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Pahlas

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[54] **COMBINATION GAME AND EDUCATIONAL DEVICE**

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[52] **U.S. Cl.** ..... **273/1 M,** 35/37, 273/116, 273/125 A

[51] **Int. Cl.** **A63f 7/06,** G09b 11/04

[58] **Field of Search** ..... 273/1 M, 1 E, 1 R, 110, 273/115, 116, 125; 35/36, 37

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[57] **ABSTRACT**

An educational magnetic game device wherein a steel or other magnetic ball is caused to traverse an undulatory channel-like track under the influence of a magnetized stylus. Appropriately positioned holes in the channel track bottom constitute obstacles to continuous movement of the ball along the track. The game device is embodied in a box having a non-magnetic transparent hinged lid through which the track may be viewed and the ball magnetically attracted while the interior of the box affords a storage space for a selection of different tracks. A guide channel within the box receives a ball which has successfully traversed the track and returns it to the player. Such balls as are entrapped by the obstacle holes are captured within the box. The various tracks define contours which may familiarize the player or players with specific shapes such, for example, as letter or numeral shapes, or merely with penmanship strokes which are used in executing such shapes.

2 Claims, 8 Drawing Figures

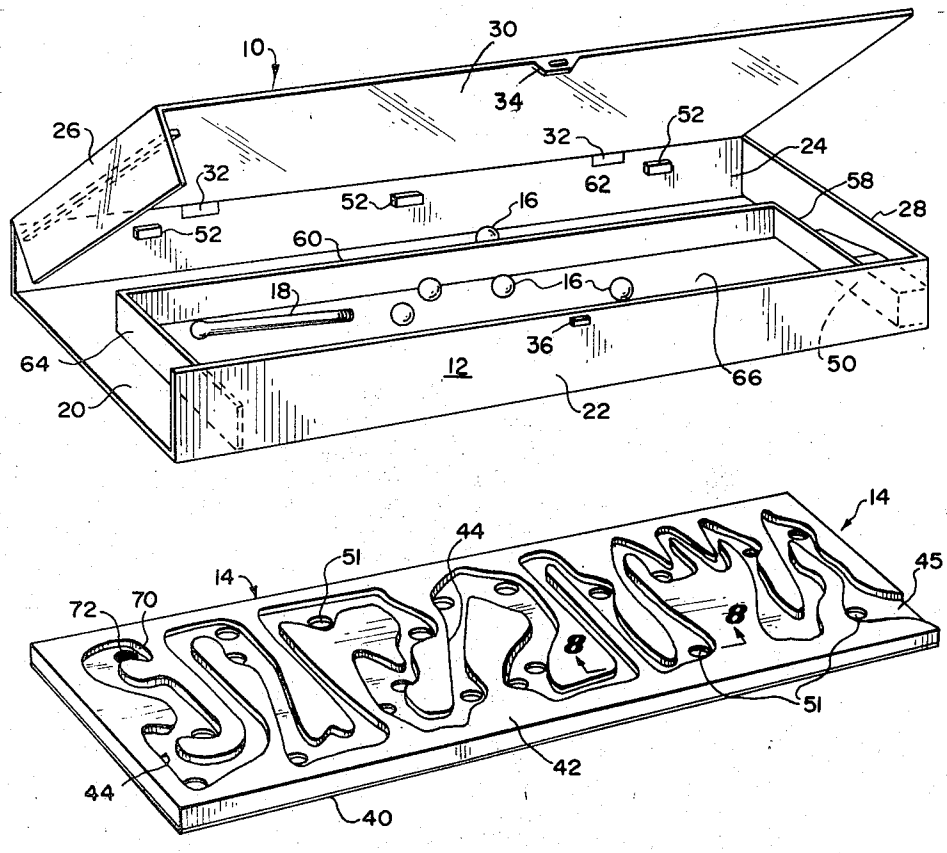


FIG. 1

