

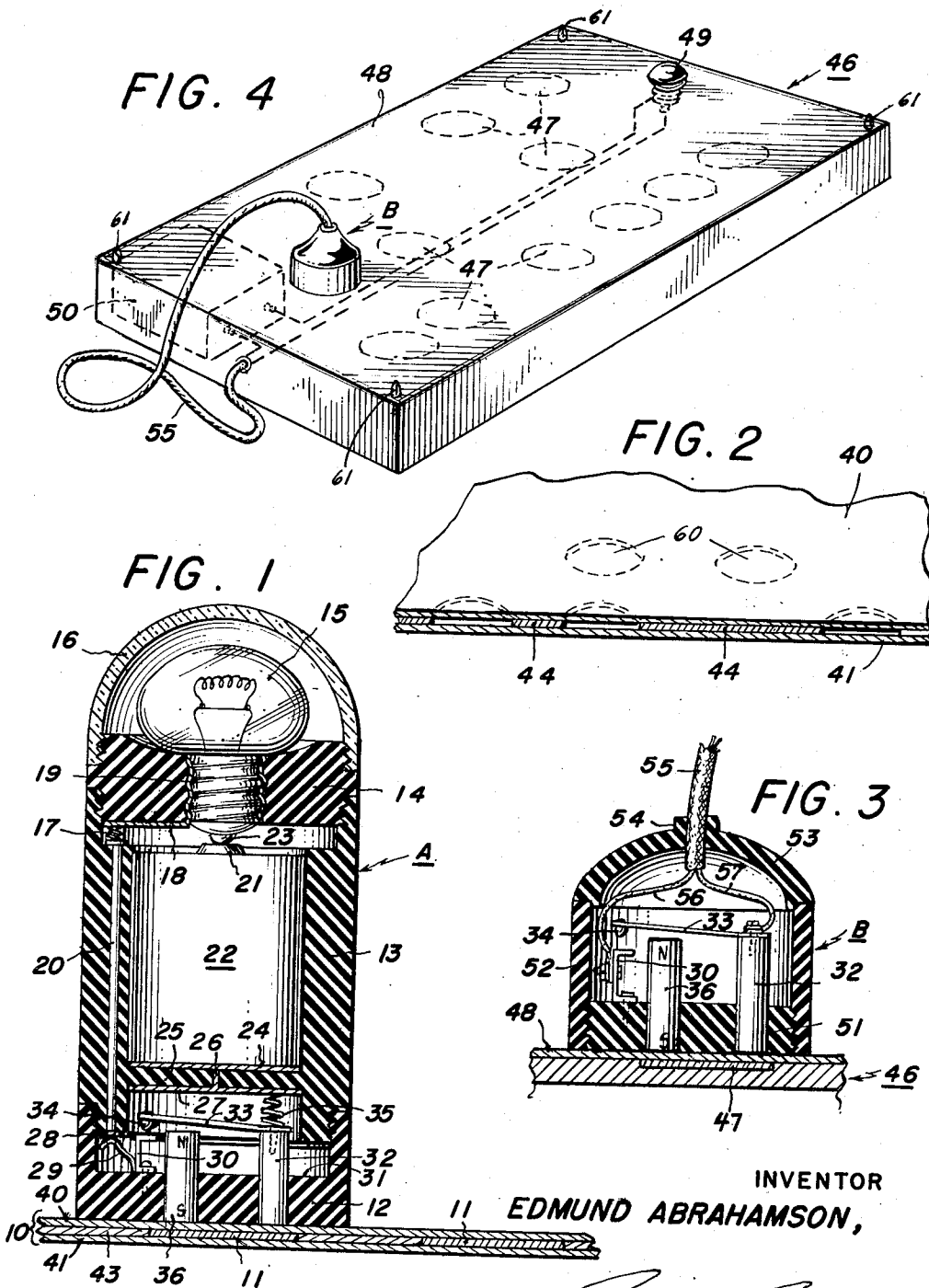
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MAGNETIC GAME APPARATUS

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MAGNETIC GAME APPARATUS

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14 Claims. (Cl. 35—9)

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This application is a division of my copending application, Ser. No. 719,661, filed January 2, 1947, now U. S. Patent No. 2,619,349, issued November 25, 1952, and relates to improvements in magnetic apparatus of the type employable in the construction and operation of games, amusement, educational and display devices, or the like, the primary object of the invention being to provide devices involving magnetizable elements which become endowed with or produce visible or audible activity, upon the establishment, either momentary or prolonged, of a magnetic circuit between such elements and magnet means located in a supporting surface over which the devices are moved, such as a game board or other platform or base. In contrast to the apparatus according to my afore-mentioned copending application, employing electromagnets as magnetizing means, permanent magnets are used as magnetizing means in the device according to the present invention.

