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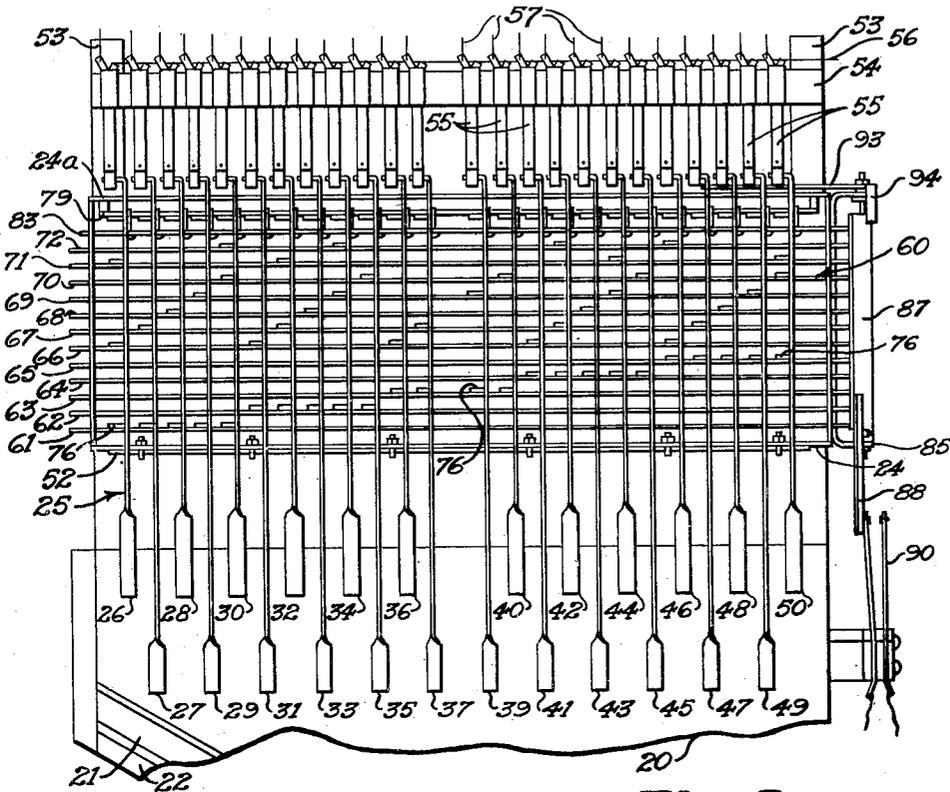
V. C. ENGSTROM

2,485,721

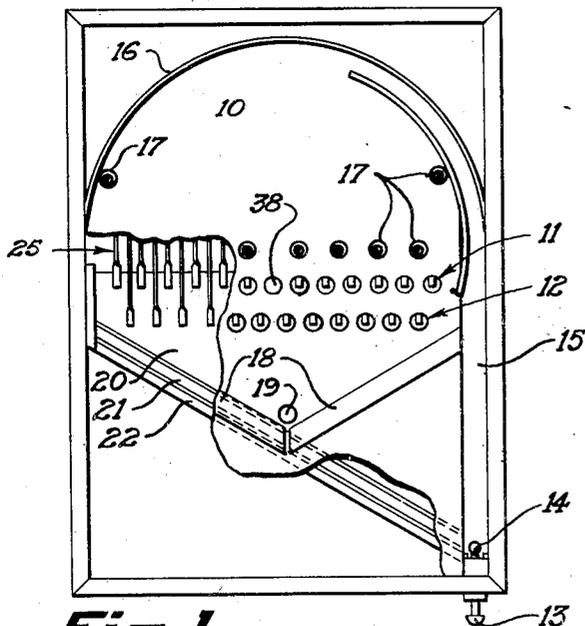
GAME APPARATUS

Filed Sept. 23, 1946

3 Sheets-Sheet 1



**Fig. 2.**



**Fig. 1.**

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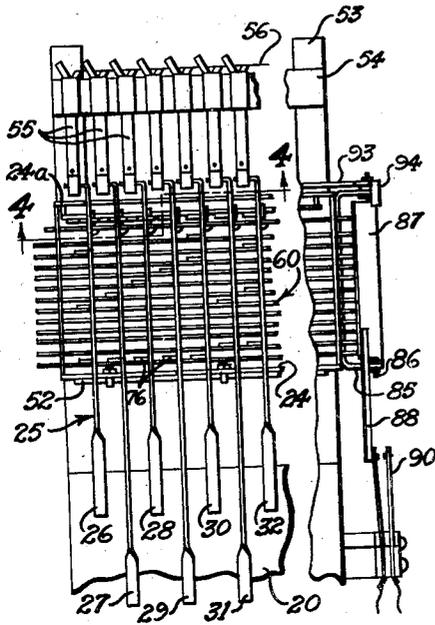
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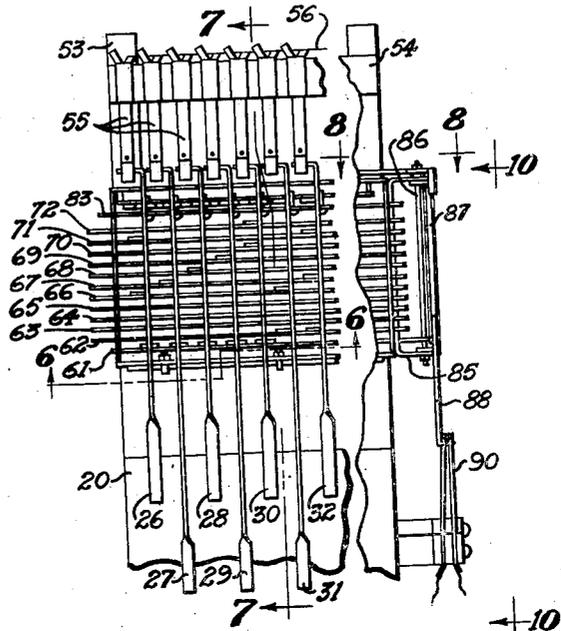
GAME APPARATUS

