Aug. 25, 1964 A. M. ARCHER 3,145,993

ELECTRICALLY OPERATED SOLITAIRE TICKTACKTOE GAME

Filed Oct. 4, 1962 4 Sheets-Sheet 1

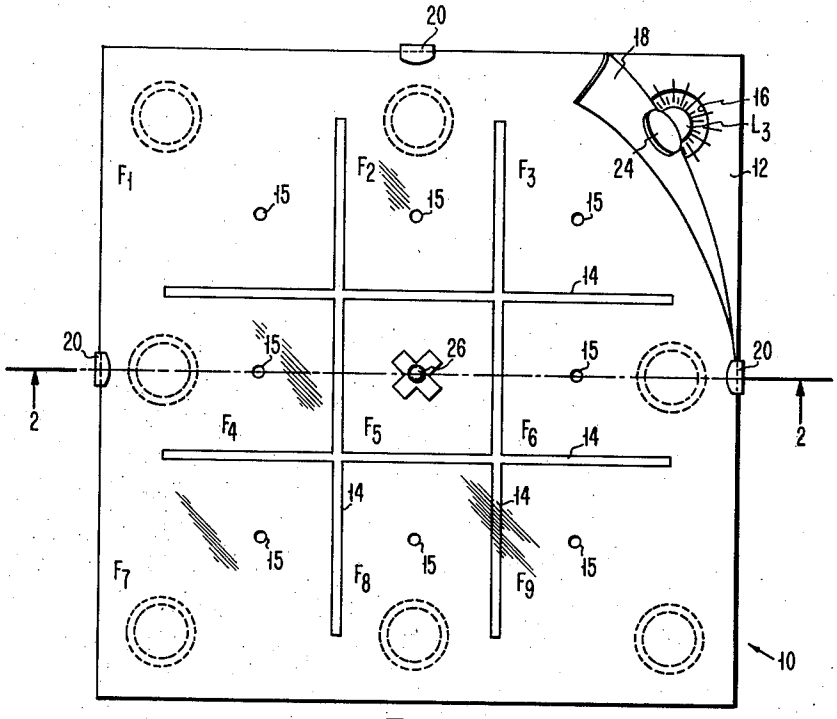


FIG.1

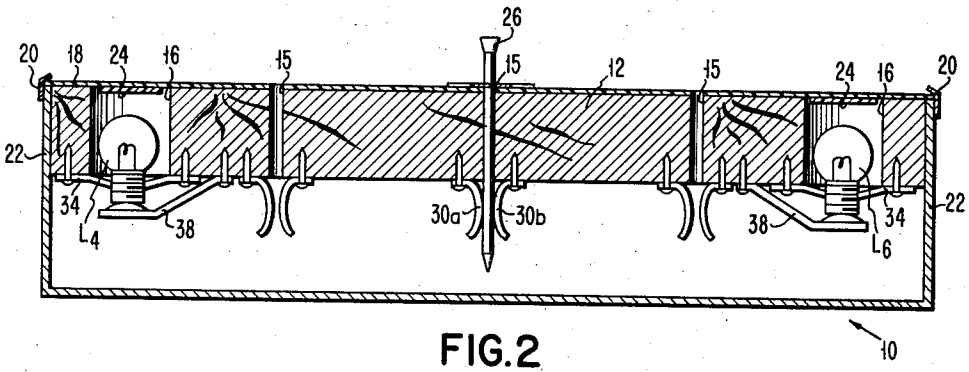


FIG.2

INVENTOR.
ANDREW M. ARCHER

BY

Aug. 25, 1964 A. M. ARCHER 3,145,993

ELECTRICALLY OPERATED SOLITAIRE TICKTACKTOE GAME

