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Lee

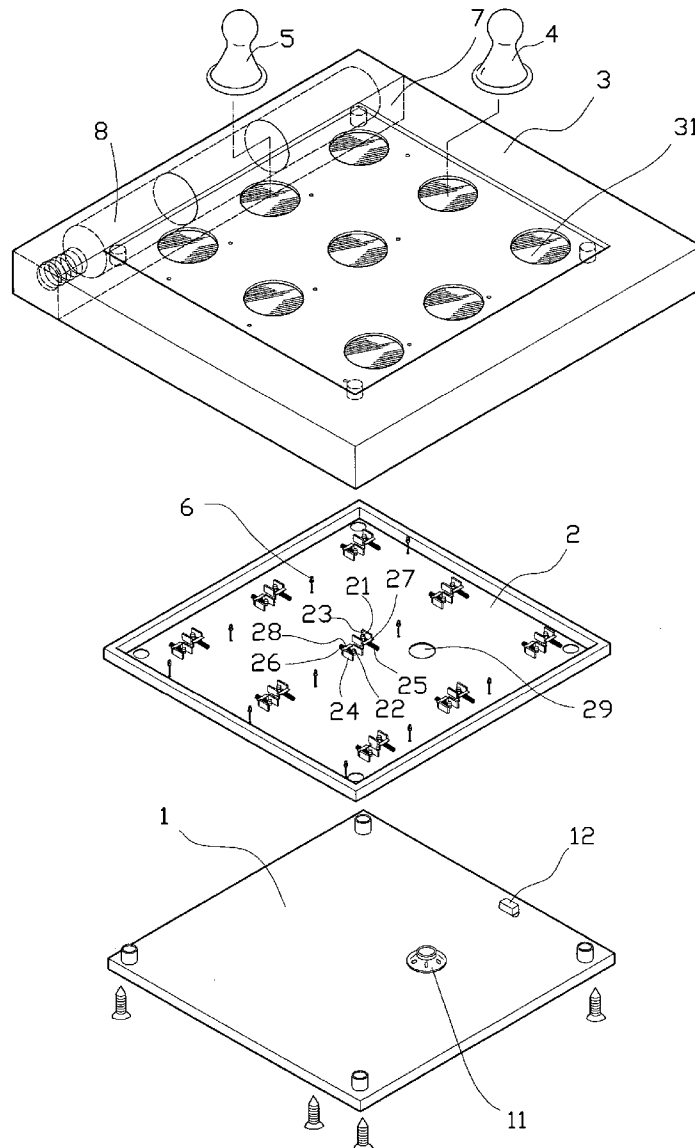
(43) **Pub. Date:****Feb. 17, 2005**(54) **BOARD FOR CROSS-AND-CIRCLE GAME**(52) **U.S. Cl.** ..... 273/237; 273/271(76) **Inventor:** Yi-Fu Lee, Tainan Hsien (TW)

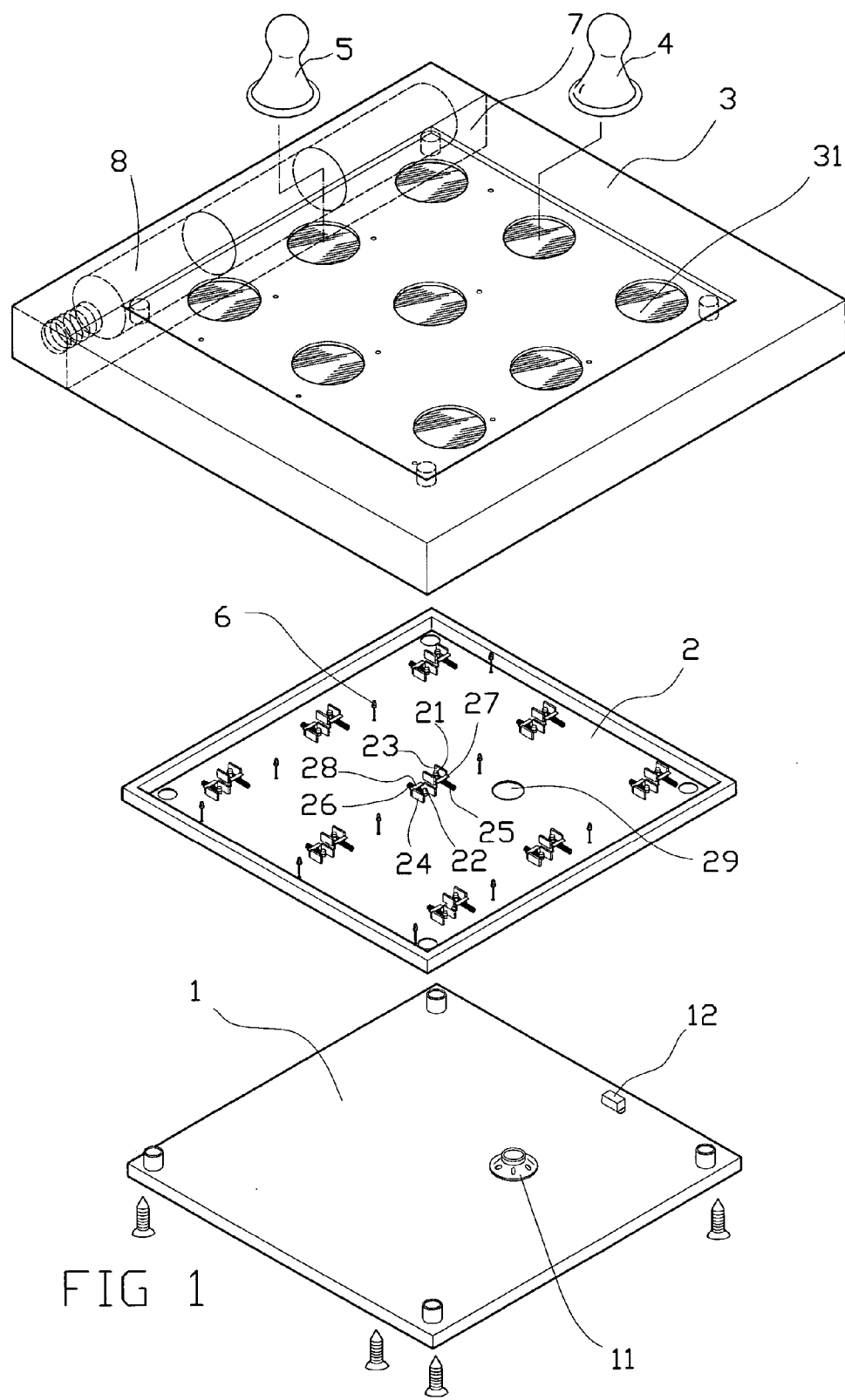
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**ABSTRACT**