Another important object of this invention is to provide a novel arrangement of magnetically cooperating gameboard and game pieces, in which the gameboard is provided with iron pieces in either fixed or changeable locations, and/or with changeable game charts or cards overlying and concealing these iron pieces and adapted to be changed to prevent the player's memorizing the locations of the iron pieces and being guided thereby in subsequently moving the game pieces over the gameboard.

Another important object of this invention is to provide game pieces, or exhibitors of the character indicated above which are self-energizing, that is, which contain batteries for the energization of their visible and/or audible components, such as lamps, buzzers, and the like; and whose magnetizable elements control switches for closing and/or opening the circuits between the batteries and said components.

Other important objects and advantageous features of this invention will be apparent from the following description and the drawing appended thereto, wherein merely for purposes of illustration, specific but non-limiting embodiments of this invention are set forth.

In the drawing:

Fig. 1 is a transverse vertical section through a game piece, according to the present invention, and through the inventive gameboard with which this game piece is associated, the game piece having a permanent magnet and the gameboard being equipped with concealed soft iron pieces for actuation of the game piece;

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Fig. 2 is a perspective illustration of a modified form of the gameboard associated with the game piece of Fig. 1, part of the gameboard being shown in transverse vertical section;

Fig. 3 is a transverse vertical section, on an enlarged scale, taken through a magnetically operated switch, similar to that employed in the game piece of Figure 1, adapted to be used in connection with the gameboard shown in Figure 4;

Fig. 4 is a top perspective view of a question-and-answer type of gameboard in accordance with the present invention, in the operation of which the magnetically operated switch of Figure 3 is selectively moved over the surface of the gameboard, containing concealed soft iron pieces for actuating the switch.

Referring to the drawing in detail, and first to Fig. 1, thereof, numeral 10 generally designates a platform, base or gameboard of suitable material, which may be provided with a plurality of pieces or discs 11 of soft iron which are concealed in said platform, base or gameboard.

The game piece or exhibitor A placed on the gameboard 10 and adapted to be actuated by registry with any of the afore-mentioned soft iron pieces 11 comprises an insulating casing or housing including a lower part 12, an upper part 13, a lamp support block 14 holding a bulb 15 and a transparent dome 16, an upper spring contact 17 and its connection 18 with a bulb socket 19, and its rod 20 presenting a contact point at its lower end. Also, an upper terminal 21 of a battery 22 engages a bulb contact 23. Other than this, the battery case engages a conductor strip 24, on the upper side of a partition 25 and is connected at 26 to a conductive strip 29 on the underside of said partition.

The contact point 28 is engaged by a spring finger 29 anchored in contact with a contact bracket 30 anchored in the bottom wall 31 of the lower casing part 12 near the contact point 28 at the opposite side of said lower part from a vertically elongated post or spacer 32, to the upper end of which is fastened one end of a generally horizontal spring armature 33 having on its free end a depending contact point 34 for engagement with the bracket 30. A spiral spring connector 35 connects the conductive strip 27 with the armature 33. The armature 33 and its post or spacer 32 are preferably of soft iron so as to exhibit a practical minimum of residual magnetism.

Positioned beneath and close to the underside of the free end of the armature 33 is a vertical

bar permanent magnet core 36, which like the post or spacer 32, extends through to substantially flush with the underside of the lower casing part 12. The permanent magnet 36 is arranged, for example, with one (north) pole up and its other (south) pole down. When the device is registered with one of the soft iron pieces or discs 11 in the game board or other platform 10, the gap in the magnetic circuit between the lower ends of the soft iron post 32 and the permanent magnet 36 will be practically closed. This results in an increase of the magnetic field strength acting on the armature 33 which will be attracted by the magnet 36, i. e., said armature swings downwardly and closes the battery lamp bulb circuit and lights the lamp bulb 15.