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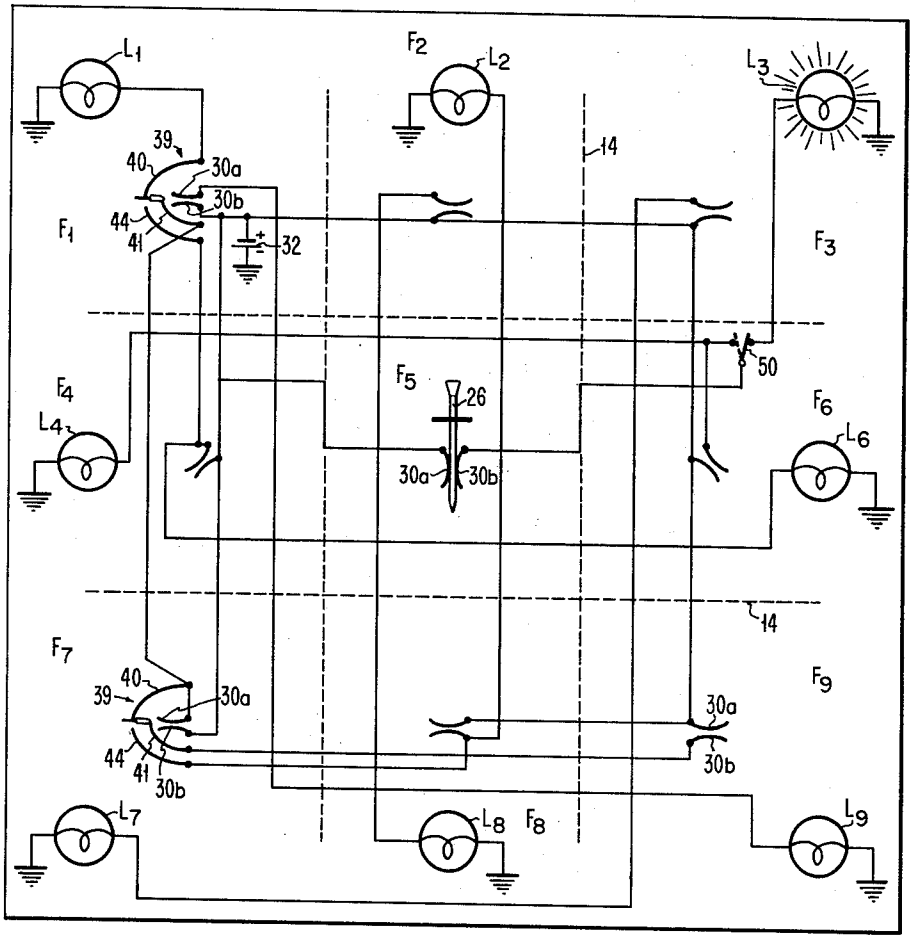


FIG. 3

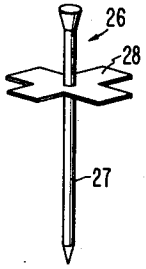


FIG. 4

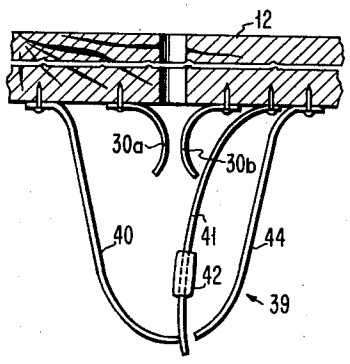


FIG. 5A

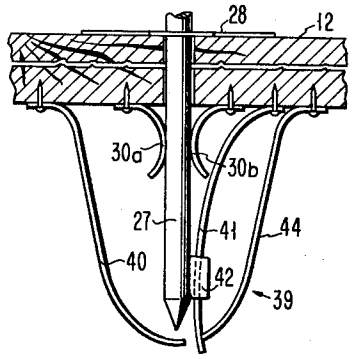


FIG. 5B

ELECTRICALLY OPERATED SOLITAIRE TICKTACKTOE GAME

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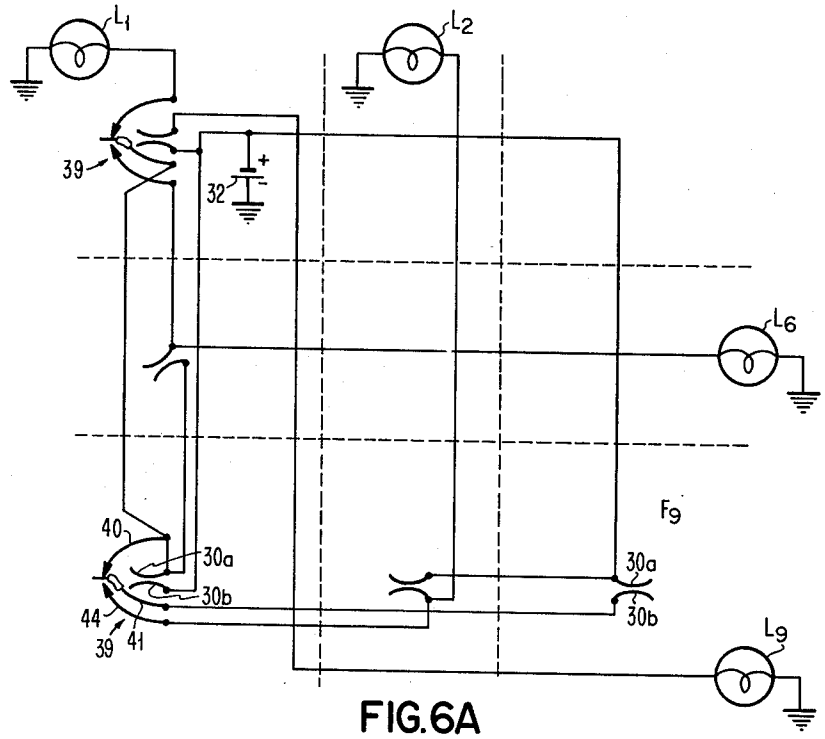