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An XO board for cross-and-circle game is internally provided with a circuit board, on which an IC sound effect component is provided. Chess pieces used with the XO board are divided into two types, depending on the mounting position of a metal sheet at the bottom surface of the chess piece. When one chess piece is positioned on the XO board corresponding to an actuating switch electrically connected to the IC sound effect component, the metal sheet at the bottom surface of the chess piece would cause one of two magnets in the actuating switch to move upward and thereby actuates the IC sound effect component to produce a specific sound depending on the type of the chess piece.

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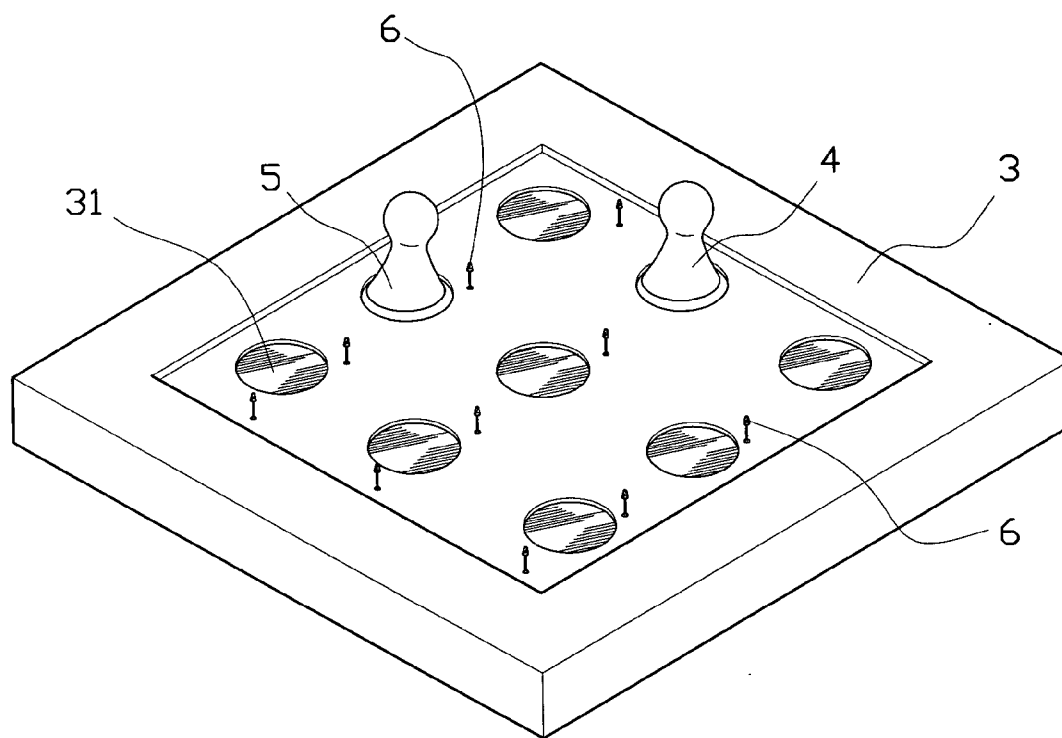