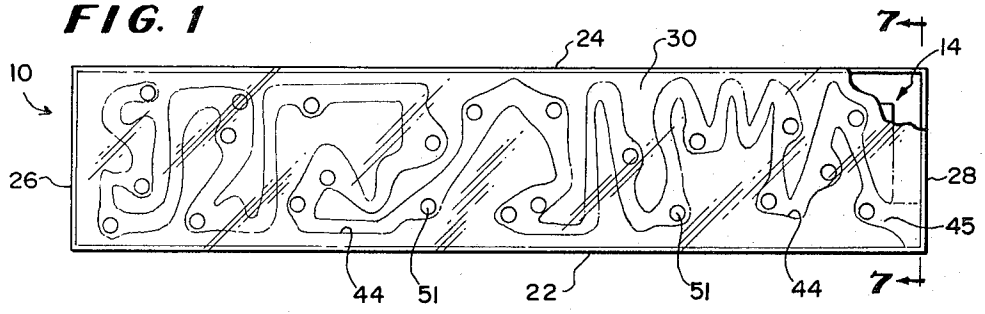


FIG. 2

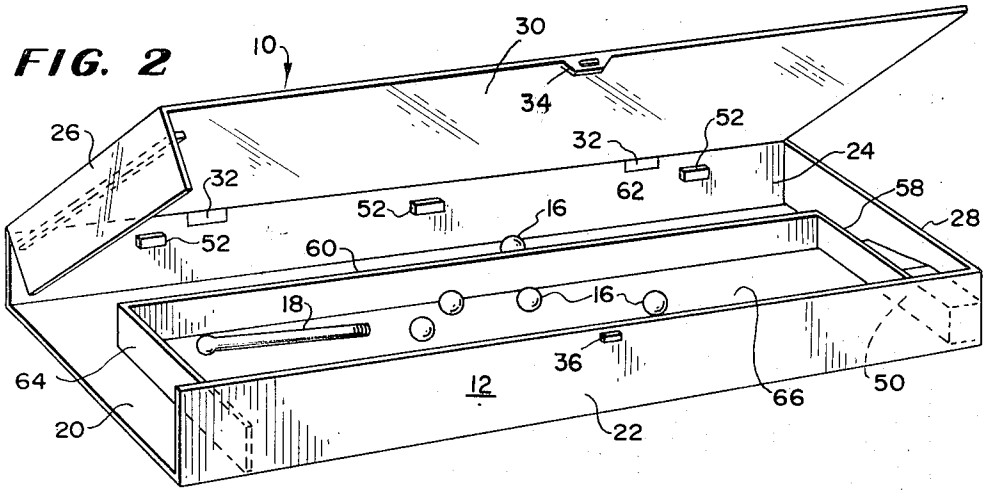


FIG. 3

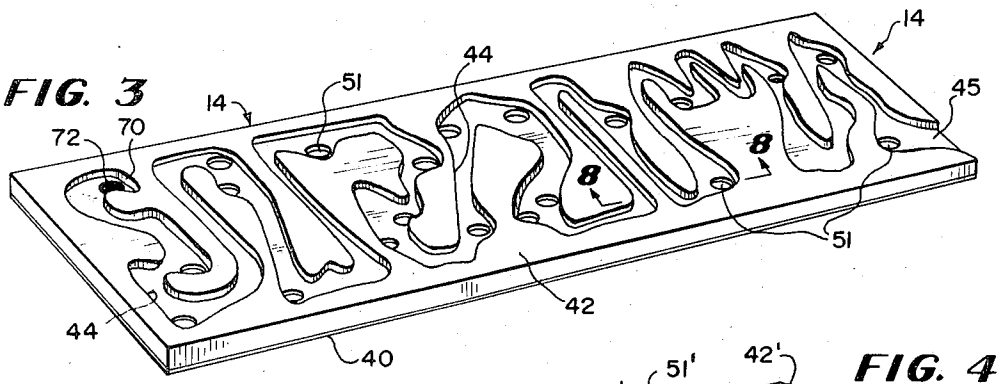


FIG. 4

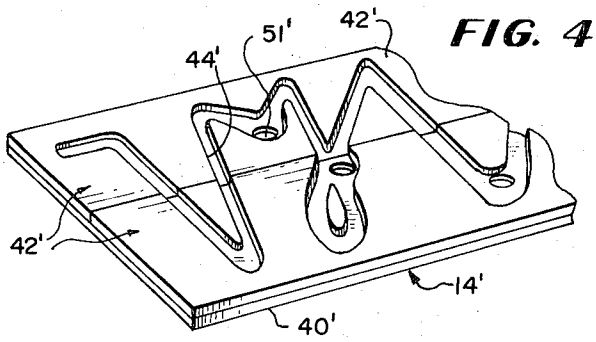


FIG. 5

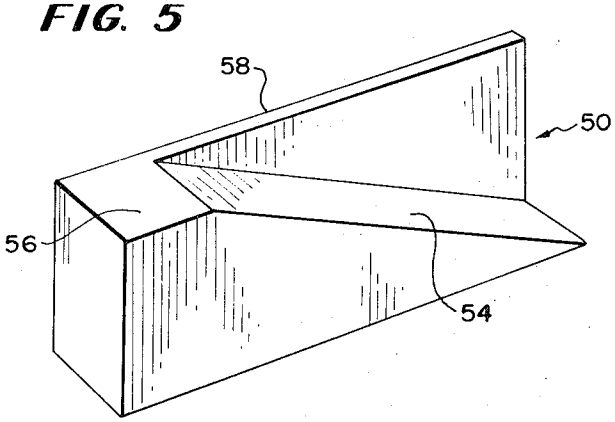


FIG. 6

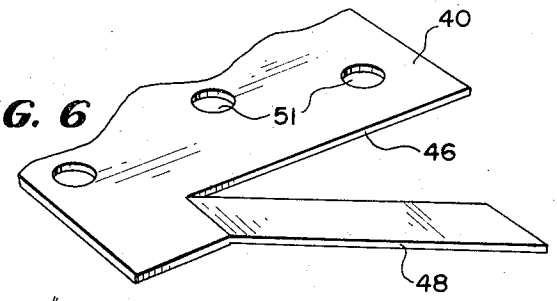


FIG. 7

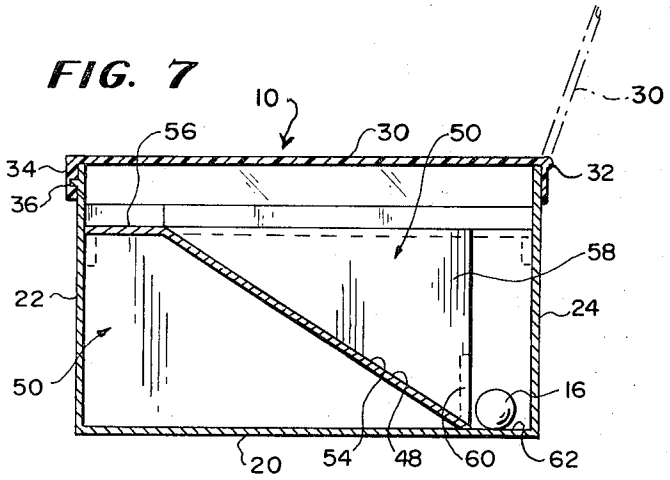
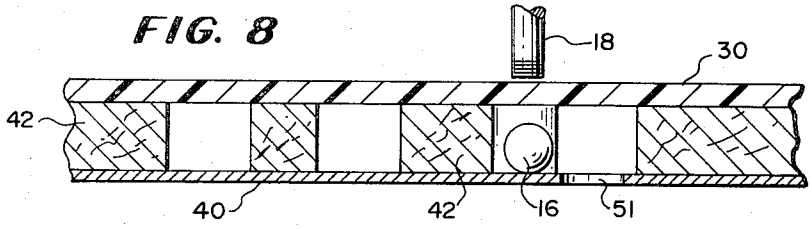


FIG. 8



COMBINATION GAME AND EDUCATIONAL DEVICE

The present invention relates generally to educational magnetic game devices of the type which provides a lane or channel, together with a playing piece or object which is adapted to traverse such channel from one end thereof to the other under the influence of the magnetic attraction which is offered to it by a manually movable stylus or wand.

