Oct. 25, 1949. V. C. ENGSTROM 2,485,721

GAME APPARATUS

Filed Sept. 23, 1946 3 Sheets-Sheet 1

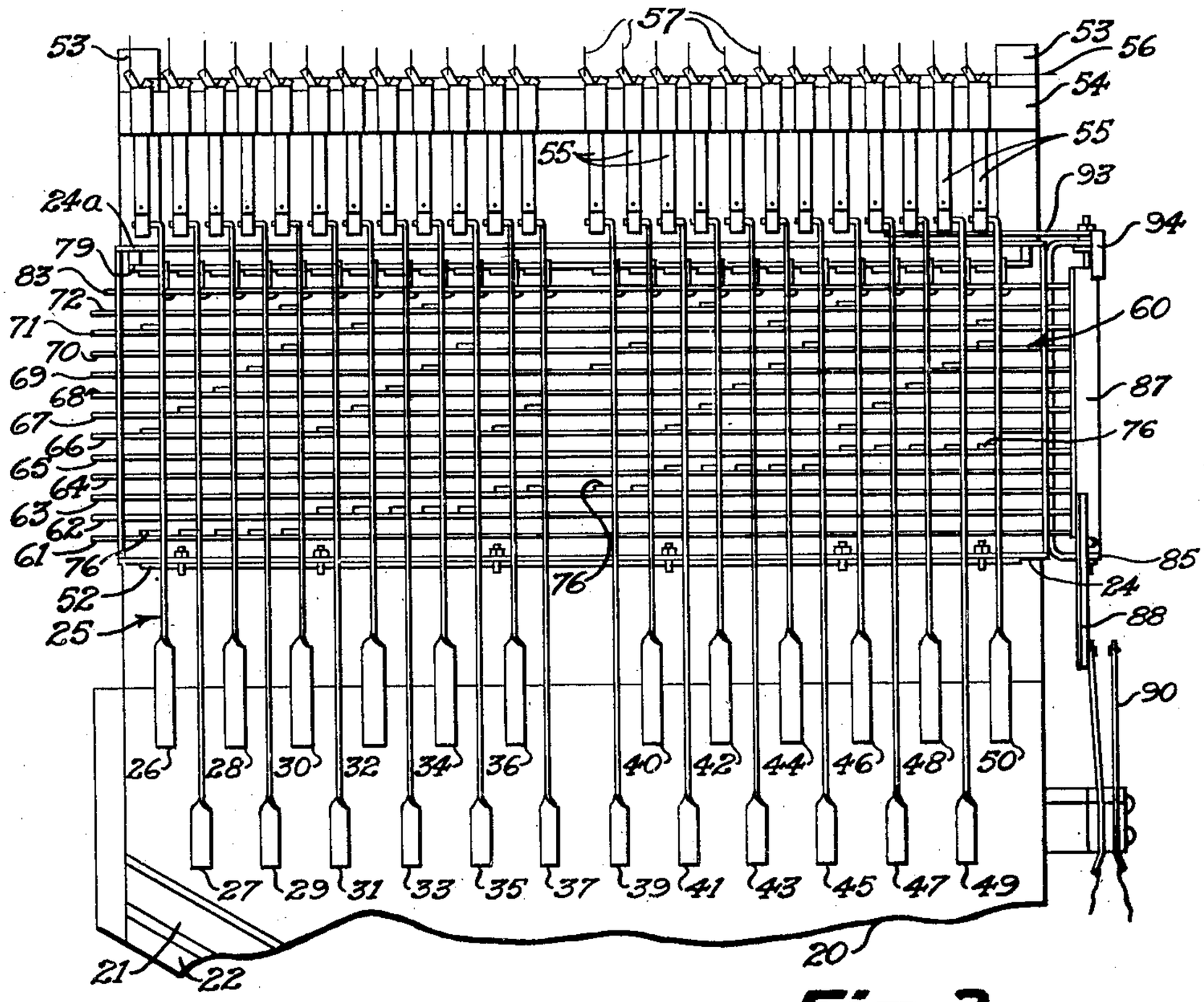

Fig. 2.