FIG 2

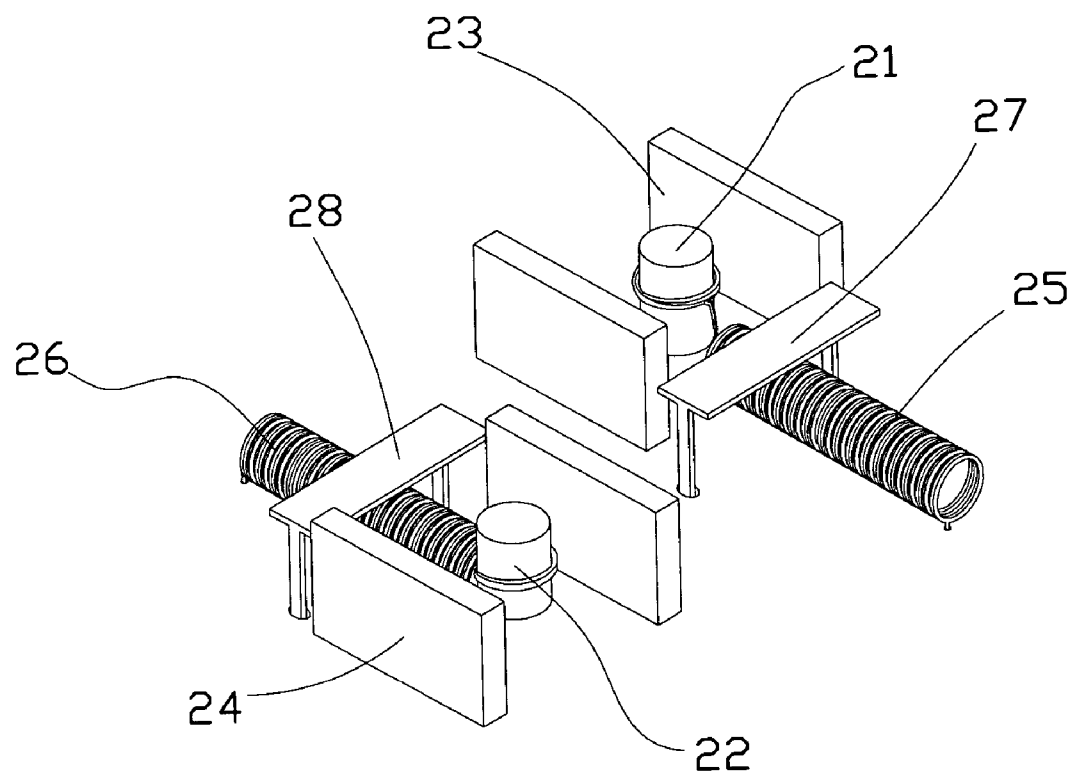


FIG 3

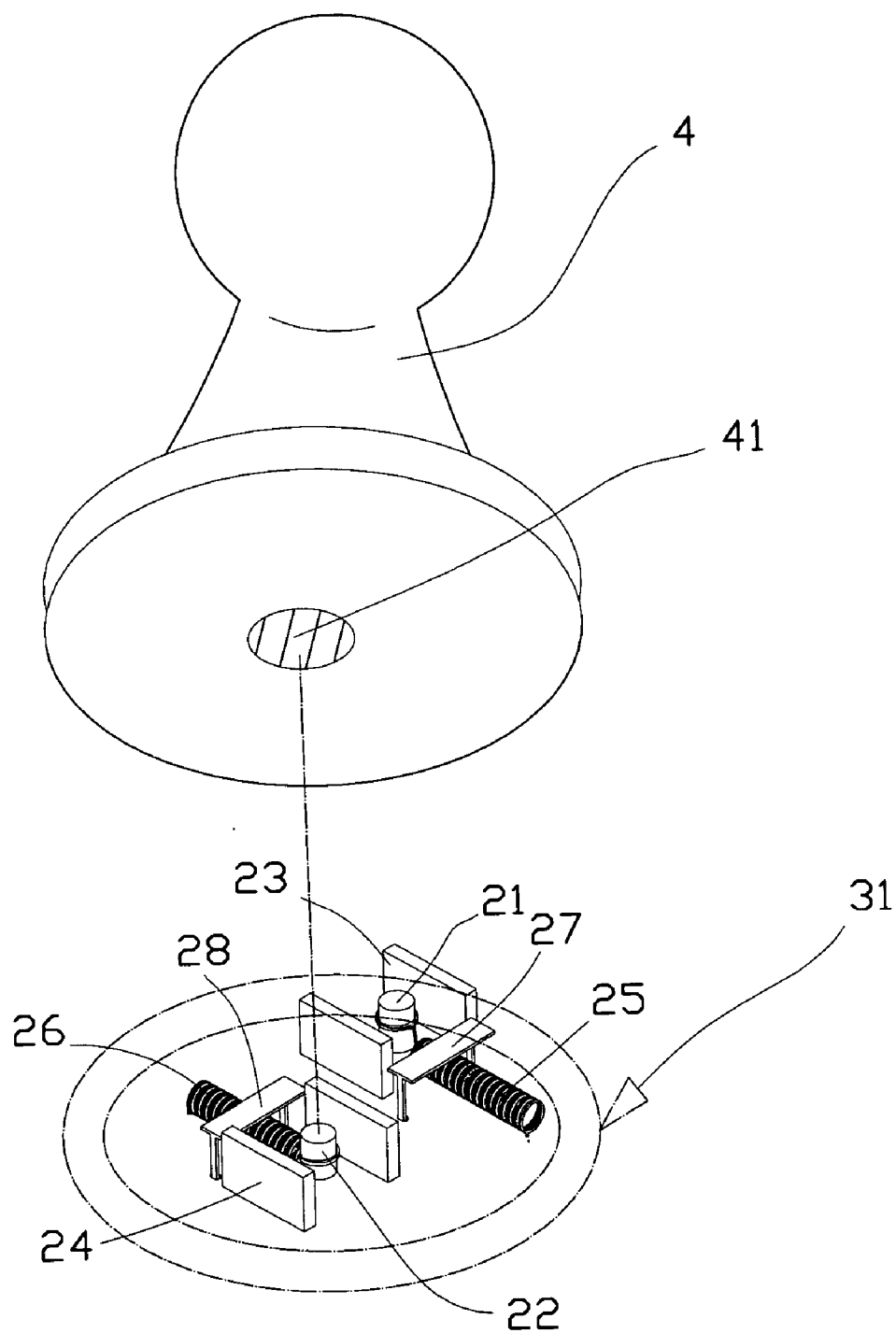


FIG 4

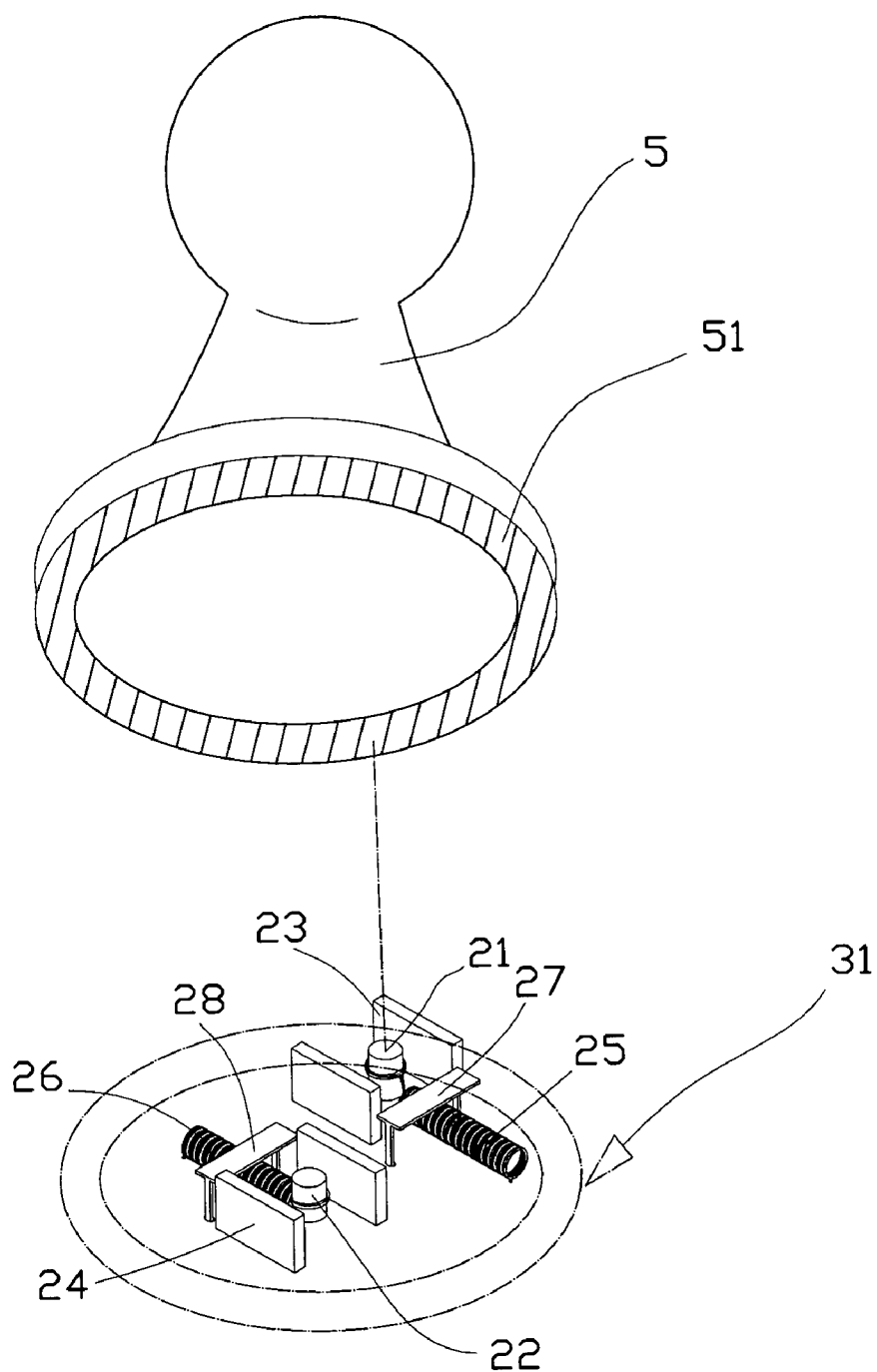


FIG 5

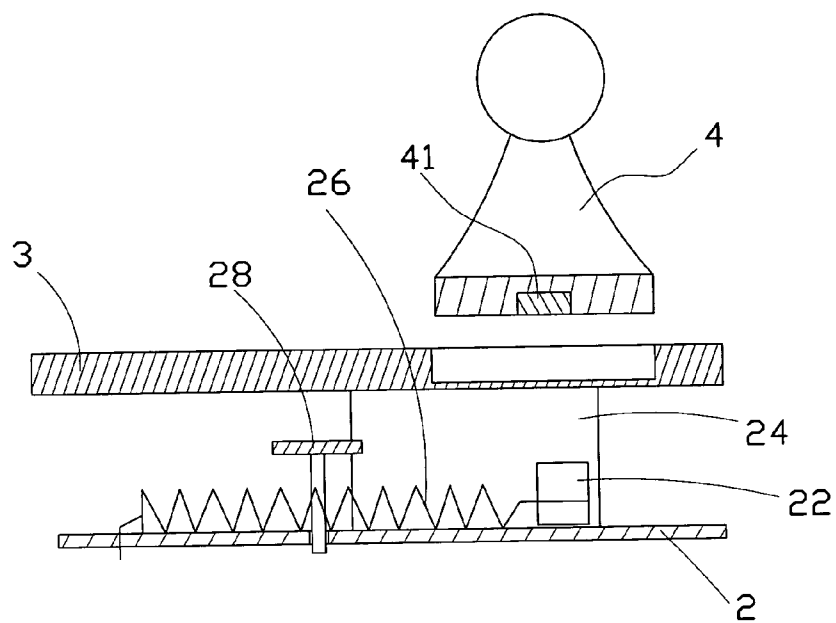


FIG 6

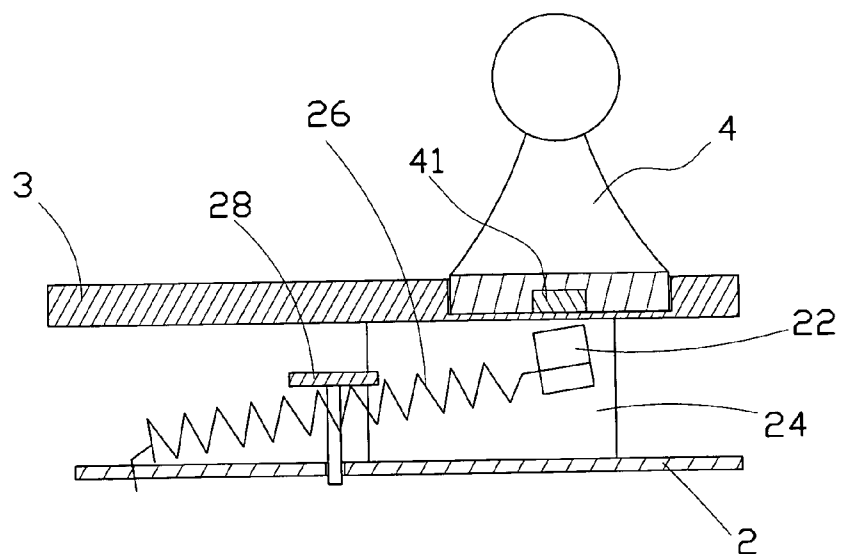


FIG 7

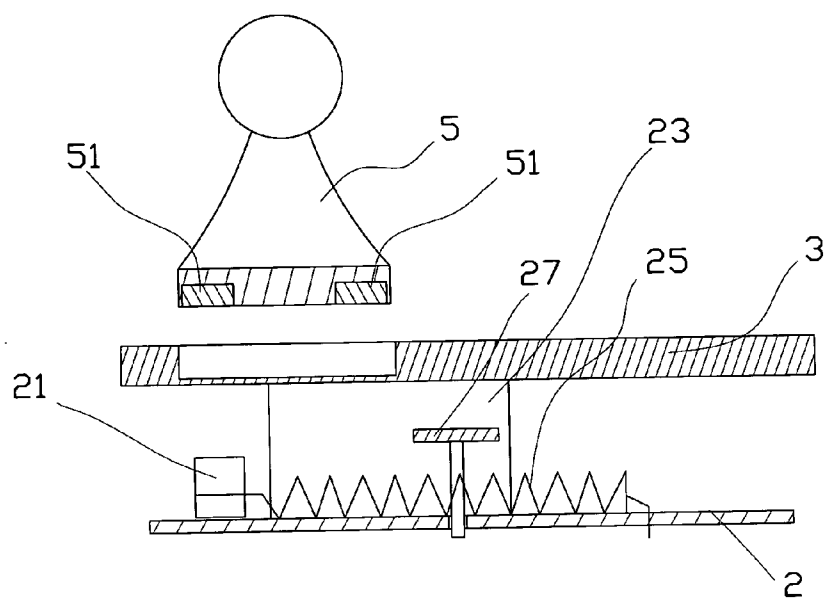


FIG 8

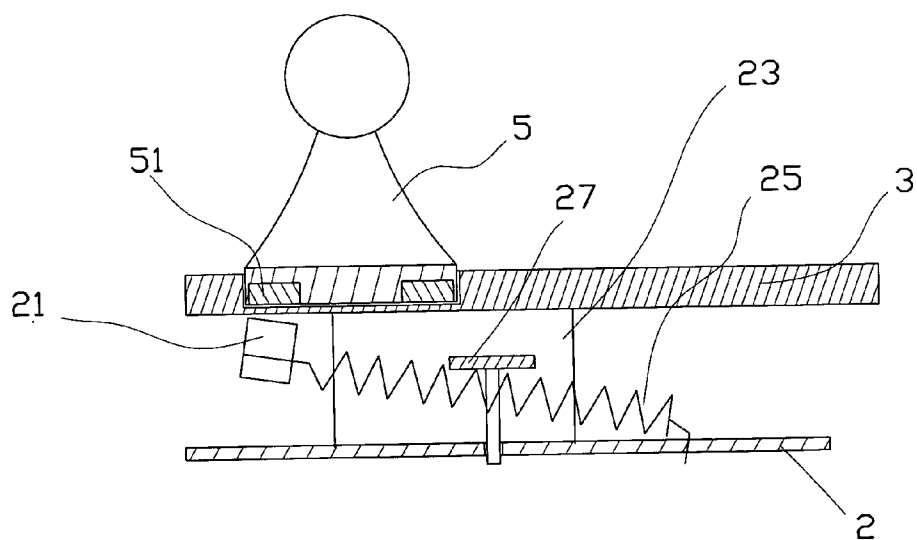


FIG 9



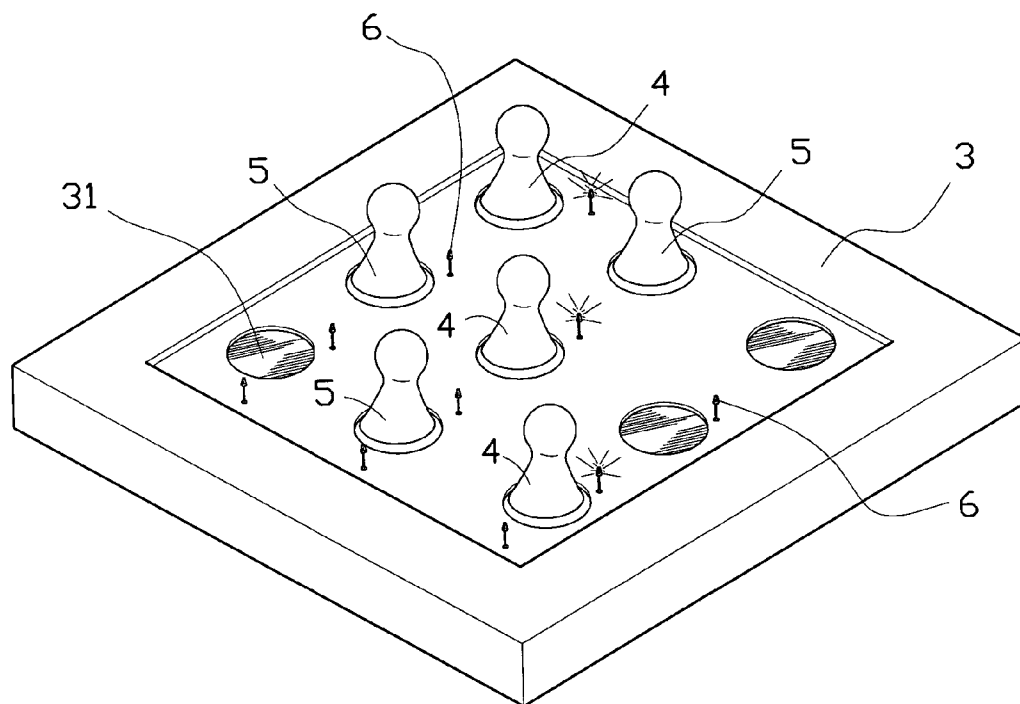


FIG 10

## BOARD FOR CROSS-AND-CIRCLE GAME

### BACKGROUND OF THE INVENTION

[0001] With the prosperous and rapid developments in the industrial and commercial fields, people's living