There are currently in use at the present time a number of games of this general character, such games differing widely both in the manner in which they are played or operated, and in their objectives i.e. the end results which are sought by playing such games. Certain such games employ plural but intercommunicating track paths which, collectively, establish a labyrinth which must be solved before the playing piece may be moved to its home position at one end of the game board or field. Other such games employ uni-directional obstacles which allow the playing piece to pass in one direction toward either a clear path continuation or toward a dead end. Still other games of this nature employ lanes which are not channel-defined so that extreme care must be taken to maintain the playing piece centered at all times on a marked lane which is provided for it, any appreciable deviation from such lane resulting in entrapment of the playing piece.

Games of this general character are based solely upon their entertainment value and they are possessed of little if any educational merit. Game boards which offer plural and selective channels for the playing piece or pieces offer no manipulative training skills inasmuch as the player or players seldom cause the playing piece to traverse the same path in moving from the starting point to the finishing point. Game boards which employ open lanes instead of confing channels require that the player move his playing piece slowing and with precision, concentrating at any given time on the immediate area of the game board which is undergoing traversing. Games with uni-directional obstacles along the path of travel of the playing piece also require the player to move the piece slowing while studying the existence of various other such obstacles at points further advanced along the track or tracks. Games which utilize pockets or depressions as obstacles which are to be avoided posses the limitation that when a given playing piece is caught in one of the depressions it remains seated therein and the playing of the game must be terminated until such time as the playing piece is manually withdrawn from the depression.

The present magnetic game device differs from game devices of the character briefly outlined above both functionally and structurally. Insofar as its function is concerned, the invention contemplates the provision for the playing piece of a channel-like track wherein the contour of the track defines either complete or partial indicia such as letters or numerals so that the player, in advancing the playing object along the track by the magnetic stylus or wand is obliged to perform strokes which are patterned along acceptable penmanship lines, such a device being particularly educational to small children who are approaching grade school level. In order to prevent the stylus or wand from deviating too widely from the acceptacle penmanship path, obstacles are positioned at strategic points, for example in the vicinity of an outside curve, or of an inside curve, where a direction change is involved, the presence of such obstacles calling for caution on the part of the player as he or she encounters the particular outside or inside curve.

Structurally, the present game device offers numerous advantages over magnetic game devices currently in use, one important advantage residing in the fact that plural interchangeable game boards are employed so that each game board may be used in the training of the player in the performance of certain penmanship strokes to the exclusion of others. In the attainment of this advantage the invention contemplates the provision of a composite, package-type game in the form of a rectangular box which establishes an enclosure for all of the component game parts including the game board to be used, the playing piece or pieces and the magnetic stylus or wand. A hinged transparent cover or lid allows the particular or selected game board which is in use to be viewed, this lid being of nonmagnetic material so that attraction of the playing piece by the stylus through the lid may be resorted to for piece-impelling or controlling purposes. Shelf-supports within the box serve selectively to support the various game boards. Each game board is of flat panel-like construction, the upper surface of the board being provided with a channel that defines a generally sinuous tortuous or serpentine path for travel of the playing piece from one end to the other. The playing piece is in the form of a ball of magnetic material which makes the ball capable of being magnetically attracted to the magnetic stylus or wand. The width of the channel is somewhat greater than the diameter of the ball so that the latter may have some freedom of lateral movement within the channel. At judiciously selected regions along the channel the latter is widened and, in such widened areas, there are formed obstacles in the form of drop-out holes. Thus, if a ball is caused to deviate by an irregular hand movement on the part of the player from the desired uniform penmanship stroke, the ball will encounter the adjacent hole and fall through the latter into the interior of the box where it is captured, along with any other similar balls which have thus been misplayed. On the other hand, a ball which has successfully avoided all of the obstacles and traversed the full length of the channel will pass through an exit hole and follow a return channel or guide within the box and thus be returned to the player for re-playing purposes. By such an arrangement, a player may continue with the game indefinitely until all of the playing pieces or balls assigned to him for playing purposes have been captured within the box.