FIG.6A

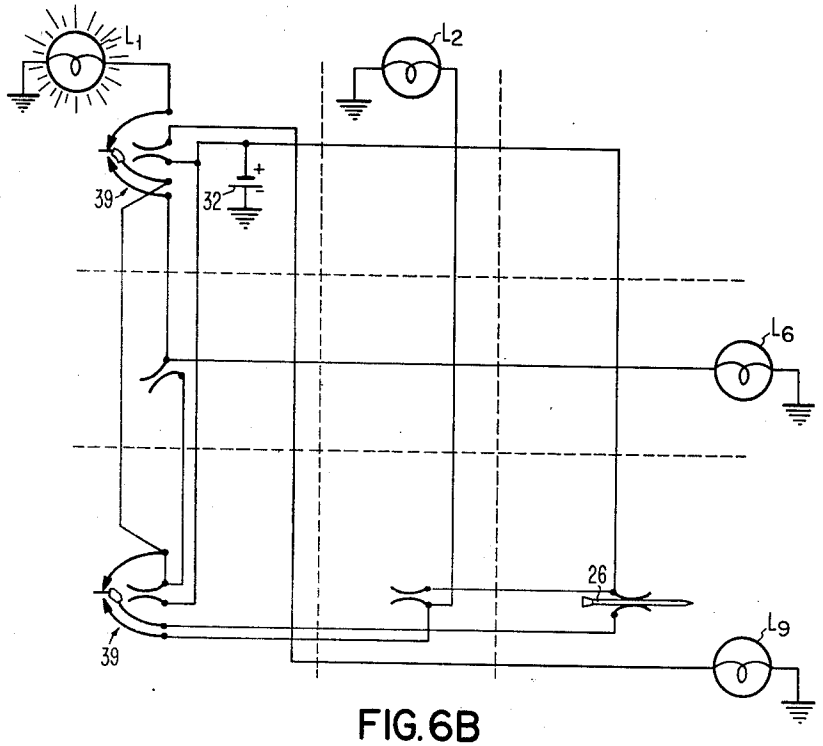


FIG.6B

ELECTRICALLY OPERATED SOLITAIRE TICKTACKTOE GAME

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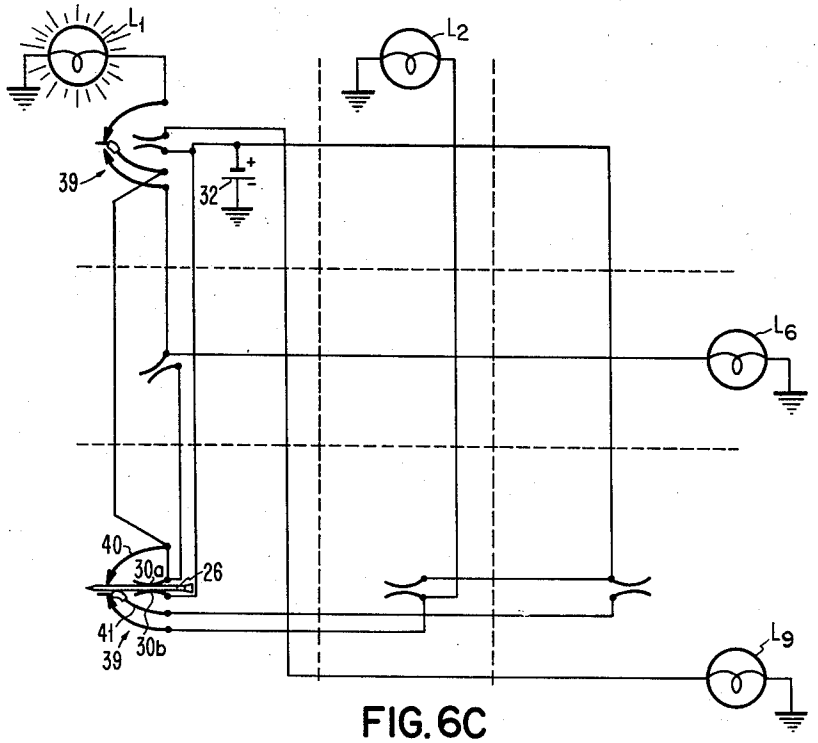


