surface that prevents magnets attached to the belts 26 (which are capable of independent restricted movement) from falling down below the upper reaches of the belts, away from the playing surface. For this purpose, the plate 67 extends substantially beyond the outside belts 26a and 26j, beyond the limits of possible independent movement of the magnets.

A control panel 71 is indicated diagrammatically in FIGURES 1-3. The control panel 71 is conventional and is used to control the direction and speed of rotation of the electric motors 60, 70 in manner well known in the art. Electric current is supplied in a conventional manner.

The lower supports 30, 31 support the movable frame 28 for lateral movement relative to the base 12. The two supports 30, 31 are longitudinally spaced and extend transversely of the base member 12. The support 30 includes a cross piece 72 and two upwardly extending vertical end plates 73, 74 on opposite sides of the frame 28. Similarly, the support 31 is formed of a cross piece 76 and two upwardly extending vertical plates 77, 78.

A shaft 80 is mounted in the support 30, journaled in

the vertical plates 73, 74 and extends transversely of the base 12. The shaft 80 passes through the longitudinal frame members 47, 48 of the frame 28. One portion 80a of the shaft 80 is smooth and passes through a slide bearing 82 secured to the angle bar 48. A second portion 80b of the shaft 80 is threaded and passes through a nut 84 secured to the angle bar 47.

Similarly, a shaft 86 is journaled for rotation in the vertical plates 77, 78 of the support 31. A smooth portion 86a of the shaft 86 passes through a sleeve bearing 88 secured to the angle bar 48. A threaded portion 86b passes through a nut 89 secured to the angle bar 47. The shafts 80, 86 are threaded so that rotation in the same direction causes movement of the frame 46 transversely of the base 12.

A hand wheel 90 is mounted to the outside of side member 14 and is used to rotate the two shafts 80, 86. The hand wheel 90 is secured to one end of a horizontal shaft 92 journaled for rotation in a support bracket 94 fastened to the base member 12 adjacent the vertical side member 14. Two sprockets 96, 98 are fastened to the shaft 92. The sprocket 96 drives a chain 100 and the sprocket 98 drives a chain 102. The chain 100 encircles a sprocket 104 secured to the end of shaft 80, adjacent the threaded portion 80b. The chain 102 encircles a sprocket 106 secured to the end of shaft 86, adjacent the threaded portion 86b. Rotation of the hand wheel 90 causes rotation of the shafts 80, 86 in the same direction through the chain drive 100, 102. This moves the frame 28 back and forth, from one side to the other of the base 12.

A detailed view of three belts 26 is shown in FIGURE 4 of the drawings. The direction of movement of each belt is diagrammatically indicated by arrows, each alternate band moving in the same direction and at the same speed under the control of one of the drive shafts 38 or 44. The belts 26 are preferably flat and thin, and relatively narrow. They may be formed of rubber, plastic or composition and are preferably somewhat elastic to maintain the bands under tension to assure a positive drive without appreciable slippage. It is contemplated that such belts 26 may be in the form of timing belts, cooperating with teeth on pulleys or wheels 34, 36. Chains or bars, such as racks, or other narrow bands or strips could also be substituted. As best illustrated in FIG. 5, the pins 32 extend upwardly through the belts 26, providing a pivotal connection for magnets, such as the magnets 110 or 112. Indicia indicated at 113 are provided on at least one belt of each set to indicate, at a position adjacent the ends 21, 22 of the playing surface, the location of the first (i.e., most advanced) magnet on the belts 26 beneath the playing surface.

The magnets 110 include an attachment portion 114 that is preferably not magnetized and which has a central aperture 115. A magnetic portion 116 extends from the attachment portion 114 so that the magnetic portion is off center from the aperture 115. The aperture 115 is constructed to receive one of the pins 32. As illustrated in FIGURES 4, 5 and 6, the magnet 110 is generally flat, having upper and lower planar surfaces and with the aperture 115 providing a through passageway perpendicular to the upper and lower planar surfaces. The aperture 115 is of a size sufficiently larger in diameter than pin 32 so that the magnet 100 can freely pivot about the pin 32 while carried on the band 26. A retainer ring 117 retains the magnets on the pins. Due to the close juxtaposition of the bands 26, as shown in FIGURE 4, pivotal movement of the magnetic portion 116 about the pin 32 will move the magnetic portion from directly over the supporting belt to a position overlying the adjacent belt, which is controlled by an opposing player.