The provision of a game device such as has briefly been outlined above constitutes the principal object of the present invention. Other objects and advantages of the invention, not at this time enumerated, will readily suggest themselves as the following description ensues.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by the claims at the conclusion hereof.

In the accompanying two sheets of drawings forming a part of this specification, one illustrative embodiment of the invention is shown.

In these drawings:

FIG. 1 is a plan view of an educational magnetic game device which is constructed according to the principles of the present invention;

FIG. 2 is a perspective view of the box-like game housing with the game boards removed, the hinged lid being shown in a partially open condition;

FIG. 3 is a perspective view of one of the game boards;

FIG. 4 is a fragmentary perspective view of another game board containing a different channel pattern or arrangement;

FIG. 5 is an enlarged perspective view of the particular game board-supporting and ramp member which is employed in connection with the invention;

FIG. 6 is an enlarged fragmentary perspective view of a game board bottom panel;

FIG. 7 is an enlarged transverse sectional view taken on the vertical plane indicated by the line 7—7 of FIG. 1 and in the direction of the arrows; and

FIG. 8 is an enlarged longitudinal sectional view taken on the line 8—8 of FIG. 3 and schematically illustrating the manner in which the ball is impelled by the magnetic stylus or wand.

Referring now to the drawings in detail and in particular to FIGS. 1 to 3, inclusive, a game device embodying the principles of the present invention is designated in its entirety by the reference numeral **10** and it is comprised of a combined game housing and playing stand **12**, a series of individual but differently patterned game boards, two of which are illustrated herein in FIGS. 3 and 4 and designated by the reference numerals **14** and **14'**, respectively, one or more game or playing pieces in the form of steel balls **16**, and a magnetized stylus or wand **18**.

As shown in FIGS. **1**, **2** and **7** of the drawings, the housing **12** is of rectangular box-like construction and includes a bottom wall **20**, upstanding front and rear side walls **22** and **24**, end walls **26** and **28**, and a hinged cover or lid **30**. The end wall **28** is a fixed end wall which is associated with and extends upwards from the bottom wall **20**, while the end wall **26** is a movable end wall in the form of a flange which is formed integrally with and extends downwardly from the end of the lid **30** that is opposite to the fixed end wall **28**. The lid is hingedly connected to the upper margin or edge of the rear wall **24** by means of conventional hinge assemblies **32** and it is capable of being maintained in its closed position by means of a downturned, aperture-equipped catch **34** which is formed on its outer or free edge and cooperates with a lug **36** on the front wall **22**. Fixedly disposed within the housing **12** and constituting functional elements thereof are game board-supporting members by means of which a selected game board may be operatively positioned within the housing for game playing purposes immediately beneath the lid **30** and the character of which will be set forth subsequently when the nature of the various game boards has been made clear. The lid **30** is formed of any suitable transparent plastic material which is non-magnetic.

Considering now the game board **14**, although this board may be of one-piece construction, in the interests of economy and for convenience of manufacture it is preferably comprised of a flat bottom plate **40** (see FIGS. **3** and **8**) which may be formed of stiff cardboard, paper board or the like, and to the upper surface of which there is adhered a channel-forming structure or sheet **42** which preferably is constructed of wood panel stock or plywood and is substantially coextensive with the plate **40** except for the provision therein of a cut-away area which defines a generally sinuous tortuous or serpentine channel **44** when the structure **42** is glued or otherwise adhered to the upper face of the bottom plate **40**. This channel extends from a starting region adjacent to one end edge of the game board to a discharge region adjacent to the other end edge of said game board, the terminal end of the channel opening endwise over the last mentioned end edge as indicated at **45** and into a discharge area within the housing **12** when the game board **14** is operatively positioned within the latter as will be described presently. The channel **44** is adapted to receive therein one of the steel balls **16**, it being the object of the game to cause such ball to traverse the channel from the starting end thereof to the terminal or discharge end.