FIG. 6C

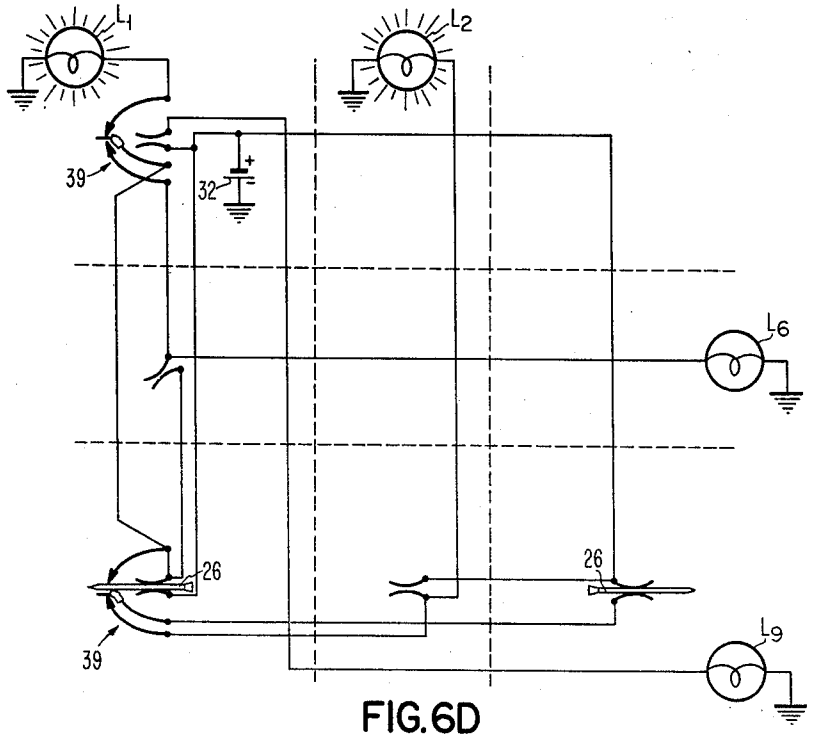


FIG. 6D

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3,145,993

ELECTRICALLY OPERATED SOLITAIRE TICKTACKTOE GAME

Andrew M. Archer, Rincon Annex, Seaman's Section, San Francisco, Calif.

Filed Oct. 4, 1962, Ser. No. 228,281
7 Claims. (Cl. 273—130)

The present invention relates to the game known under the name of ticktacktoe, which is played by two persons who mark alternately circles or crosses, respectively, into the fields of a checker board with the intention of completing a row of circles or crosses, as the case may be, while preventing the opponent from doing the same.

It is an object of my invention to provide an apparatus by means of which a single person may play the described game under conditions simulating the moves of an opponent.

More particularly it is an object of my invention to provide an apparatus in the form of a checker board upon which a player may make identifying marks and which in response to such marks will automatically display marks such as an opposing player would provide to counteract the player's moves and nullify his intentions.

Yet another object is to provide an apparatus, of the type referred to, that may be set to make occasional errors so that the player has a chance to win.

Still another object of the invention is to provide an apparatus, of the type referred to, that is of a simple and inexpensive construction, involves a minimum of electrical connections, and does not require relays, thermionic tubes or transistors.

These and other objects of my invention will be apparent from the following description of the accompanying drawings which illustrate a preferred embodiment thereof and wherein—

FIGURE 1 is a plan view of the apparatus of my invention.

FIGURE 2 is a vertical cross section through the apparatus taken along line **2—2** of FIGURE 1 and viewed in the direction of the arrows associated with said line.