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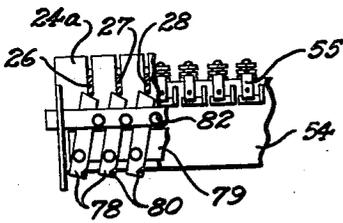
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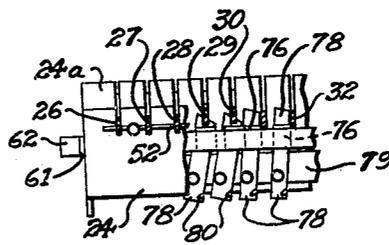
**Fig. 3.**



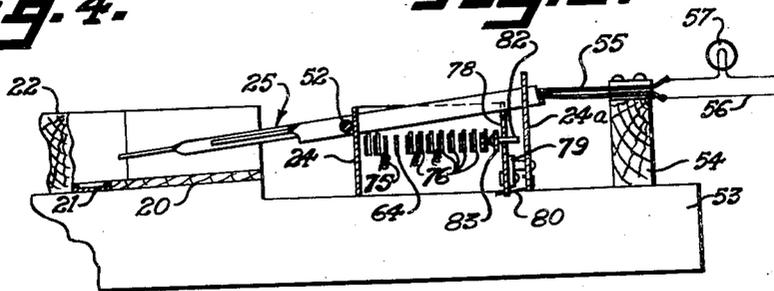
**Fig. 5.**



**Fig. 4.**



**Fig. 6.**



**Fig. 7.**

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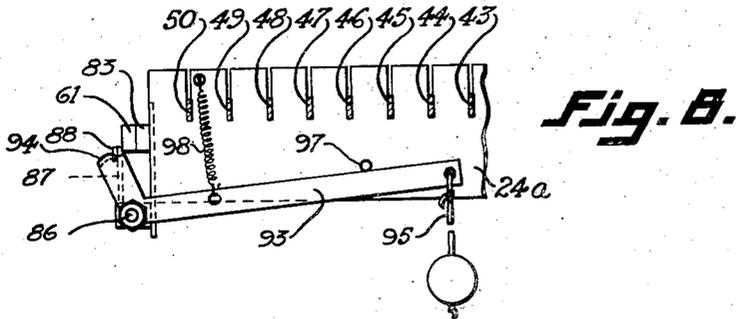
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GAME APPARATUS

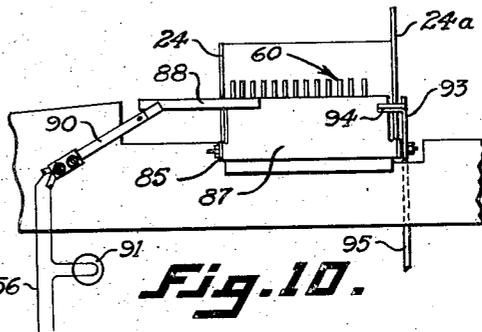
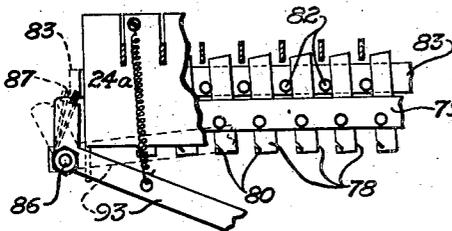
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3 Sheets-Sheet 3



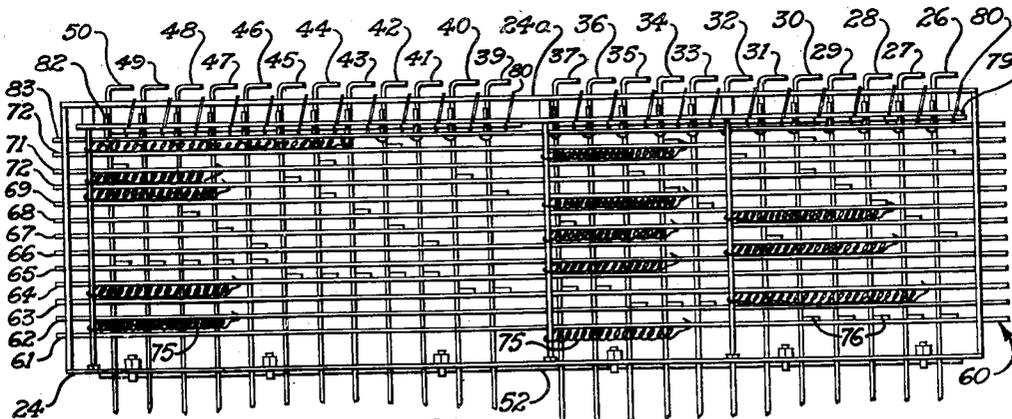
**Fig. 8.**

**Fig. 9.**

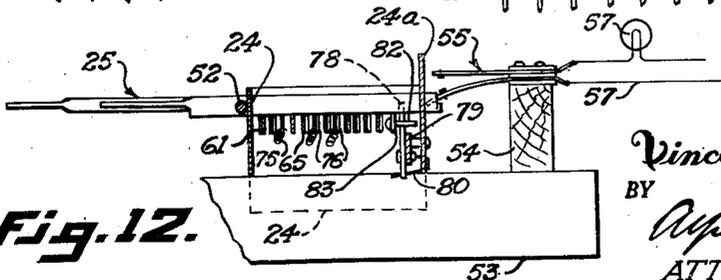


**Fig. 10.**

**Fig. 11.**



**Fig. 12.**



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# UNITED STATES PATENT OFFICE