quality has been largely and constantly upgraded. As a result, most consumers have higher requirements for the products they intend to purchase. The products that meet consumers' requirements must economically provide good basic functions and have novel and fashionable appearances to increase their added value and make them more changeful and interesting when compared with other similar products.

[0002] It is therefore tried by the inventor to develop a unique sound-producing board for cross-and-circle game, or an XO board, with the above principle kept in mind, so that the XO board attracts more children.

### SUMMARY OF THE INVENTION

[0003] A primary object of the present invention is to provide an XO board for cross (X)-and-circle (O) game that would produce a specific sound whenever a chess piece is positioned on a particular location on the board, and another specific sound, such as applause, whenever three chess pieces of the same type are formed into line on the XO board to win one game.

[0004] To achieve the above object, the XO board of the present invention is internally provided with a circuit board, on which an IC sound effect component is provided. Chess pieces used with the XO board are divided into two types, depending on the mounting position of a metal sheet at the bottom surface of the chess piece. When one chess piece is positioned on the XO board corresponding to an actuating switch electrically connected to the IC sound effect component, the metal sheet at the bottom surface of the chess piece would cause one of two magnets in the actuating switch to move upward and thereby actuates the IC sound effect component to produce a specific sound, such as cat's meow or dog's bark, depending on the type of the chess piece.