Instead of the soft iron pieces 11, small permanent magnets may be provided in the gameboard or other platform. When the game piece or exhibitor A is registered with one of these permanent magnet pieces, the armature 33 will be attracted by the magnet 36, only if the lower pole of the permanent magnet 36 in the game piece or exhibitor registers with a pole of opposite polarity of said permanent magnet piece in the gameboard or other platform, because in other positions of the game piece or exhibitor A with respect to said permanent magnet piece in the gameboard, the magnetic field acting on the armature 33 is decreased or changed in direction so that said armature will be repelled rather than attracted by the permanent magnet 36. In other words, the game piece or exhibitor A has to be placed on each of the permanent magnets in the gameboard or other platform in one definite position to actuate the switch closing the circuit of the lamp bulb 15, so that, in case of a game, the chances are made additionally dependent upon the relative positions of the game piece and the significant areas. The exhibitor A may also be used as indicator means to indicate the direction of magnetic field lines or the polarity of a magnetic field pole.

If permanent magnets are provided in the gameboard, the permanent magnet 36 in the game piece A may be replaced by a soft iron core.

The game board in Figure 1 comprises three layers of wood, cardboard, plastic or other suitable material, i. e., two outer layers 40 and 41, and an intermediate layer 43, the latter being provided with a plurality of apertures into which the soft iron or permanent magnet pieces 11 are inserted. The three layers are glued together or combined to an integral structure in any other manner. The outer surfaces of the two outer layers may be printed with circles or other designs to indicate the playing positions of the game pieces, so that both sides of the structure can be used as game surface.

A modification of the gameboard structure shown in Figure 1 is illustrated in Figure 2. The two outer layers 40 and 41 in Figure 2 are the same as in Figure 1, while the intermediate layer 44 consists of an iron or steel sheet in which a large number of perforations or cut-outs 63 of preferably circular shape is provided. The three layers are combined to a unitary structure in the same manner as in the gameboard in Fig. 1. The gameboard of Figure 2 has active or significant areas all over the surface, except at places where the perforations or cut-outs are provided in the intermediate sheet.

In Figures 3 and 4 is shown a question-and-answer game piece adaptation B of the invention involving a suitable rearrangement of the com-

ponents of form A in relation to a gameboard 46, having soft iron discs or plates 47 inserted in the surface thereof, in positions corresponding to correct answers to questions appearing on the replaceable chart or card 48. This rearrangement includes provision of a lamp bulb 49 in a position at the head or other desirable location of the gameboard 46, the installation of a battery 50 within the gameboard 46, with the remainder of the game piece A changed to mount the permanent magnet core 36, the soft iron post 32, the soft iron armature 33, the contact point 34 and the bracket 30 in an insulated casing or housing consisting of a disc 51 on which is threaded a tubular upper part 52, whose upper end is closed by a cap 53 having a neck 54 through which extends a flexible conduit 55, containing the necessary leads 56 and 57 to the armature 33 and bracket 30, and connected to the battery 50 and the lamp bulb 44. The game piece B being freely movable by a player over the surface of the card 48 on the question-and-answer board 46, will, if registered with one of the soft iron discs or plates 47 underlying a correct answer area, produce lighting of the lamp bulb 49 thereby visually indicating the correctness of the player's response to a given question. The questions appearing on the replaceable chart or card 48 may call for answering "yes" or "no." Consequently two answer areas, marked "yes" and "no," respectively, would have to be provided for each question printed on said chart or card 48 adjacent said areas, for example, therebetween. If, for example, the question between one "yes" and one "no" areas reads "Did Alexander Graham Bell invent the telephone?" the correct answer is "yes," and therefore the player is expected to place the game piece B on the adjacent "yes" area to answer this question correctly. In this case, one of the soft iron discs or plates is concealed under the said "yes" area and consequently the game piece B becomes energized and the lamp bulb 49 lights up to indicate the correctness of the answer. If the player should answer the question incorrectly and place the game piece B on the "no" area having no soft iron disc or plate in the present case, no energization of the game piece B takes place and the lamp 49 does not light up, indicating that the answer was incorrect.