2,485,721

## GAME APPARATUS

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Application September 23, 1946, Serial No. 698,719

12 Claims. (Cl. 200—52)

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The present invention relates generally to games, and more especially to scoring mechanisms for use with board games so arranged that the successive scores or plays made by each player on his board or playfield will be indicated visibly or audibly, and that the record of these plays or scores will be retained for such time as may be desired. The scoring mechanism is the type that also embodies means whereby the winning play will be indicated, accompanied, if desired, by elimination of the record of plays on other units than the one having the winning play recorded thereon.

The games with which we are particularly concerned here are those which are played upon a board or playfield which is provided with a number of holes through which marbles, balls, or similar objects are dropped in order to obtain a score. Underneath the board is the score recording mechanism which is actuated by the balls dropping through the holes in the board, there normally being an individually operated portion of the score recording mechanism associated with each hole in the playfield. The visual record of the score or play made is kept upon a separate score board or annunciator which may be located above the playfield, or some distance away from it. Indications are made on the score board by means of electric lights which are electrically connected to switches in the score recording mechanism beneath the playfield.

There are many different well known games using score recording mechanisms. One that is typical of the type of game with which we are here concerned is that disclosed in Patent No. 1,906,260 issued May 2, 1933 to John T. Gibbs. This patent shows and describes a game, and apparatus therefor, commonly known as "Bingo" in which the object of the game is to obtain a series of scores by causing a ball to drop through each and every one of the holes in a predetermined group of holes in the playfield. Because my improved scoring mechanism is particularly adapted to be used in conjunction with a game board of this character, I show and describe a preferred form of my invention in conjunction with such a board; but it will be understood that I am not necessarily limited thereto because the invention may be used in conjunction with other games without departing from the essential features thereof.

In the Gibbs patent referred to above, the score recording mechanism is entirely electrical and requires the use of a large number of electric switches and relays, and a complicated wiring

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system. An electrical device of this type for recording plays or scores is relatively expensive to construct, and also to maintain because it has so many parts that may be easily deranged or become inoperative and the difficulty can be readily detected only by an expert. Such mechanisms are subjected to a large number of repeated operations; and a maximum of reliability, combined with a minimum difficulty of repair and maintenance is of obvious advantage.

It is a general object of my invention to provide a score recording mechanism of the character described which is actuated by a falling ball or similar object to score the successive plays of a player, and also to indicate the winning play.

It is also an object of my invention to provide a reliable scoring mechanism of the character described in which all of the essential parts are mechanical in character, rather than electrical, except for the minimum number of electrical parts required to obtain a visual indication of the plays or scores.

Thus it may be said to be an object of my invention to substitute a simple, durable, and reliable mechanical device for electrical apparatus performing the same functions.

I attain these objects of my invention in a score recording mechanism for use in conjunction with a game apparatus having an inclined playfield over which a ball can roll and in which is a plurality of holes through which a ball can drop to obtain a score, by providing a plurality of levers which are biased toward one position and are adapted to be moved to a second or tilted position, as, for example, by a ball or balls dropped through the holes. The levers when in the second or tilted position are adapted to close electric switches associated therewith. Each switch closes a circuit to a signal light. The holes, and also the levers which are arranged one beneath each hole, are arranged in several predetermined groups. A bar, disposed transversely of the levers, is provided for each of said groups, and is engaged by all levers of a predetermined group of levers when they are in normal position, but the bar is disengaged by each lever of the group as it is raised to the tilted position. The bar is spring biased to move longitudinally in one direction but is held against movement by engagement with one or more levers. When disengaged from all levers, the bar is moved longitudinally and actuates a second electric switch which is connected to a signal light or other apparatus for indicating the winning play and performing such

other operations as may be desired in connection therewith.

In order that the first-mentioned signal lights will remain on in order to indicate the plays which have already been made, I provide means for holding each lever in a tilted position so that the lever maintains the associated electrical switch closed. Another function of equal importance of such holding means is to hold the tilted levers out of engagement with the transverse bars to permit movement thereof. Means is provided for returning each bar to its original position in which it engages the levers, and for releasing the holding means in order that the levers may return to their normal positions under the influence of gravity.