FIGURE 3 is a diagram of the control circuitry of the apparatus, drawn as viewed from the top of the apparatus.

FIGURE 4 is a perspective of one of the markers employed in playing the game to mark a cross upon the fields of the board.

FIGURES 5A and 5B are side elevations of a multiple switch mechanism employed in the control circuit of the apparatus, illustrating different operational positions thereof; and

FIGURES 6A, 6B, 6C and 6D are diagrams showing a selected part of the control circuitry of FIGURE 3 in different operational positions.

In accordance with my invention I provide a translucent checker board wherein each field is provided with a centrally located aperture, and I provide symbols or markers such as cross bars mounted upon an electrically conductive stem, with which the player may mark his fields by inserting the stem into the apertures thereof; and below the translucent checker board I arrange electric circuitry that causes a luminous sign, such as a luminous circle, to light up under a predetermined field of the board in response to the insertion, by the player, of a marker into a field of the board. In this manner the moves of an opponent are simulated by the apparatus. Depending upon the details of the circuitry below the board, the apparatus of the invention may be arranged to respond appropriately to any move on the part of the player. In such a case the player cannot win the game, he can only hope to tie the game, or may lose the game. According to a modified embodiment of the invention I arrange the electric control circuitry below the board in such a manner that

the apparatus fails at times to respond in the proper manner, so that the player has a chance to win.

Having first reference to FIGURES 1 and 2, the apparatus of my invention comprises a flat rectangular box **10** whose top wall may be formed by a board **12** of wood or plastic material, that is divided into nine square fields F_1 to F_9 by heavy black lines **14**. Provided in each of said fields is a centrally located aperture **15** that passes through the board **12**, and each of its said fields, except the center field, possesses adjacent to its aperture **15** a cylindrical hole or recess **16** of sufficient size to receive a small bulb or lamp L. Placed upon the top of the board is a stiff sheet **18** of a translucent material such as parchment paper. Said sheet may removably be held in position upon the board by inwardly turned resilient lips **20** that project upwardly from the side walls **22** of the box. Provided on the underside of said sheet in axial alignment with each of the recesses **16** are opaque circular marks **24** of a somewhat smaller diameter than the maximum diameter of said recesses. Hence, whenever one of the bulbs in said recesses is illuminated, a luminous circle seems to appear upon the translucent sheet **18**.

The markers or symbols **26** with which the player operates, comprise a stem **27** of conductive material, such as metal, which fits snugly into the apertures **15** in the center of the fields F, and upon which may be supported a pair of cross bars **28** as illustrated in FIGURE 4. Whenever the stem of one of said markers is inserted into one of the apertures **15** in the fields F, it is effective to close an electric circuit through whatever lamp L must light up to prevent the player from planting a row of three consecutive markers **26** upon the board **18**.

The exemplary embodiment of the invention which I am about to explain, is based upon the assumption that every player will plant his first marker upon the center field F_5. Insertion of the conductive stem of a marker into the aperture **15** in field F_5 is, therefore, arranged to close an electrical power circuit through the lamp in one of the four corners of the board, say lamp L_3 below field F_3, so that a luminous circle appears in said field—which is the proper counter move that any player of average intelligence would make. Secured to the underside of the board at either side of the aperture **15** in field F_5 are two arched lips **30***a* and **30***b* of a resilient conductive material, such as brass, that are spaced from each other (FIGURE 2), but extend with their convex sides into the space below the aperture **15**. Said lips lie in, and normally interrupt, the power circuit of lamp L_3 (FIGURE 3). This circuit includes a battery indicated at **32** that may be a simple flash light battery and which is suitably secured to the underside of the board. When the stem of a marker **26** enters the space between the lips **30***a* and **30***b* and establishes conductive contact with both said lips, it closes said power circuit and lamp L_3 lights up so that a luminous circle appears in field F_3 of the board, which represents the proper counter move of an imaginary opponent (FIGURE 3).

For simplicity of construction and cheapness, each of the lamps L comprised in the embodiment of the invention illustrated in the accompanying drawings may be engaged in an aperture provided in a common sheet metal frame **34** (FIGURE 2) that is secured to the underside of board **12** and which is permanently connected to one pole of the battery **32** and thus establishes a permanent connection of all the lamps comprised in the apparatus to said pole. The other terminals of said lamps which are usually located at the bottom of their necks are arranged to contact yieldable metal tongues which form part of individual brackets **38** that are secured to the underside of the board **12**; and said brackets may individually be connected to the opposite pole of the battery **32** by insertion of a marker **26** into a hole **15** of a field F into

contact with the lips **30***a* and **30***b* located below said hole.