In order to prevent the players from memorizing the positions of the iron pieces with reference to the different significant areas of any game card or chart 48 and to provide games of varied nature and procedure, a plurality of interchangeable cards or charts may be provided, which can be exchanged at will upon the gameboard 46 or altered in relative position thereon by removably placing them on projecting pins 61 mounted on the corners of the gameboard 46 and adapted to enter in correspondingly located holes in said cards or charts. For the same purpose the soft iron pieces 47 may be changed in position by placing them in different cavities provided in the gameboard 46 (see Fig. 3).

As in the gameboard 10 of Figure 1, permanent magnets may be provided in the gameboard 46 of Figures 3 and 4 rather than soft iron pieces 47. In this case, the permanent magnet 36, in the game piece B (Fig. 3) may be replaced by a soft iron core.

It will be understood that the arrangement of Figures 1 and 2 could also be devised to permit question-and-answer operation of the "yes" and "no" type and that forms of gameboards or plat-

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forms and/or game pieces or exhibitors other than those disclosed herein. for example, game pieces or exhibitors with audible signals, such as buzzers or bells replacing the light bulbs in the battery circuits, could be employed in either arrangement, without departure from the present invention.

I claim:

1. Magnetically operated game apparatus comprising a gameboard including a playing surface having significant areas and non-significant areas, some of which significant areas have magnetic means positioned therein, and at least one game piece selectively movable over said surface with reference to said areas, said game piece comprising a casing, magnetizable means in said casing, an electric contact device in said casing, operatively associated with said magnetizable means, an electric circuit connected to a source of electric current, said electric circuit including an electric signal element and said electric contact device, said magnetizable means being constructed and arranged to be actuated by any of said magnetic means to act on said electric contact device and thereby operate said electric signal via said electric circuit, when said game piece is moved on said gameboard to a position of substantial registry with a significant area having such magnetic means.

2. Magnetically operated game apparatus according to claim 1, wherein a permanent magnet is mounted in said game piece casing to act on said magnetizable means when said game piece is moved on said gameboard to a position of substantial registry with any of said significant areas having said magnetic means.

3. Magnetically operated game apparatus according to claim 1, wherein said magnetic means positioned in said gameboard at said significant areas are pieces of soft iron.

4. Magnetically operated game apparatus according to claim 1, wherein said magnetic means positioned in said gameboard at said significant areas are permanent magnets.

5. Magnetically operated game apparatus according to claim 1, wherein said magnetic means at said non-significant areas is a piece of soft iron extending substantially over the whole playing surface and being formed with cut-outs at said significant areas.

6. Magnetically operated game apparatus according to claim 1, wherein a chart indiscriminately indicating the position of said significant and non-significant areas is placed on said gameboard and wherein means are mounted on said gameboard to exchangeably hold said chart on said gameboard.

7. Magnetically operated game apparatus according to claim 6, wherein said means to exchangeably hold said chart on said gameboard are pins mounted on said gameboard close to its edge, said chart being formed with holes adapted to be engaged by said pins.

8. Magnetically operated game apparatus comprising a gameboard including a playing surface having significant areas and non-significant areas, some of which significant areas have magnetic means positioned therein, and at least one game piece selectively movable over said surface with reference to said areas, said game piece comprising a casing, a signal element and magnetizable means in said casing for operating said signal element, said magnetizable means being constructed and arranged to be actuated by any of said magnetic means when said gamepiece is

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moved on the gameboard to a position of substantial registry with a significant area having such magnetic means, said signal element comprising an electric alarm means, said magnetizable means comprising a normally open magnetically operable switch in said casing arranged to be closed by the magnetic flux of any of said magnetic means when registered therewith, and a circuit in said casing including a battery, said alarm means, and said switch for energizing said alarm means, as said switch is closed by registration of said game piece with one of said significant areas of said playing surface.