The magnet 112 is of somewhat different construction from magnet 110 to allow greater freedom of movement of a magnet portion 119 with respect to an attachment

portion 120. In this embodiment, a magnetic portion 119 is coupled to the attachment portion 120 by a flexible linkage 122, which, in its preferred form, is a flexible length of ribbon-like material, such as plastic. The attachment portion 120 is secured to a belt 26 by a pin 32, in the same manner as the attachment portion 114 of the magnet 110. The flexible linkage 122 provides a wide range of positions of the magnetic portion 119 relative to the attachment portion 120. Thus, if the magnetic portion is off to one side when the belts 26 are first moved, it will travel in a path initially diagonally to the direction of belt movement until it swings around behind the attachment portion 120. Moreover, the magnetic portion 119 can be prepositioned by a player by sliding a game piece into position above the magnetic portion 119 and then to one side of the associated belt 26, carrying the magnetic portion 119 along with the game piece due to the magnetic attraction. This maneuver is not necessarily detected by the opposing player and, accordingly, the game piece so positioned will move in a manner generally known to the player positioning the piece but in a manner unexpected by the opposing player. A magnetic portion 119 is shown off to one side of its associated belt in FIGURE 4. The magnetic portions 119 are held adjacent the game surface by the support plate 67 even if they move off the belts 26.

The retainer rings 117 frictionally engage the pins 32 and permit purposeful removal of the magnets. Certain magnets may be removed or exchanged as part of the strategy of the game.

The magnets 110 and 112 are constructed with one portion of one polarity and another portion of an opposite polarity. For example, as indicated in FIGURE 6, an upper planar surface 116a of the magnetic portion 116 may be of a first polarity, such as magnetic north. The lower planar surface 116b is of an opposite polarity, such as magnetic south. All of the magnets on the alternate strips under the control of one player are arranged with the polarities in a common position; e.g., with the south pole of each magnet up, facing away from the belt 26 to directly underlie the playing surface 20. All of the magnets 110 and 112 on the alternate bands under control of the other player are arranged with an opposite or north pole facing upward, away from the surface of the band 26 to directly under lie the playing surface 20. With this arrangement, the magnets of adjacent bands 26 tend to attract each other as they approach one another, whereas a magnet that might lie close to the magnet on an alternate strip (as would be the case if they were pivoted toward each other) will tend to repel one another to avoid contact of playing pieces on the same team being moved by the two magnets.

A typical game piece 25 in the form of a football player is shown in detail in FIGURE 5 of the drawings. The game piece 25 is in the form of a generally upright man having a narrow, elongated base member 124. The base member 124 includes a flat rear bottom portion 126 and an upwardly curved forward bottom portion 128. A plate 130, of ferromagnetic material, such as iron or steel, is provided in the forward bottom portion 128. Preferably, this plate is embedded into the base member 124 or is otherwise secured in a relatively flush manner so that the game piece 25 may rock about the bottom surface of the base member. When a magnet, such as the magnet 110 shown in FIGURE 5, moves beneath the game piece 25 in the direction indicated by the arrow, the game piece 25 will tilt forward, as shown, because of the location of the metal plate 130 and the shape of the base member. This position of the game piece 25 not only accurately simulates the position of a football player in actual play, but also positions the game piece with the center of gravity forward, to better engage a game piece of the opposing side. Pivotal movement of the game piece 25 can be facilitated by forming the metal plate 130 in a

slight dome-shape. Such shape is particularly advantageous with certain types of game pieces, such as swordsmen that might be used in war games, because the piece tends to pivot back and forth during movement, simulating the actual movements of a duel.

It will be apparent that many interesting games can be played with the above described apparatus. In operation, and by way of example, game pieces representing two opposing teams in a football game are aligned on opposite sides of the yardline marked of the grid iron 24. This simulates a formation at the beginning of a play from scrimmage. A player handling each team arranges the game pieces in a desired manner, consistent with the rules of the game being simulated and in a manner best suitable to the offense and defense, in keeping with the characteristics of the present apparatus. When necessary, the players adjust the positions of the belts 26 of each set in accordance with the indicia on one or more of the belts, indicating the position of a lead magnet. The lead magnets will normally be placed beneath the linemen at the line of scrimmage.

In establishing the position of the game pieces, each player positions men over the magnets 110 and 119 so that the game pieces move in a predetermined manner and formation. For example, certain pieces may be placed ahead of the associated magnets that will move beneath them, so that the pieces do not move as soon as other pieces that are directly over other magnets. Some other pieces can each be moved across a magnet portion 119 that is connected by a flexible strip 122 to a belt. When such a piece is finally positioned it will be directly over the magnetic portion 119 of a magnet 112 but will not be directly over the associated belt 26. See FIGURE 4. This piece will move in a manner unexpected by the opposition.

Play is begun by starting the motors 60, 70, causing the belts 26 to move. Normally, the belts of each set will be moved in an opposite direction to bring both teams forward into conflict. Ideally, one set of belts will be under the individual control of each player. If desired, the defensive team can move backward, i.e., in the same direction as the offensive team, momentarily, by reversing the drive motor. This can change the relative positions of the playing pieces on the team due to the manner in which the magnetic portion of each magnet can vary in position with respect to the belt to which it is attached.

When a game piece approaches another on the same team during the play, the pieces will repel each other due to the polarity of the associated magnets. When pieces on opposite approach each other they are attracted together and the pieces tend to knock each over or out of position. In the exemplified football game, the play ends when a game piece designated as the ball player is stopped or knocked over by the opposing team.