Two preferred methods of constructing the game board may be used. In FIG. **3** the game board **14** is provided with a channel-forming structure **42** which is of integral one-piece construction and in which the channel **44** is formed by a suitable stamping operation. In FIG. **4** the game board **14'** is similarly provided with a channel forming structure **42'** which is made in two halves, each half being cut in jig-saw fashion to produce complementary sections which, when adhered in place on the bottom plate **40**, establish the channel **44'**. Due to the similarity between the game boards **14** and **14'** and, in order to avoid needless repetition of description, similar reference numerals but with a prime affix have been employed to designate the corresponding parts as between the disclosures of FIGS. **4** and **3**.

As best shown in FIG. **6** of the drawings the end portion of, the rectangular bottom plate **40** that is located at the discharge end of the channel **44** is formed with a transverse slit **46** which extends inwardly from the rear longitudinal edge of the plate to a point near the front edge thereof, this slit serving to provide outwards thereof a strip which is bent to form a downwardly inclined ramp **48** down which the steel ball **16** may roll after it leaves the channel **44** at the end of its travel therealong. This ramp **48** is adapted to be supported on a wooden or other ramp supporting member **50** (see FIG. **5**) which is associated with the housing **12**.

The specific character of the channel **44** which is established by installing the wooden structure **42** on the bottom plate **40** will be pointed out presently after the manner in which the game board **14** is operatively supported within the housing **12** for playing purposes, it being sufficient at present to state that the bottom plate **40** is formed with a plurality of discharge holes **51** which lie within the confines of the channel sides, such holes constituting obstacles or traps which must be avoided by the ball **16** during travel thereof along the channel **44**.

Returning now to FIG. **2** of the drawings, the game board **14** is adapted to be operatively supported in a horizontal position within the housing **12** and, when so positioned, the longitudinal side edges of the bottom plate **40** are supported on a plurality of ledge-forming strips **52** which are suitably secured to the front and rear walls **22** and **24** of the housing **12**. With the game board thus supported, the discharge end thereof overlies the aforementioned ramp supporting member **50**, the latter being glued or otherwise fixedly secured within the housing so that it seats upon the bottom wall **20** and bears against the front wall **22** and the end wall **28**.

As shown in FIG. **5**, this ramp-supporting member **50** consists of a rectangular block which is relieved on one

side to establish a downwardly and rearwardly inclined ramp-supporting surface **54** which merges with a flat area **56** at its upper end. The remainder of the block is in the form of a vertical wall **58** which may be of such height that it serves to support the discharge edge region of the game board bottom plate **40.** As shown in FIG. **6,** by bending the ramp **48** downwardly and out of the plane of the bottom plate, the ramp may be caused to rest coextensively upon the inclined surface **54** of the member **50.** The small area **56** serves to support the adjacent corner region of the bottom plate **40** of the game board **14.** As shown in FIG. **1,** the portion of the bottom plate which overlies such area **56** establishes the aforementioned discharge area **45** into which the terminal end of the channel **44** opens. It will be apparent from an inspection of FIGS. **1, 2** and **7** that after a given ball **16** has traversed the track-like channel **44** and has been discharged from the terminal end of the latter, it will roll downwards by gravity upon the ramp strip **48** and move onto the bottom wall **20** of the housing **12.**

As shown in FIGS. **2** and **7,** a rail **60** extends longitudinally along the bottom wall in the vicinity of the rear wall **24** and blocks off a narrow strip of such bottom wall so as to define a return trough **62** for a ball **16** which has been discharged from the terminal end of the channel **44** and caused to descend the ramp **48.** A transverse rail **64** extends across the bottom wall **40** beneath the starting end of the game board and, in combination with the front wall **22,** the ramp-supporting member **50** and the rail **60,** establishes on the bottom wall **40** a relatively large rectangular walled enclosure or confinement area **66** which receives such balls **16** as do not make the full channel traverse but, instead, fall through the various discharge holes **51.**