Reverting now to the actual conduct of the game, a player intent to win the game will now place a marker onto one of the remaining free fields. Arranged below the aperture **15** in everyone of fields F_1, F_2, F_4, F_6, F_7, F_8 and F_9, therefore is a pair of such normally spaced contact lips each lying in the power circuit of a lamp arranged below an opposite field. In the exemplary embodiment of the invention represented by FIGURE 3, the open contacts **30** below field F_1 lie in the power circuit of lamp L_9 below field F_9, the contacts **30** below field F_2 lie in the power circuit of lamp L_8, the contacts **30** below field F_4 lie in the power circuit of lamp L_6, the contacts **30** below field F_6 lie in the power circuit of lamp L_4, the contacts **30** below field F_8 lie in the power circuit of lamp L_2 and the contacts **30** below field F_9 lie in the power circuit of lamp L_1. However, the contacts **30** below field F_7 do not lie in the power circuit of the diagonally opposite lamp L_3 for this lamp was energized by the first move of the player, i.e. by insertion of a marker into the hole below the center field F_5 as was explained above, and insertion of a marker into the hole of field F_7 is therefore arranged to close a second power circuit for lamp L_1. With the connections as explained above, when the player places a marker into anyone of the (remaining) fields, a lamp in an oppositely positioned field lights up, and a circle appears in said field representing the proper counter move of an imaginary opponent, which frustrates any plan, on the player's part, to complete a row of markers.

To avoid that insertion of markers into the apertures of fields F_7 and F_9 may close two power circuits through lamp L_1 and thus effect less than perfect operation of the apparatus of the invention in that it duplicates and therefore wastes a counter move, I provide below field F_7 a multiple switch mechanism collectively identified by the reference numeral **39** (FIGURES 2, 5A, 5B, 6A, 6B, 6C and 6D). Upon insertion of a marker stem into the aperture **15** of field F) and resultant energization of lamp L_1 by closure of the contact lips **30***a*, **30***b* below field F_7 (FIGURE 6C), this switch mechanism **39** detours the power path established by insertion of a marker into the aperture **15** of field F_9 through lamp L_2. Having particular reference to FIGURES 3, 5A and 6A, the power circuit of lamp L_1 which passes through the normally disconnected contact lips **30***a*, **30***b* below field F_9, includes a normally closed switch that is formed by a pair of blades **40** and **41** which are secured to the underside of board **12** and straddle the contact lips **30***a*, **30***b* below field F_7. Blade **41** forms a run that extends adjacent the path of a marker stem pushed through aperture **15** of field F_7. Blade **40** forms an arch that curves (below the tip of a marker stem **27** pushed through aperture **15**) into contact with the flat side of the tip of blade **41**. Above said tip the vertical run of blade **41** carries a cover **42** of insulating material that extends into the path of a marker stem pushed through aperture **15**. Arranged adjacent blade **41** is another arched contact blade **44** of a conformation symmetrical to blade **40**, and the tip of said blade **44** is normally spaced from the tip of blade **41**, as illustrated in FIGURE 5A.

When the stem of a marker is pushed through aperture **15** of field F_7 and establishes conductive connection between the contact lips **30***a*, **30***b* below said field to energize lamp L_1, full insertion of said marker to the extent permitted by its cross bars **28** causes its stem **27** to engage the insulating cover **42** of center blade **41** and cam said blade away from and out of contact with blade **40**, while at the same time moving said blade into contact with the tip of blade **44** (FIGURE 5B). This disables the power circuit of lamp L_1, which passes through the contacts **30***a*, **30***b* below field F_9 (FIGURE 6C). At the same time it re-routes any power circuit established, or to be established, by conductive connection of the contact lips **30***a*, **30***b* below field F_9 through lamp L_2 so that insertion of a marker stem into the aperture **15** in field F_9 is now effective to illuminate lamp L_2 (FIGURE 6D). Thus, insertion of a marker into the aperture of field F_7 has a triple effect. (1) It closes a power circuit through lamp L_1 by conductively connecting the contact lips **30***a*, **30***b* below field F_7 as illustrated in FIGURE 6C. (2) It breaks the switch formed by the blades **40** and **41** and thus makes it impossible for insertion of a marker into the aperture of field F_9 to energize the lamp L_1—or it breaks any power circuit through lamp L_1 that may previously have been established by insertion of a marker into the aperture of field F_9, and (3) it readies a power path to lamp L_2 causing said lamp to light up if and when a marker is planted onto field F_9 (FIGURE 6D). If a marker should previously have been planted onto field F_9 and cause illumination of lamp L_1 (FIGURE 6B), these occurrences happen in such quick succession that it appears as if lamp L_1 continues to be illuminated uninterruptedly, and the illumination of lamp L_2 is the direct result of the insertion of a marker into the aperture of field F_7 (FIGURE 6D).