[0005] And, any three of the actuating switches that are located at one line may be electrically connected in parallel, whereby whenever three chess pieces of the same type having the metal sheet mounted to the same position on the bottom surface of the chess pieces are formed into line on the XO board, the sound of applause is emitted from the IC sound effect component as a notice of winning the game.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The structure and the technical means adopted by the present invention to achieve the above and other objects can be best understood by referring to the following detailed description of the preferred embodiments and the accompanying drawings, wherein

[0007] FIG. 1 is an exploded perspective view of an XO board for cross-and-circle game according to the present invention;

[0008] FIG. 2 is an assembled perspective view of FIG. 1;

[0009] FIG. 3 is an enlarged perspective view of an actuating switch used in the present invention;

[0010] FIG. 4 shows the manner in which a first type of chess piece used with the XO board of the present invention corresponds to the actuating switch of FIG. 3;

[0011] FIG. 5 shows the manner in which a second type of chess piece used with the XO board of the present invention corresponds to the actuating switch of FIG. 3;

[0012] FIG. 6 is a sectional view showing the state of the actuating switch below a top plate of the XO board of the present invention before the first type of chess piece is positioned on the XO board;

[0013] FIG. 7 is a sectional view showing the state of the actuating switch below the top plate of the XO board of the present invention after the first type of chess piece is positioned on the XO board;

[0014] FIG. 8 is a sectional view showing the state of the actuating switch below the top plate of the XO board of the present invention before the second type of chess piece is positioned on the XO board;

[0015] FIG. 9 is a sectional view showing the state of the actuating switch below the top plate of the XO board of the present invention after the second type of chess piece is positioned on the XO board; and

[0016] FIG. 10 shows the state of the XO board of the present invention when three chess pieces of the same type are formed into line on the board.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] Please refer to FIGS. 1 and 2 that are exploded and assembled perspective views, respectively, of a board for the cross-and-circle game according to the present invention. For the purpose of simplicity, the board for the cross-and-circle game is also referred to as the XO board throughout the specification, wherein "X" represents the mark "cross" and "O" the "circle". As shown, the XO board of the present invention mainly includes a bottom plate 1, a circuit board 2 mounted on the bottom plate 1, a top plate 3 covering the circuit board 2 and the bottom plate 1, and a plurality of first and second types of chess pieces 4, 5.

[0018] The bottom plate 1 is provided on a top at predetermined positions with an amplifier 11 and a power switch 12.

[0019] The circuit board 2 is provided at a lower side with related electronic elements and an integrated circuit (IC) sound effect component, and at an upper side with nine (9) orderly arranged fixed positions, on each of which an actuating switch for actuating the IC sound effect component is provided.

[0020] As can be clearly seen from FIG. 3, the actuating switch includes a pair of magnets 21, 22, two pairs of dams 23, 24, a pair of springs 25, 26, and a pair of metal spring leaves 27, 28. The two springs 25, 26 are parallelly arranged to extend toward two opposite directions. Two outer ends of the two springs 25, 26 are fixed to the lower side of the circuit board 2 and connected to one of two electrodes of the IC sound effect component. Two inner ends of the two springs 25, 26 are two loops fixedly put around the two magnets 21, 22, respectively. The two metal spring leaves 27, 28 are generally n-shaped members having two legs and

adapted to straddle the two springs **25**, **26**, respectively, with lower ends of the two legs fixed to the lower side of the circuit board **2** and connected to the other electrode of the IC sound effect component. When the spring **25** or **26** is in contact with the corresponding metal spring leaf **27**, **28** to form a circuit loop, the IC sound effect component is actuated to produce a specific sound.

[0021] Moreover, a light-emitting-diode (LED) indicating lamp **6** is provided on the circuit board **2** close to each actuating switch. Pins provided at a lower end of the LED indicating lamp **6** are electrically connected to the IC sound effect component, so that the LED indicating lamp **6** flashes whenever the IC sound effect component is actuated to produce a specific sound.

[0022] The circuit board **2** includes an opening **29** provided at a position corresponding to the amplifier **11** on the bottom plate **1**, so that the amplifier **11** is allowed to project from the opening **29** when the circuit board **2** is assembled to the top of the bottom plate **1**.

[0023] The top plate **3** is provided at one side with a battery compartment **7**, in which batteries **8** are mounted to supply power needed for the IC sound effect component and the LED indicating lamps **6** to operate normally. The top plate **3** is also provided on an upper surface with nine (9) flat-bottomed round recesses **31** at positions corresponding to the nine actuating switches on the top of the circuit board **2**. Each of the nine round recesses **31** has a size close to an area covered by the actuating switch. When the top plate **1** is assembled to the top of the circuit board **2**, the magnet **22** in the actuating switch is generally aligned with a central area of the round recess **31**, and the other magnet **21** is generally aligned with a peripheral area of the round recess **31**, as can be seen from FIGS. **4** and **5**, respectively.