How the above objects and advantages of my invention, as well as others not specifically mentioned, are attained will be more readily understood by reference to the following description, and to the annexed drawings in which:

Fig. 1 is a plan view of a game board or playfield with a portion thereof broken away to show some of the levers underneath the field;

Fig. 2 is a plan view of the score recording mechanism alone removed from the game board;

Fig. 3 is an enlarged fragmentary plan view of a portion of the score recording mechanism with the first three levers of a group in tilted position;

Fig. 4 is a fragmentary vertical section taken on line 4—4 of Fig. 3;

Fig. 5 is a plan view similar to Fig. 3 with all levers of the first group of five levers in tilted position, allowing one of the bars to move transversely;

Fig. 6 is a fragmentary vertical section on line 6—6 of Fig. 5;

Fig. 7 is a fragmentary longitudinal section taken on line 7—7 of Fig. 5 showing the levers in tilted position;

Fig. 8 is a fragmentary vertical section on line 8—8 of Fig. 5 showing the reset means;

Fig. 9 is a view similar to Fig. 8 with portions of the frame broken away showing the action of the reset means in returning the levers to normal position;

Fig. 10 is a fragmentary side elevation, as shown by line 10—10 in Fig. 5;

Fig. 11 is an enlarged bottom view of the central portion of the score recording mechanism revolved endwise; and

Fig. 12 is a view similar to Fig. 7 showing the levers in normal position and the electric switch open.

Fig. 1 shows in plan a typical game board of the so-called "pin ball" type. The game board has a playfield 10 which is customarily covered by a sheet of glass or other transparent material, not shown, and is provided with a number of holes through which a ball or marble can be dropped. The object of the game is to obtain scores by causing the ball to drop through one or more holes or certain combinations of holes. Two or more players, each with a game board, can play competitively, the winner being the first to complete certain plays or make certain scores. In the form here illustrated, the scoring holes are arranged in two rows, 11 and 12 extending from right to left across the playfield.

In order to play the game, the player retracts plunger 13, and then allows the plunger suddenly to move forward under the influence of a spring, not shown. The plunger drives ball 14 forwardly and upwardly along inclined ramp 15 and against curved guide 16 which directs the

ball onto the rear upper end of the playfield. Field 10 is slightly inclined downwardly and forwardly toward the player and ball 14 rolls down it toward the scoring holes. A number of bumpers or posts 17 are provided in order to make it more difficult to drop ball 14 through any particular scoring hole. If ball 14 does not drop through any of the holes in rows 11 and 12, it will strike against a guide 18 which directs the ball into the non-scoring hole 19.

After the ball 14 drops through any of the holes in playfield 10 it eventually drops onto inclined surface 20 which is located beneath playfield 10. The balls roll downwardly on surface 20 onto track 21. A curb 22 is parallel to track 21 at its lower edge, and the track and curb direct the ball downwardly and to the right to return it to the position shown immediately in front of plunger 13, from which it may be again played by the operator.

It will be understood that the particular arrangement of the playfield, the scoring holes, and the other details thereof form no portion of the present invention and may be varied in any suitable manner. It is contemplated that my invention may be modified to adapt it to other well known games and game boards, if desired. The playfield 10 and the scoring holes in rows 11 and 12 are herein shown and described in order to fully disclose the features of my invention and to illustrate how the invention is adapted to operate in recording scores obtained in a game board of this general type.

The score recording mechanism is shown in Fig. 2 removed from playfield 10 and the enclosing structure of the game board. Referring now to Figs. 2 and 3, it will be seen that the recording mechanism comprises an open rectangular frame 24 on which is mounted a plurality of parallel levers, indicated collectively at 25. These levers are also designated individually by the numerals 26 to 50 inclusive, except that there is no lever 38, as will be explained later. All levers 25 are pivotally mounted in a row on a horizontally extending rod 52 attached to the forward wall of frame 24, the levers moving in a vertical plane and being guided by slots (see Fig. 6) in the rear vertical wall 24a of frame 24. There is one lever 25 for each scoring hole in rows 11 and 12 on playfield 10. The even numbered levers are shorter in order that their ends will be positioned under the scoring holes in row 11, as shown in Fig. 1; while the odd numbered levers are longer and are positioned beneath the scoring holes in row 12.

Frame 24 is supported upon a pair of longitudinally extending members 53 which extend rearwardly beyond frame 24; and on these rearward projections is supported crossbar 54. Crossbar 54 carries a plurality of electric switches 55. There is the same number of switches 55 as levers 25, and the electric switches are so located that there is one switch associated with and operated by each lever 25.

Levers 25 are individually biased toward one position in which they are preferably horizontal or nearly so, as in Fig. 12. This may be done by using gravity or a spring. Herein I use both since the inherent spring of the lower leaf of switch 55 not only keeps the switch contacts normally separated but also aids the associated lever 25 to return to this first position.

The construction and operation of these switches is shown in Figs. 7 and 12. Each switch 55 comprises a pair of spaced, horizontally ex-

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tending spring leaves, held at their rearward ends between pieces of insulation and normally separated at their forward ends, because of the inherent curvature in the spring leaves, as illustrated in Fig. 12. The free ends of the spring leaves carry a pair of electrical contacts which can be brought together by a lever 25 engaging and raising the lower spring leaf to the position shown in Fig. 7. As indicated in Fig. 3, the lower leaves of all switches 55 are connected to a common wire 56 connected to a suitable source of electric power. The other leaf of each switch 55 is connected to an individual signal light 57 which may be located at any convenient place. It will thus be seen that the number of signal lights is equal to the number of scoring holes on playfield 10, there being one light representing each hole in order that when a score is made by dropping a ball through that hole the corresponding light may be lit to give visual indication of the score made. A light 57, but without a switch 55 in its circuit, is ordinarily provided to represent hole 38. All signal lights 57 are normally located on a score board or annunciator which may be located at the back end of playfield 10, or is frequently located a short distance away from the game board.

A plurality of transversely extending bars 60 are mounted slidably in the end members of frame 24. These bars are indicated collectively at 60 but are given individual numerals 61 to 72, inclusive, and are shown particularly in Figs. 2 and 11. These bars are spring biased toward the right as viewed in Fig. 2, or toward the left as viewed in Fig. 11, by springs 75 which are in tension and are attached one to each of bars 61 to 72 inclusive.