A similar multiple switch mechanism **39** may be provided below the aperture of field F_1 to make it impossible for the lamp L_1 to light up once a marker has been planted upon field F_1, and to cause insertion of marker stems into the apertures of fields F_7 and F_9 to effect illumination of lamps L_6 and L_2 rather than lamps L_1 and L_2. Having reference to FIGURE 3, insertion of a marker into the aperture of field F_1 completes a power circuit through lamp L_9. At the same time it separates the tips of the contact blades **40** and **41** which lies in the power circuit of lamp L_1 so that it is impossible to illuminate lamp L_1 whether markers are planted upon field F_7 or field F_9, or both of said fields. Insertion of a marker into the aperture of field F_1 has the added effect, however, of bringing blade **41** into contact with blade **44** and thus establishes potential power paths to be completed by insertion of markers into the apertures of fields F_7 and F_9 through lamps L_2 and L_6 respectively. Hence, once a marker has been planted on field F_1, later moves of the player planting markers upon fields F_7 and/or F_9 will not waste any counter moves of the apparatus of the invention, such as useless illumination of lamp L_1, but will cause luminous circles to appear on still available fields of the checker board.

Thus, for whatever moves a player may make, the described arrangement will automatically provide the proper responses, without wasting moves on fields that are no longer available. In this manner the apparatus of the invention keeps up the interest of the player and will counter every one of his moves in an effective and not always foreseeable manner. Under ordinary circumstances the apparatus of the invention cannot be beaten and the game can at best be a draw. In accordance with the invention, however, I may provide one or several switches which when manipulated prior to playing a game, interfere with the proper responses of the machine to the insertion of a marker in one or several of the fields of the board. In this manner it becomes possible under certain circumstances for the player to win the game. Having reference to FIGURE 3, the numeral **50** identifies a movable switch arm that lies normally in the power circuit of lamp L_3 below field F_3. Ordinarily this lamp is illuminated in response to insertion of a marker into the aperture of the center field F_5. However, upon setting said switch arm **50** to the position indicated in broken lines in FIGURE 3, insertion of a marker into the center field F_5 operates to illuminate lamp L_4 so that a luminous circle appears in field F_4 which is not the best counter move for an opposing player to make. At the same time the power circuit of lamp L_3 is permanently disabled so that the machine is unable to create a circle upon field F_3 during the game. This is a series handicap for the machine because the player may now win the game by planting a marker upon field F_7 (which causes the machine

to produce a circle upon field F_1) and then upon field F_3 which completes a row of three markers so that the player has actually won the game.

While it may be of advantage to provide a multiple switch mechanism of the type illustrated in FIGURES 5 and 5B, and make suitable alternative connections below each of the fields on the board, it will usually suffice, and may in fact render the game more irrational and therefore more interesting while keeping the apparatus simple and inexpensive, to provide such multiple switch mechanism only below fields L_1 and L_7, as illustrated in FIGURES 3, 6A, 6B, 6C and 6D.

The described apparatus makes it possible for a single player to play the ticktacktoe game. It is erratic in its responses, and while it will ordinarily make the proper counter moves and is therefore invincible, it may be adjusted to make occasional mistakes and let the player win. It is of the cheapest construction and its control circuit is relatively simple. It does not require relays, thermionic tubes or transistors and involves a minimum of electrical connections. It lends itself therefore ideally to use as an educational toy for the younger set.

While I have explained my invention with the aid of a particular embodiment thereof, it will be understood that the invention is not limited to the specific constructional details and the specific circuitry shown and described by way of example which may be departed from without departing from the scope and spirit of the invention.

I claim:

1. A game apparatus comprising a board having a surface divided into fields, said fields having recesses and adjacent thereto apertures, lamps located in said recesses, and a power circuit for each lamp including normally spaced contact members adjacent to an aperture in a field opposite to the field wherein the lamp is located.