Considering now the specific nature of the channel **44** in the game board **14,** the starting end of the channel is preferably a closed end and it may be slightly widened to provide an enlarged starting station or area **70** (see FIG. **3**) within which the playing ball **16** may be positioned at the commencement of game play. A printed or otherwise marked circle **72** may be provided on the bottom plate **40** within this starting area if desired to facilitate visual location of the area. It will be understood that in order to commence the play, the transparent lid will be raised by swinging the same upwardly to an out-of-the-way position wherein the channel **44** is exposed. After placing a ball **16** at the starting station or area **70,** the lid will be closed and the game board **14** will be clearly visible through such transparent lid. The game is, of course, played with the housing resting on a flat horizontal surface so that the game board **14** will also extend in a horizontal plane.

The ball **16** is adapted to be impelled along the channel **44** under the attractive influence of the stylus or wand **18** which is slid along the upper surface of the lid **30** in a path intended to match that which is established by the tortuous or serpentine channel **44.** The mass of the ball **16** and the relative strength of the magnetic field offered by the magnet are such that the stylus may be caused to lead the ball magnetically along the channel if the acceleration of the stylus does not exceed a value which will cause the ball to lag and thus become withdrawn from the effective magnetic field of the stylus. The strength of the field, however, is not so great as to cause the ball to jump upwardly from the bottom plate **40,** even when the stylus is positioned directly above the ball and is in contact with the upper surface of the transparent lid.

While a wide variety of tortuous channel paths may be defined by the channel **44,** it is preferable that the track shall extend so as to present linear spans which generally correspond to penmanship strokes and, in order to train the player in proficiency in performing such strokes with a reasonable degree of accuracy, the aforementioned trap-forming discharge holes are provided alongside the tortuous channel axis or centerline. These traps which are afforded by reason of the discharge holes **51** in the bottom plate **40** are disposed at strategic locations along the channel and in channel areas which are purposely made wider than the mean channel width and define lateral pocket-like bulges in the channel walls on one side or the other. As shown in FIG. **3,** there are in general two types of traps, one type existing in the vicinity of a reverse bend in the channel and the other type existing at a medial region of a linearly straight, or nearly straight, section of the channel. All of the trap-forming holes **51** are laterally offset in one direction or the other from the mid-line or axis of the track-like channel **44** so that during play a ball **16** which is being conducted accurately along the mid-line will not encounter any of the holes. However, if a ball **16** is being conducted in a path which deviates from the mid-line on either side thereof, it will encounter the adjacent hole **51** and drop by gravity through such hole and become captured in the confinement area **66** on the bottom wall **40** of the housing **12.** A ball **16** which, during the play thereof, successfully avoids all of the trap-forming holes **51,** will emerge from the discharge area **45** of the channel **44** and ride downwardly on the ramp **48** as previously described and be returned along the trough **62** to the player.

The game device of the present invention may be used by an individual player as a test of skill or as an educational device wherein the player is trained in wrist and forearm motions which match various penmanship strokes. Alternatively, the game device may be used as a competitive game by two or more players. In such an instance, each player may have assigned to him a plurality of balls **16.** In playing the game, each player in turn will place a ball within the channel track **44** on the starting area **72** and then, with the magnetized stylus **18,** attract the ball magnetically by causing the distal end of the stylus to slide along the upper surface of the closed transparent lid **30** while, at the same time, attempting to follow the mid-line or center-line of the channel **44.** To facilitate this operation, preferably but not necessarily, the channel center-line may be marked by a center-line (not shown). If the player, in his first attempt to bring a ball along the channel **44** to the discharge area **45** thereof, fails by reason of such ball having encountered one of the trap-forming holes **51** in the bottom panel **40** of the game board **14,** he may commence a second attempt with a different ball **16,** the game being continued in this manner until all of the balls assigned to him have been exhausted and captured within the confinement area **66.** On the other hand, at such time as a given ball has been successfully conducted along the channel, the ball will ride downwardly on the ramp **48** and along the return trough **62** where the successful player may retrieve it by the simple expedient of raising the lid **30** slightly and allowing the ball to roll from the housing **12** onto the subjacent table or other game-supporting surface. Each time a

ball is thus retrieved by the player, the player is accorded an additional opportunity to play, the score being calculated on the basis of the number of successful plays which may be made on the basis of the balls assigned to each player. After a player has exhausted all of the balls assigned to him, his playing turn is ended.