9. Magnetically operated game apparatus comprising a gameboard including a playing surface having significant areas and non-significant areas, some of which significant areas have magnetic means positioned therein, and at least one game piece selectively movable over said surface with reference to said areas, said game piece comprising a casing, a signal element and magnetizable means in said casing for operating said signal element, said magnetizable means being constructed and arranged to be actuated by any of said magnetic means when said game piece is moved on the gameboard to a position of substantial registry with a significant area having such magnetic means, said signal element comprising an electric lamp bulb, said magnetizable means comprising a normally open magnetically operable switch in said casing arranged to be closed by the magnetic flux of any of said magnetic means when registered therewith, and a circuit in said casing including a battery, said lamp bulb, and said switch for lighting said lamp bulb, as said switch is closed by registration of said game piece with one of said significant areas of said playing surface.

10. Magnetically operated game apparatus comprising a gameboard including a playing surface having significant areas and non-significant areas, some of which significant areas have magnetic means positioned therein, and at least one game piece selectively movable over said surface with reference to said areas, said game piece comprising a casing, a signal element comprising an electric alarm means secured to said game board, magnetizable means in said casing for operating said signal element, said magnetizable means being constructed and arranged to be actuated by any of said magnetic means when said game piece is moved on the gameboard to a position of substantial registry with a significant area having such magnetic means, said magnetizable means comprising a normally open magnetically operable switch in said casing arranged to be closed by the magnetic flux of any of said magnetic means when registered therewith, and an electric circuit including said switch, said alarm means, and a source of electric current for energizing said electric alarm means, when said switch is closed as said game piece is registered with one of said significant areas on the playing surface of the gameboard.

11. Magnetically operated game apparatus according to claim 10, wherein said source of electric current is a battery built into said gameboard.

12. Magnetically operated game apparatus comprising a gameboard including a playing surface having significant areas and non-significant areas, some of which significant areas have magnetic means positioned therein, and at least one game piece selectively movable over said surface with

reference to said areas, said game piece comprising a casing, a signal element secured to said gameboard, magnetizable means in said casing for operating said signal element, said magnetizable means being constructed and arranged to be actuated by any of said magnetic means when said game piece is moved in the gameboard to a position of substantial registry with a significant area having such magnetic means, said signal element comprising an electric lamp bulb mounted on said gameboard, said magnetizable means comprising a normally open magnetically operable switch in said casing arranged to be closed by the magnetic flux of any of said magnetic means when registered therewith, and an electric circuit including said switch, said bulb, and a source of electric currents for lighting said lamp bulb when said switch is closed as said game piece is registered with one of said significant areas on the playing surface of the gameboard.

13. An exhibitor comprising a non-magnetic casing having a magnetizable core in its bottom, an armature arranged opposite said core and mounted by one end in said casing with its opposite end free, said armature being adapted to be drawn toward said core when said core is magnetized by being placed within the flux of a magnet over which said exhibitor may be placed, signal means in said casing and operating means actuated by said armature and connected to said signal means, said signal means comprising an electrical alarm device, an energizing circuit for said alarm device including a battery and a switch having a pair of normally separated opposed switch points, and said operating means comprising a portion in said armature carrying one of said switch points, the other of said switch points being stationarily mounted in said casing, said armature being arranged to move said

one switch point into engagement with said other stationary switch point so as to close said energizing circuit and operate said alarm device, when said core is magnetized.

14. An exhibitor comprising a non-magnetic casing having a permanent magnet mounted in the bottom of said casing, an armature arranged opposite said magnet and mounted by one end in said casing with its opposite end free, a magnetic circuit including said permanent magnet and said armature, a small air gap in said magnetic circuit, said armature being adapted to be drawn toward said permanent magnet when said exhibitor is placed near a magnetic means and adapted to substantially close said gap in said magnetic circuit, signal means in said casing and operating means actuated by said armature and connected to said signal means, said alarm device means comprising an electrical signal, an energizing circuit for said signal including a battery and switches having a pair of normally separated, opposed switch points, and said operating means comprising a portion in said armature carrying one of said switch points, the other of said switch points being stationarily mounted in said casing, said armature being arranged to move said one switch point into engagement with said other stationary switch point so as to close said energizing circuit and operate said alarm device, when said armature is drawn toward said permanent magnet.

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