At any time during the play, one player, for example, the player controlling the offensive team, can rotate the hand wheel 90 causing the belts 26 to move as a unit to one side of the playing field or the other. This causes the game pieces to move or slide across the supporting surface at an angle. It also causes the magnetic portions of the magnets to pivot about the attachment pins 32. Both factors tend to change the relative positions of the players of the offensive team and the defensive team, so that the defensive strategy might no longer be effective.

After each play, the belts 26 of each set are reversed and placed in a desired position that will permit forward movement of the belts again from a line of scrimmage at the point where the designated ball carrier was stopped. Each player then arranges the game pieces in accordance with a desired formation and play again resumes. When a ball player of one team moves to the far end of the playing field and crosses the goal line, a score is recorded. The number of plays permitted, and the distance to be advanced in any given number of plays can follow the conventional rules of the sports simulated. Rules may

also be agreed upon in advance by the players. It is of course recognized that many modifications of the rules used in actual games must be made because of the limited functions in which the playing pieces can perform, as compared with actual players. Nevertheless, it will be apparent that a novel and interesting game apparatus has been provided that is versatile and interesting to play, and which simulates many phases of various activities, such as sports, battles, etc. in a realistic manner.

While a preferred embodiment of this invention has been described with particularity, it will be understood that various modifications and alterations may be made therein without departing from the spirit and scope of the invention, as set forth in the appended claims.

What is claimed is:

1. In a game apparatus, the combination of:
 - (a) a plurality of separate, movable game pieces;
 - (b) a playing surface lying in a flat plane for supporting the game pieces;
 - (c) a plurality of elongated movable members beneath the playing surface providing surfaces parallel to the playing surface and having a plurality of pivotal connections extending upward toward the playing surface;
 - (d) means supporting the movable members for movement relative to the playing surface;
 - (e) means to drive the movable members in two opposite directions relative to the supporting means; and
 - (f) permanent magnets for causing movement of game pieces on the playing surface in response to movement of the movable members beneath the playing surface, said magnets being secured to the movable members by said pivotal connections for movement with the members and for rotational independent movement about the connections in a plane essentially parallel to the playing surface, said magnets including a portion engaging the pivotal connection and an off-center magnetic portion.

2. The game device of claim 1 wherein game pieces include base portions having a magnetic attraction to magnets carried by the movable members.

3. In a game apparatus, a plurality of game pieces that have base portions for supporting the game pieces upright relative to a horizontal support, a generally horizontal playing surface for supporting the game pieces, two sets of game piece actuators in the form of endless loops beneath the playing surface movable horizontally relative thereto, and extending beyond the playing surface at two opposite ends thereof, ferromagnetic base portions on the game pieces and magnets on the actuators that establish a magnetic attraction between the game pieces and the actuators, said magnets on the actuators being fastened for movement with the actuators and also for restricted, independent movement relative to the actuators, the magnets on one set of game-piece actuators being of opposite polarity from the magnets on the other set, and indicia associated with the loops and visible beyond the playing surface indicating the location of a preselected magnet carried by the loops beneath the playing surface.

4. In a game apparatus, a plurality of game pieces that have base portions for supporting the game pieces upright relative to a horizontal support and including a game piece in the form of a generally-upright figure with an elongated base portion, said base portion including a bottom surface having a relatively flat rear portion and an upturned front portion, a generally-horizontal playing

surface for supporting the game pieces, game piece actuators beneath the playing surface movable horizontally relative thereto, means on base portions of game pieces and means on the actuators that establish a magnetic attraction between the game pieces and the actuators, said means on the actuators being fastened for movement with the actuators and also for restricted independent movement relative to the actuators, and said means on the base portion of said game piece in the form of a generally upright figure being located at the upturned front portion essentially along the playing surface when the said means on an actuator underlies the upturned front portion and establishes a magnetic attraction between the upright game piece and the actuator.

5. In a game apparatus, the combination of:

- (a) a plurality of separate movable game pieces,
- (b) a horizontal playing surface,
- (c) a plurality of parallel, endless belts trained about spaced pulleys beneath the playing surface, with an upper reach oriented horizontally beneath and closely adjacent to the playing surface,
- (d) said belts arranged in two sets of plural belts, the belts of one set being interposed alternately between belts of the other set,
- (e) means to independently drive the belts of each set in either of two opposite directions about the spaced pulleys, and relative to the playing surface,
- (f) means to move both sets of belts transversely to the direction the belts extend and relative to the playing surface,
- (g) magnetic means secured to the outer surface of the belts, beneath the playing surface,
- (h) said magnetic means having a non-magnetic portion pivotally attached directly over the belt and a magnetic portion extending from the non-magnetic portion, whereby the location of the magnetic portion relative to the belt can vary,
- (i) said magnetic portions each including an upper surface adapted to be located adjacent the playing surface and a lower surface that faces the belt and is adapted to be located away from the playing surface, said upper and lower surfaces being opposite poles of the magnetic portion,
- (j) the upper surfaces of all the magnets of any one set of belts having the same polarity and the upper surfaces of the magnets of belts of the different sets having opposite polarity,
- (k) said game pieces including base members having ferromagnetic portions.

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