Transverse bars 60 are held against horizontal sliding movement toward the right hand side of Fig. 2, by engagement with one or more of levers 25. As will be more fully explained, initially each transverse bar engages each lever of a group of levers 25, and when play has proceeded in such a way that all levers of that group are tilted to indicate scores, that bar is then disengaged by the levers and is free to move as a result of a force applied to the bar by the attached spring 75. For the purpose of engaging levers 25, each bar is provided at appropriate locations with a plurality of stops 76. Stops 76 project above the top surfaces of transverse bars 60 for a short distance, as may be seen in Fig. 7, in order to engage the side face of levers 25 when the levers are in the horizontal or normal position of Fig. 12. Any other suitable means of engaging the transverse bars and levers may be used; for example, it is possible to form bars 60 with notches or irregularities in their upper edges which will engage levers 25.

After a lever 25 has been struck by a ball dropped through a scoring hole and tilted to the position of Fig. 7 in which it closes a switch 55, it is desirable that the lever be retained in this position in order to keep switch 55 closed and signal light 57 lit. For this purpose I provide means adapted to hold each individual lever in the tilted position. Such means is shown best in Figs. 4 and 9, and comprises a plurality of holding members 78 pivotally mounted on a fixed transverse bar 79. There is one such member 78 for each lever 25. Holding members 78 are normally substantially vertical and press against the side of the associated lever 25, as shown by the right hand two members 78 in Fig. 6. Spring wires 80, attached to the lower end of holding

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members 78 and to frame wall 24a, urge holding members 78 to pivot clockwise, as viewed in Figs. 4 and 6. Consequently, as soon as the rear end of any lever 25 is raised, the associated holding member 78 swings into the path of that lever and prevents the lever from dropping back to its normal position. In Fig. 4, levers 26, 27 and 28 are shown held in the tilted position by holding members 78. Pivotal movement of the holding members 78 is limited by stops 82 extending horizontally from transverse bar 83 which is slidably mounted in the end members of frame 24.

At the right hand end of frame 24, is mounted U-shaped bracket 85. Between the outstanding arms of bracket 85, plate 87 is pivotally mounted on shaft 86 in a position opposite the ends of all transverse bars 60. A projecting portion 88 of plate 87 is in a position to engage the free ends of the two spring leaves forming electrical switch 90. The normal position of plate 87 is shown in Fig. 3, in which position switch 90 is open. When any one of transverse bars 60 moves to the right, as typified by bar 61 in Fig. 5, the end of the bar engages pivotal plate 87, swinging the upper end of the plate outwardly around its pivotal mounting on bracket 85. This movement causes projection 88 to engage the leaves of switch 90 and close them, as shown in Fig. 5. One contact of switch 90 is connected to wire 56, which is a common source of electrical current. When switch 90 is closed, it closes a circuit to signal light 91, shown in Fig. 10, which is normally in a position adjacent to signal lights 57. Light 91 is normally of a different character from lights 57 and is used to indicate that a winning play has been made. In addition to a visual signal from a light, an audible signal may be made by incorporating into the circuit a suitable device. In addition thereto, various other electrical devices may be actuated upon closing the circuit controlled by switch 90, as for example relays which would operate to break the electric supply to each of the game boards other than the one upon which the winning play has been made. Such devices form no part of the present invention and are well known to those skilled in the art; and consequently there is no need herein for further description of such devices.

Plate 87 is also used as a reset mechanism to return to their normal positions any of bars 60 which have moved to the right, and also the holding members 78 by movement of bar 83. For this purpose bell crank 93 is pivotally mounted on shaft 86 on bracket 85, as seen in Fig. 8. The upwardly extending arm of bell crank 93 has projection 94 engageable with plate 87, as seen in Fig. 10. The horizontally extending arm of bell crank 93 is provided with a pull cord 95, or any other suitable means, by means of which the bell crank may be turned about its pivotal mounting. Pull cord 95 is an example of manually operated means for actuating bell crank 93 for resetting the portions of the scoring mechanism preparatory to resuming play; but it will be evident that electrical or any other desired type of means may be substituted for cord 95.

Having described the construction of my score recording mechanism, I shall now describe its operation. The player using the game board causes ball 14 to drop through one of the scoring holes in rows 11 and 12. After dropping through a hole, ball 14 strikes the forward end of a lever 25 located directly beneath the hole and depresses the forward end of the lever, causing the lever to tilt about fulcrum 52. Thus the impact of the

falling ball causes lever 25 to move from the normal position of Fig. 12 into the tilted position of Fig. 7, in which the raised rearward end of the lever brings together the contacts of the associated switch 55 thus closing the electric circuit to signal light 57.

In the normal or initial position of each lever 25, a pivoted holding member 78 bears lightly against one side of the lever, as shown by the two right-hand members 78 in Fig. 6. When the lever 25 is tilted to raise its rearward end, the holding member 78 swings about its pivot on bar 79 and moves under lever 25, as shown by the two right hand members 78 in Fig. 6. Member 78 holds the lever 25 in its tilted position and switch 55 is held closed by the lever so that signal light 57 remains lit.