2. A game apparatus comprising a board having a top surface divided into fields, said fields having recesses and apertures, lamps located in said recesses, a translucent sheet placed upon said top surface, said sheet having opaque areas of lesser compass than said recesses in axial alignment with said recesses, and a power circuit for each lamp including normally spaced contact members adjacent to an aperture in a field opposite to the field wherein the lamp is located.

3. A game apparatus comprising a board having a top surface divided into fields, said fields having recesses and apertures passing through the board to the underside thereof, lamps located in said recesses, a translucent sheet arranged upon the top surface of said board and having opaque areas of lesser compass than said recesses located above said recesses, and a normally interrupted power circuit for each of said lamps including a pair of normally spaced contact members secured to the underside of said board adjacent to an aperture passing through a field located opposite to the field wherein the lamp is located.

4. A ticktacktoe game apparatus comprising a board having a top surface divided into square fields, said fields having circular recesses and adjacent thereto apertures passing through the board to the underside thereof, lamps located in said recesses, a translucent sheet arranged upon the top surface of said board and having in axial alignment with said recesses opaque circular areas of lesser diameter than said recesses, and a normally interrupted power circuit for each lamp arranged below said board and including a pair of spaced contact members secured to the underside of said board adjacent to an aperture passing through a field located opposite to the field wherein the lamp is located, to be conductively connected by insertion of a conductive stem into the aperture into conductive contact with said members to illuminate the lamp and display a luminous circle through said translucent sheet in the field above said lamp.

5. In a game apparatus of the type described, an arrangement for avoiding duplication in the responses of the apparatus to the insertion of markers into different fields of a board, said arrangement comprising a first lamp in a first field, a second lamp in a second field, a third field having an aperture for the insertion of the conductive stem of a marker, a fourth field having an aperture for the insertion of the conductive stem of a marker, a first power circuit for said first lamp including spaced conductive contact members located adjacent the aperture in said third field and adapted for conductive connection by insertion of a marker stem into the aperture in said third field, a second power circuit for said first lamp including a pair of spaced conductive contact members located adjacent said aperture in said fourth field and adapted for conductive connection by insertion of a marker stem into the aperture in said fourth field, and means rendered effective by insertion of a marker stem into the aperture in said fourth field for shunting said first lamp from said first power circuit and routing said first power circuit through said second lamp.

6. In an automatic ticktacktoe game apparatus of the type described, an arrangement for avoiding duplication in the responses of the apparatus to the insertion of markers into different fields of a board, said arrangement comprising a first lamp in a first field, a second lamp in a second field, a third field having an aperture for the insertion of the conductive stem of a marker, a fourth field having an aperture for the insertion of the conductive stem of a marker, a first power circuit for said first lamp including a pair of normally spaced conductive contact members located adjacent the aperture in said third field and adapted for conductive connection by insertion of a conductive marker stem into the aperture in said third field and a pair of yieldable contact blades in conductive contact with each other adjacent the aperture in said fourth field and adapted for separation from each other by insertion of a marker stem into the aperture of said fourth field, a second power circuit for said first lamp including a pair of spaced conductive contact members located adjacent the aperture in said fourth field adapted for conductive connection by insertion of a conductive marker stem into the aperture in said fourth field, and a power circuit for said second lamp including said normally spaced contact members adjacent the aperture in said third field, one of the normally closed contact blades adjacent the aperture in said fourth field and a contact member adjacent to and normally spaced from said last mentioned contact blade in a position to be contacted by said last mentioned contact blade when said normally closed contact blades are separated from each other by insertion of a marker stem into the aperture in said fourth field.

7. Arrangement according to claim 6 wherein said last mentioned contact blade has an insulating cover extending into the path of a marker stem inserted into the aperture in said fourth field.

References Cited in the file of this patent

UNITED STATES PATENTS

655,264	Nichol	Aug. 7, 1900
2,302,849	Frank et al.	Nov. 24, 1942
2,670,208	Wales	Feb. 23, 1954
2,811,359	Haufe	Oct. 29, 1957
2,844,374	French	July 22, 1958
2,877,019	Keister	Mar. 10, 1959
2,923,800	Borde et al.	Feb. 2, 1960
2,951,703	Arnold	Sept. 6, 1960

FOREIGN PATENTS

646,542	Canada	Aug. 14, 1962