[0024] The first and the second type of chess pieces **4**, **5** representing two opponents are so designed that they have a bottom surface slightly smaller than the round recess **31**, so that the chess pieces **4**, **5** may be positioned in the round recesses **31** in the process of playing the cross-and-circle game on the XO board of the present invention. The chess pieces **4**, **5** are provided at their bottom surface with a metal sheet **41**, **51**, respectively. The metal sheet **41** is mounted at a bottom center of the chess piece **4**, while the metal sheet **51** is mounted at a lower periphery of the chess piece **5**, as shown in FIGS. **4** and **5**, respectively. Therefore, when the first type of chess piece **4** is positioned in any one of the round recesses **31**, the metal sheet **41** at the bottom center of the chess piece **4** would be in alignment with the magnet **22** in the corresponding actuating switch on the circuit board **2**, as shown in FIG. **6**, causing the magnet **22** to move upward and magnetically attract the metal sheet **41**, as shown in FIG. **7**. At this point, the spring **26** is pulled upward by the upward moved magnet **22** to finally touch the metal spring leaf **28** and thereby actuates the IC sound effect component below the circuit board **2** to produce a specific sound, such as cat's meow. And, when the second type of chess piece **5** is positioned in any one of the round recesses **31**, the metal sheet **51** provided at the lower outer periphery of the chess piece **5** would be in alignment with the magnet **21** in the corresponding actuating switch on the circuit board **2**, as shown in FIG. **8**, causing the magnet **21** to move upward and magnetically attract the metal sheet **51**, as shown in FIG. **9**. At this point, the spring **25** is pulled upward by the

upward moved magnet **21** to finally touch the metal spring leaf **27** and thereby actuates the IC sound effect component below the circuit board **2** to produce a specific sound, such as dog's bark.

[0025] Alternatively, it is possible to connect any three in-line actuating switches in parallel, so that whenever three chess pieces **4** or **5** are located to form into line, the IC sound effect component is caused to produce another kind of sound, such as applause, and the LED indicating lamps **6** at the vicinity of the corresponding actuating switches are caused to flash.

[0026] As having been mentioned above, when the top plate **3** is assembled to the top of the circuit board **2**, each of the round recesses **31** has a central area aligned with the magnet **22** of the corresponding actuating switch, and a peripheral area aligned with the magnet **21** of the corresponding actuating switch. And since the metal sheets **41**, **51** are respectively mounted to the bottom center and the lower periphery of the first and the second type of chess piece **4**, **5**, the positioning of the two types of chess pieces **4**, **5** in the round recesses **31** on the XO board would not result in interference or conflict with each other. That is, the positioning of the first and the second type of chess piece **4**, **5** in the round recess **31** would always cause the IC sound effect component to produce a specific sound representing the type of chess piece positioned in the round recess **31**, such as the cat's meow or the dog's bark. And, whenever any three chess pieces of the same type **4** or **5** are formed into line, as shown in FIG. **10**, the LED indicating lamps **6** in the vicinity of the corresponding actuating switches are caused to flash and the IC sound effect component is caused to produce the sound of applause.

What is claimed is:

1. An XO board for cross-and-circle game, comprising:

a bottom plate having an amplifier and a power switch provided at predetermined positions thereon;

a circuit board being provided on an upper side with nine orderly arranged actuating switches;

a top plate being provided at one side with a battery compartment for accommodating batteries to supply power needed by said actuating switches to operate normally; and

a plurality of first and second types of chess pieces, each of which is provided on a bottom surface with a metal sheet.

2. The XO board as claimed in claim 1, wherein said circuit board is provided at a lower side with related electronic elements and an IC sound effect component.

3. The XO board as claimed in claim 1, wherein each of said actuating switches provided on said circuit board includes a pair of magnets, two pairs of dams, a pair of springs, and a pair of metal spring leaves.

4. The XO board as claimed in claim 3, wherein said pair of springs in each said actuating switch are arranged to point toward two opposite directions, two outer ends of said pair of springs being fixed to the lower side of said circuit board and connected to one of two electrodes of said IC sound effect component, and two inner ends of said pair of springs being two loops separately put around said pair of magnets.

5. The XO board as claimed in claim 3, wherein said metal spring leaves in each said actuating switch are n-shaped

members having two legs, each of said metal spring leaves straddling one of said two springs with said two legs downward fixed to the lower side of said circuit board and connected to the other electrode of said IC sound effect component.

6. The XO board as claimed in claim 1, wherein said circuit board is provided at a position in the vicinity of each said actuating switch with a light-emitting-diode (LED) indicating lamp.

7. The XO board as claimed in claim 6, wherein said LED indicating lamps have pins provided at a lower end thereof to electrically connect to said IC sound effect component.

8. The XO board as claimed in claim 1, wherein said top plate is provided on an upper surface with a plurality of flat-bottomed round recesses corresponding to said actuating switches on the top of said circuit board, and each of said round recesses having a size close to an area covered by each said actuating switch.

9. The XO board as claimed in claim 8, wherein said top plate is assembled to the top of said circuit board with one of said two magnets in each said actuating switch generally aligned with a central area of a corresponding one of said round recesses, and the other said magnet generally aligned with a peripheral area of said corresponding round recess.

10. The XO board as claimed in claim 1, wherein said metal sheet mounted on the bottom surface of each said first type of chess piece is located at a central area of said bottom surface.

11. The XO board as claimed in claim 1, wherein said metal sheet mounted on the bottom surface of each said second type of chess piece is located at a peripheral area of said bottom surface.

12. The XO board as claimed in claim 10, wherein said metal sheet on said bottom central area of each said first type of chess piece is aligned with a first one of said two magnets in each said actuating switch on the top of said circuit board when said first type of chess piece is positioned in one said round recess on said top plate.

13. The XO board as claimed in claim 11, wherein said metal sheet on said peripheral area of each said second type of chess piece is aligned with a second one of said two magnets in each said actuating switch on the top of said circuit board when said second type of chess piece is positioned in one said round recess on said top plate.

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