It will be understood that the purpose of the game, as is ordinarily the case with games of this type, is to attain scores by causing the ball or marble to drop through certain selected holes. In this particular instance, the object is to obtain scores by causing the ball to drop through all the scoring holes of a particular group. As typical of the way in which groups of holes may be established or predetermined, but without any necessary limitation thereto, I show twenty-four levers arranged one beneath each of an equal number of scoring holes, the holes, and consequently, the levers, being arranged in twelve different predetermined groups of five each. Although it is desired that the scoring holes are arranged in predetermined groups, it is equally true that the levers are arranged into similar groups; and for purposes of the disclosure herein, the grouping of the levers will be considered.

The first five groups of levers 25 are obtained by designating each successive five levers, starting from either end of the row as seen in Fig. 2, as a group, except that the center group contains only four levers although the center group of scoring holes contains five holes. This is because there is no lever beneath scoring hole 38. This construction illustrates the so-called "free-play" in which the player is automatically credited with a score equivalent to that represented by hole 38, without actually having to drop a ball 14 through that hole. Since in this particular game, it is not possible to obtain another score by dropping a ball through a specific hole a second time, the lever beneath "free-play" hole 38 has been omitted. It will be understood that, in the event a game is played in which a repeat score can be obtained, then a lever underneath hole 38 may be added, as are the other levers. Because of the presence of hole 38 on playfield 10, levers 25 are grouped by fives as if there were a lever beneath hole 38 making a total of twenty-five; but for other purposes hole 38 may be considered as a non-scoring hole.

According to this grouping of levers 25, it will be appreciated that the first group consists of levers 26, 27, 28, 29 and 30. The second group consists of levers 31 to 35; the third group of levers 36 to 40; the fourth group, levers 41 to 45; and the fifth group, levers 46 to 50.

As a consequence of this grouping of levers, bar 61 is provided with five stops 76. Stops 76 are spaced along transverse bar 61 with the same interval as successive levers 25, and are so located that one stop engages each of levers 26, 27, 28, 29 and 30, as shown particularly in Figs. 2, 3 and 5. It will be understood that as long as levers 25 are in the normal position, that each stop 76 on

bar 61 engages a lever of the first group of five levers.

Assuming play has progressed to the point that only levers 26, 27 and 28 have been moved to the tilted position, the parts occupy the position illustrated in Figs. 3 and 4. Holding members 78 have moved to retain levers 26, 27 and 28 in the tilted position, and these three levers are maintaining their associated switches 55 in closed position. Also, these three levers have disengaged stops 76 on bar 61, but the bar is still prevented from transverse movement to the right by engagement of two stops 76 with levers 29 and 30. When play has progressed further and levers 29 and 30 have been moved in to the tilted position, then bar 61 is disengaged from each lever of the first group and is then moved to the right by the attached spring 75. This position of the parts is shown in Fig. 5.

When bar 61 slides to the right, the end of it engages plate 87 and causes the plate to swing about the shaft 85, thus bringing projection 88 into engagement with the leaves of switch 90 and closing the switch, as shown in Fig. 5. This action closes the electric circuit to signal light 31 which signals that a winning play has been made as a result of the player having completed the necessary scores.

From the foregoing description, it will be apparent that a winning play may be registered by transverse bar 62 in the event that all levers in the second group, 31, 32, 33, 34 and 35, are moved to tilted positions. Bar 62 is provided with five stops 76 each of which engages one of the levers of this second group. Consequently, when bar 62 is disengaged by all levers of this second group, it is free to move to the right under the force of a spring 75 attached to it; and as a result of this movement plate 87 swings about its pivotal mounting and switch 90 is closed, lighting light 91 as before.

Bar 63 is provided with four stops 76 each of which engages a lever 36, 37, 39 and 40 of the third group. Bar 64 is provided with five stops 76 each of which engages one of levers 41, 42, 43, 44 and 45. Transverse bar 65 is provided with five stops 76 each of which engages one of levers 46, 47, 48, 49 and 50. In the same manner as previously described, when all levers of any one of these groups are moved to the tilted position, so that one of the transverse bars is disengaged from all levers of the predetermined group and is free to move transversely, then plate 87 will be engaged and moved and switch 90 closed in order to signal a winning play.

Another grouping of levers 25 has been made, by dividing them into five other groups of five levers each, with the exception of the center group, which contains only four levers, because of the presence of hole 38 in playfield 10 as described above. Likewise, five other transverse bars 68 are provided with stops 76 in appropriate places to engage all of the levers of each of these additional predetermined groups. In this second arrangement of groups, one group has been formed of the first, sixth, eleventh, and twenty-first levers. Thus transverse bar 66 engages levers 26, 31, 36, 41 and 46. Other groupings have been made in a similar fashion as follows: Bar 67 engages levers 27, 32, 37, 42 and 47; bar 68 engages levers 28, 33, 38, 43 and 48; bar 69 engages levers 29, 34, 39, 44 and 49; and bar 70 engages levers 30, 35, 40, 45 and 50.

Two additional groups of five levers each have also been made, each of which includes the blank

space at the center beneath hole 38. Counting this blank space, these groups include the first lever of the first group, the second lever of the second group, the third lever of the third group, the fourth lever of the fourth group and the fifth lever of the fifth group, of the first five groups enumerated. Following this pattern, bar 71 engages levers 26, 32, 44 and 50. The opposite grouping is also employed and as a result bar 72 engages levers 30, 34, 42 and 46.

In the same way as described in connection with bars 61 and 62, whenever the play has been such that ball 14 drops through all of the scoring holes belonging to a particular group, and the levers 25 belonging to that predetermined group have been moved to the tilted position, then one of the transverse bars is free to move to the right by the action of a spring 75. This movement of the transverse bar actuates plate 78 to close switch 90 to record a winning play.