The particular game board undergoing use will be installed within the housing on the ledge-forming strips **52** in the manner previously described and game board substitution may be effected at any desired time by merely raising the hinged lid **30** for clearance purposes. It is contemplated that each game board will have formed therein track-like channels which are representative of several letters of the alphabet.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification as various changes in the details of construction may be resorted to without departing from the spirit of the invention. Therefore, only insofar as the invention is particularly pointed out in the accompanying claims is the same to be limited.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. A game device comprising a generally rectangular housing including a horizontal bottom wall, vertical front and rear side walls, vertical end walls, and a hinged lid pivotally connected to the upper marginal portion of said rear side wall for swinging movements between closed and open positions, said lid being comprised of transparent non-magnetic material, a flat rectangular horizontal game board disposed within said housing directly below said lid when the latter is in its closed position, said game board consisting of a flat bottom plate and a channel-forming panel sheet fixedly secured to the upper surface of said bottom plate, said game board, in combination with said housing walls, establishing beneath said game board a compartment for receiving a misplayed playing piece, said game board being of appreciable thickness and the channel-forming panel sheet thereof being relieved in order to define, in combination with said bottom plate, a shallow generally sinuous channel which commences at a receiving end of the board and terminates at a discharge end of the board and thus extends substantially from one end of the board to the other and defines a generally sinuous or serpentine path of movement for a playing piece, said channel presenting straightaway portions which are connected by reverse bends, the width of said channel throughout a major portion of its length being substantially uniform, the side walls of said channel at spaced regions therealong being provided with lateral pocket-like bulges, certain of which are formed in one side wall in the medial regions of said straightaway portions, and others of which are formed in one side wall in the vicinity of the reverse bend portions, said bulges establishing localized widened channel areas, certain of such widened channel areas having associated therewith playing piece traps in the form of hole which extend through the bottom plate and establishes playing piece communication between the channel and said compartment, means located at the discharge end of the board, positioned against one end wall of the housing, and forming a downwardly and rearwardly inclined playing piece ramp the upper end of which communicates with the discharge end of the channel and the lower end of which terminates adjacent to said bottom wall of the compartment, a longitudinal rail extending along the bottom wall a small distance forwards of the rear wall of the housing and having one end thereof terminating adjacent to the lower end of the ramp and its other end terminating a short distance inwards of the adjacent end wall of the housing, a transverse rail extending along said bottom wall, positioned inwards of the other end wall of the housing, and having its rear end connected to said other end of the longitudinal rail and its front end connected to the front wall of the housing, said longitudinal and transverse rails defining with the ramp-forming means and the front and bottom walls of the housing a walled enclosure for receiving a playing piece which passes through any of said trap-constituting holes in the bottom plate of the playing board, said longitudinal rail forming with the back and bottom walls of the housing a return trough in communication with the lower end of said playing piece ramp, a movable playing piece in the form of a spherical ball, comprised of magnetic material and designed for rolling reception in said channel, a magnetized stylus designed for manipulation over the outer surface of said lid so as to attract said game piece and cause the latter to travel along said channel from the receiving end thereof to the discharge end thereof, and a plurality of shelf-like ledge-forming strips carried by certain of the vertical walls of the housing and adapted loosely to support the game board for removable reception of the latter within the housing.

2. A game device according to claim **1** and in which the ramp-forming means includes a downwardly and rearwardly inclined end strip which is formed on the bottom plate at the discharge end of the game board by way of a transverse slit which extends inwards from the rear side edge of the plate and terminates inwards of the front side edge of the plate.

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