After a winning play has been made, it is then necessary to restore the parts of the mechanism to their original position, in order that a new game may be played. This restoration of the various parts of the mechanism is accomplished primarily by actuation of bell crank 93. At the end of play, the parts may be in the position as shown in Fig. 8 in which bar 61 is bearing against plate 87. Bell crank 93 is in its top-most position, being raised by spring 98. Upward motion of the bell crank is limited by stationary pin 97. In order to reset the mechanism, cord 95 is pulled downwardly, causing the bell crank to rotate in a clockwise direction. This motion brings projection 94 on the bell crank, see Fig. 10, into engagement with plate 87, and causes the latter member also to rotate in a clockwise direction about shaft 86. Plate 87 engages the ends of any and all transverse bars 60 which may have moved to the right from their initial positions shown in Fig. 2. Continued movement of plate 87 moves the transverse bars to the left, as viewed in Fig. 2, until the ends are nearly flush with frame 24. This is the position of the parts shown in full lines in Fig. 9.

Transverse bars 60 have been moved to the left far enough that stops 76 have been moved clear of levers 25, and are in a position to re-engage levers 25 when these levers are dropped back to their normal or initial positions.

In order to return levers 25 to their original positions, the following motions occur. Simultaneously with bars 60 bar 83 is engaged by plate 87 and moved to the left. Bar 83 carries a plurality of stop pins 82, each one of which engages a pivoted member 78 and rotates the pivoted member in a clockwise direction, as viewed in Fig. 9, about its pivotal mounting on bar 79. This movement is in opposition to that caused by springs 80. As viewed in any of Figs. 3 to 6, the top ends of all holding members 78 are moved to the left, out of the path of levers 25, and levers 25 are thus free to drop back to the horizontal position of Fig. 12, under the influence of gravity. This permits the contacts of switches 55 to separate and opens all the electric circuits to lights 57.

When bell crank 95 is moved downwardly to the fullest extent and all of the transverse bars 60 and 83 are moved to the left, the travel of the bars preferably carries them somewhat beyond their position of rest which they occupy when play commences. This is done in order that stops 76 and holding member 78 may be moved entirely

clear of levers 25. Levers 25, when they have been returned by gravity to their normal position, are then in place to be engaged by stops 76 and holding members 78, as the transverse bars are moved slightly toward the right by springs 75, as bell crank 93 is released and is returned by spring 98 to the position indicated by the dotted lines in Fig. 9. This slight return movement of the transverse bars and also of plate 87 is shown by dotted lines in Fig. 9. Bell crank 93 is returned beyond this position since it must position projection 94 outwardly away from plate 87 a short distance in order to allow plate 87 some freedom of movement. Plate 87 is preferably biased by gravity or a spring toward the ends of the transverse bars in order that it does not prematurely engage electric switch 90. It will thus be seen that the transverse bars and the levers are all simultaneously returned to their original positions as a result of the movements occurring by the actuation of bell crank 93 and plate 87.

Having described a preferred embodiment of my invention, it will be understood that various modifications may be made therein by those skilled in the art, without departing from the spirit and scope of my invention; and consequently I wish it understood that the foregoing description is to be broadly construed as illustrative of the claims appended hereto, rather than restrictive thereon.

I claim:

1. In a score recording mechanism for use with game apparatus having a play field provided with a plurality of holes through which a ball can drop to obtain a score, the combination of: a plurality of levers located one beneath each hole and adapted to be tilted by a ball dropped through the hole; electric switch means associated with each lever and adapted to be closed by the associated lever when in tilted position; a bar engageable with each lever of a predetermined group of levers when in normal position and disengaged therefrom when each lever of the group is in tilted position; means moving the bar when disengaged by all levers in said group; and a second electric switch means adapted to be closed by said movement of the bar.

2. In a score recording mechanism for use with game apparatus having a play field provided with a plurality of holes through which a ball can drop to obtain a score, the combination of: a plurality of levers located one beneath each hole and adapted to be tilted by a ball dropped through the hole; electric switch means associated with each lever and adapted to be closed by the associated lever when in tilted position; a bar engageable with each lever of a predetermined group of levers when in normal position and disengaged therefrom when each lever of the group is in tilted position; means moving the bar when disengaged by all levers in said group; a second electric switch means adapted to be closed by said movement of the bar; means holding each lever in tilted position; and means for returning the bar and the lever to normal positions.

3. In a score recording mechanism for use with game apparatus having a play field provided with a plurality of holes through which a ball can drop to obtain a score, the combination of: a plurality of levers located one beneath each hole and adapted to be tilted by a ball dropped through the hole; electric switch means associated with each lever and adapted to be closed by the associated lever when in tilted position; a bar engageable with each lever of a predetermined group of levers

when in normal position and disengaged therefrom when each lever of the group is in tilted position; means moving the bar when disengaged by all levers in said group; a second electric switch means adapted to be closed by said movement of the bar, means holding each lever in tilted position, said holding means comprising a plurality of pivoted members, located one at each lever and spring biased to swing into the path of the lever to hold it in tilted position; and manually operated means to retract each said pivoted member from the path of the lever to allow the lever to return to normal position under influence of gravity.

4. In a score recording mechanism for use with game apparatus having a play field provided with a plurality of holes through which a ball can drop to obtain a score, the combination of: a frame; a plurality of levers pivotally mounted intermediate their ends on the frame, one lever being located beneath each hole and adapted to be depressed at one end by a ball dropped through the hole; electric switch means associated with each lever adapted to be closed by the other end of the associated lever when raised; a bar engageable with each lever of a predetermined group of levers when in normal position and disengaged therefrom when said other end of each lever in the group is raised; means moving the bar when disengaged by all levers in said group; and a second electric switch means adapted to be closed by said movement of the bar.

5. In a score recording mechanism for use with game apparatus having a play field provided with a plurality of holes through which a ball can drop to obtain a score, the combination of: a plurality of levers located one beneath each hole and adapted to be tilted by a ball dropped through the hole; electric switch means associated with each lever and adapted to be closed by the associated lever when in tilted position; a bar engageable with each lever of a predetermined group of levers when in normal position and disengaged therefrom when each lever of the group is in tilted position; means moving the bar when disengaged by all levers in said group; a second switch means; a pivoted member adapted to be engaged and moved in one direction by said bar to close said second switch means; and means moving said pivoted member in the other direction to engage and return said bar to a position in which the bar reengages said levers.

6. In a score recording mechanism for use with game apparatus having a play field provided with a plurality of holes through which a ball can drop to obtain a score, the combination of: a frame; a plurality of levers pivotally mounted intermediate their ends on the frame, one lever being located beneath each hole and adapted to be depressed at one end by a ball dropped through the hole; electric switch means associated with each lever adapted to be closed by the other end of the associated lever when raised; a plurality of bars, each bar being engageable with each lever in one of a plurality of predetermined groups of levers when in normal position and disengaged therefrom when said other end of each lever in the group is raised; means moving each bar individually from its normal position when disengaged from all levers; a second electric switch means adapted to be closed by said movement of any one of said bars; means holding said other end of each lever in raised position; and means for simultaneously returning all bars and levers to their normal positions.

7. In a score recording mechanism for use

with game apparatus having a play field provided with a plurality of holes through which a ball can drop to obtain a score, the combination of: a plurality of levers located one beneath each hole and adapted to be tilted by a ball dropped through the hole; electric switch means associated with each lever and adapted to be closed by the associated lever when in tilted position; means holding each lever in tilted position, said holding means comprising a plurality of members pivotally mounted on a stationary bar, one of said pivoted members being located at each lever and being spring biased to swing into the path of the lever to hold it in tilted position; and means to retract all said pivoted members from the paths of the levers to allow the levers to return to normal positions under the influence of gravity, said retracting means comprising a longitudinally movable bar, and a plurality of stops on said movable bar adapted to engage said pivoted members, thereby to rotate said members in opposition to their biasing and move them out of the paths of the levers when said bar is moved longitudinally.

8. In a score recording mechanism for use with game apparatus having a play field provided with a plurality of holes through which a ball can drop to obtain a score, the combination of: a frame; a plurality of parallel levers pivotally mounted intermediate their ends on the frame and arranged in a horizontally extending row, one lever being located beneath each hole and adapted to be depressed at one end by a ball dropped through the hole; electric switch means associated with each lever adapted to be closed by the other end of the associated lever when raised; a plurality of parallel bars below said levers and extending transversely thereof, each bar being engageable with each lever in one of a plurality of predetermined groups of levers when in normal position and disengaged therefrom when said other end of each lever in the group is raised; means individually moving each bar longitudinally when disengaged from all levers; a second electric switch means adapted to be closed by said longitudinal movement of any one of said bars; means holding said other end of each lever in raised position; and means for simultaneously returning all bars and levers to their normal positions.

9. In a score recording mechanism for use with game apparatus having an inclined play field over which a ball can roll to obtain a score, the combination of: a plurality of levers adapted to be tilted by a ball; electric switch means associated with each lever and adapted to be closed by the associated lever when in tilted position; a bar engageable with each lever of a predetermined group of levers when in normal position and disengaged therefrom when each lever of the group is in tilted position; means moving the bar when disengaged by all levers in said group; and a second electric switch means adapted to be closed by said movement of the bar.

10. In a score recording mechanism for use with game apparatus having a play field provided with a plurality of holes through which a ball can drop to obtain a score, the combination of: a plurality of levers located one beneath each hole and adapted to be tilted by a ball dropped through the hole; a bar engageable with each lever of a predetermined group of levers when in normal position and disengaged therefrom when each lever of the group is in tilted position; means moving the bar when disengaged by all levers in said group; and electric switch means adapted to be closed by said movement of the bar.

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11. In a score recording mechanism for use with game apparatus, the combination of: a plurality of levers pivotally mounted intermediate their ends, each lever being biased toward a first position and adapted to be tilted to a second position; a bar extending transversely of the levers and biased to move longitudinally in one direction when free, the bar being engaged with each lever of a predetermined group of levers when in said first position to hold the bar against movement in said one direction and disengaged therefrom when each lever in the group is tilted to the second position; and electric switch means adapted to be closed by movement of the bar in said one direction.

12. In a score recording mechanism for use with game apparatus having an inclined play field over which a ball can roll to obtain a score, the

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combination of: a frame; a plurality of levers pivotally mounted intermediate their ends on the frame, each lever being adapted to be depressed at one end by a ball; electric switch means associated with each lever adapted to be closed by the other end of the associated lever when raised; a plurality of bars, each bar being engageable with each lever of a predetermined group of levers when in normal position and disengaged therefrom when said other end of each lever in the group is raised; means individually moving each bar longitudinally when disengaged from all levers; and a second electric switch means adapted to be closed by said movement of any one of said bars.

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No references cited.