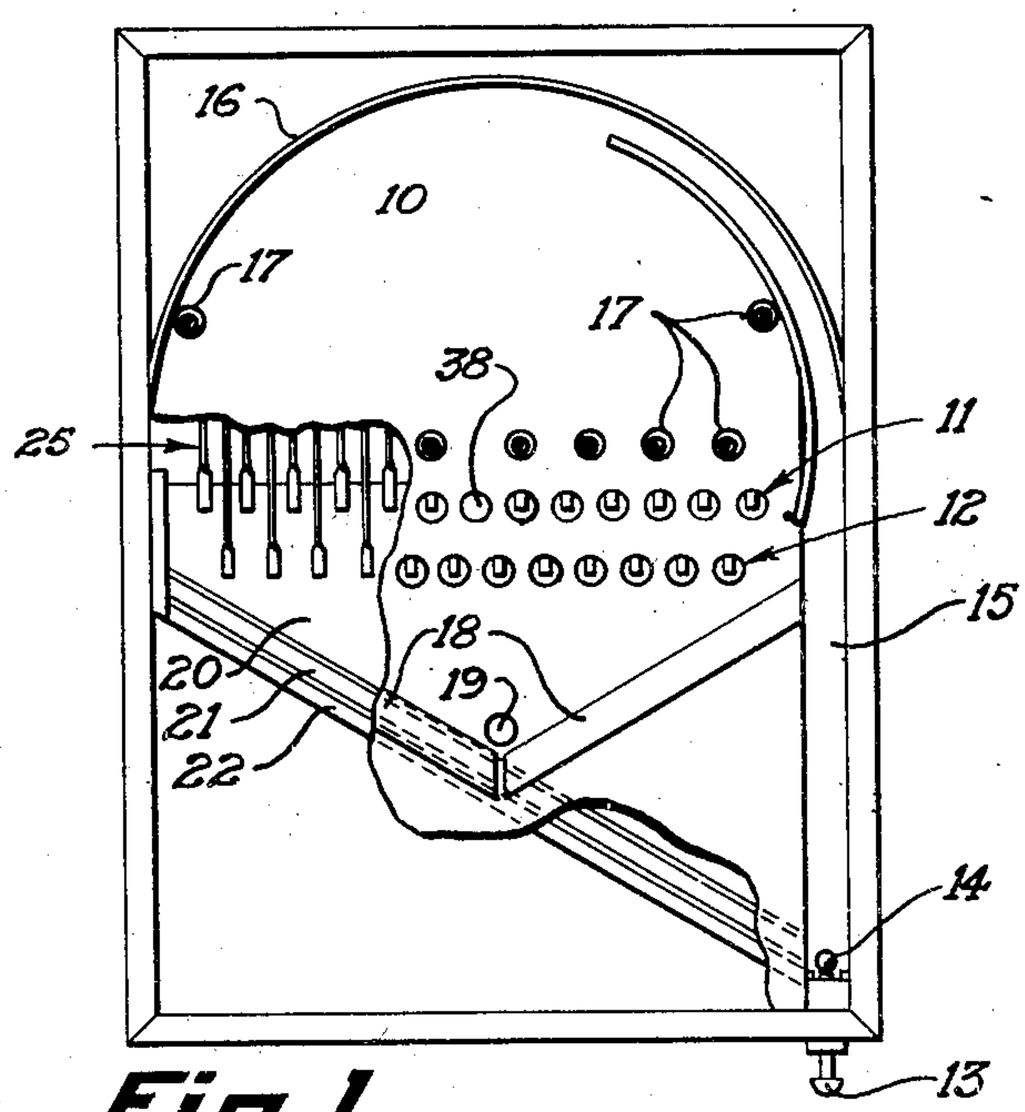

Fig. 1.

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GAME APPARATUS

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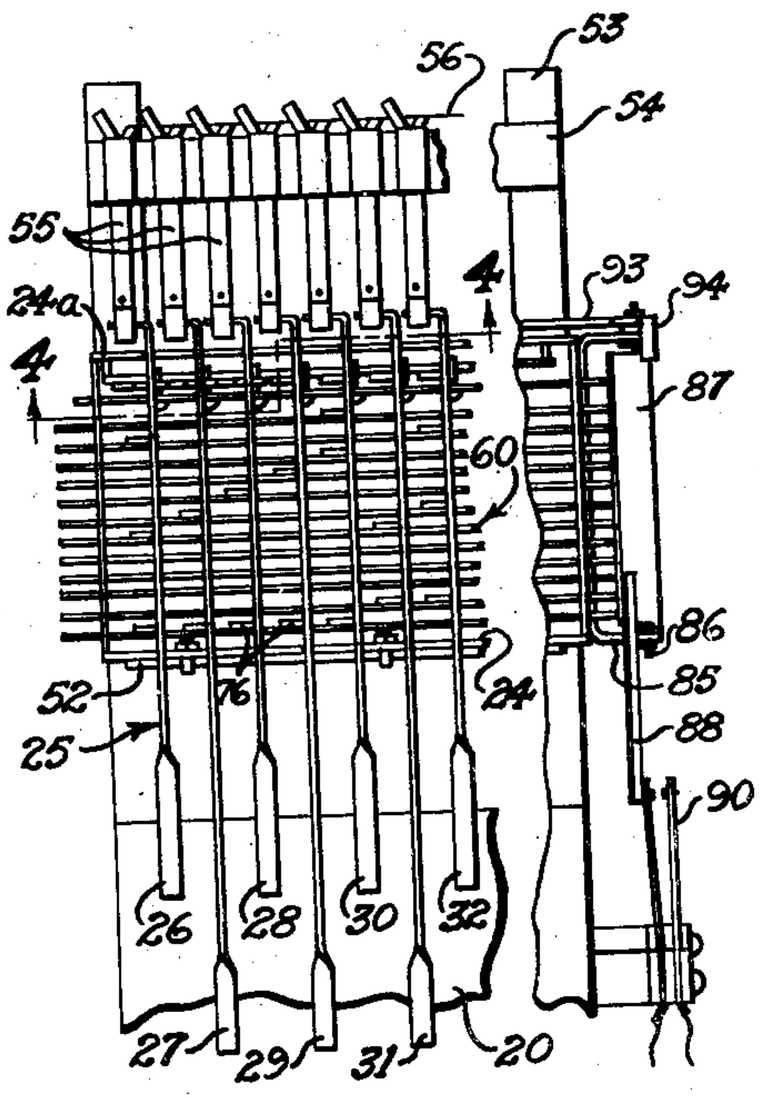

Fig. 3.

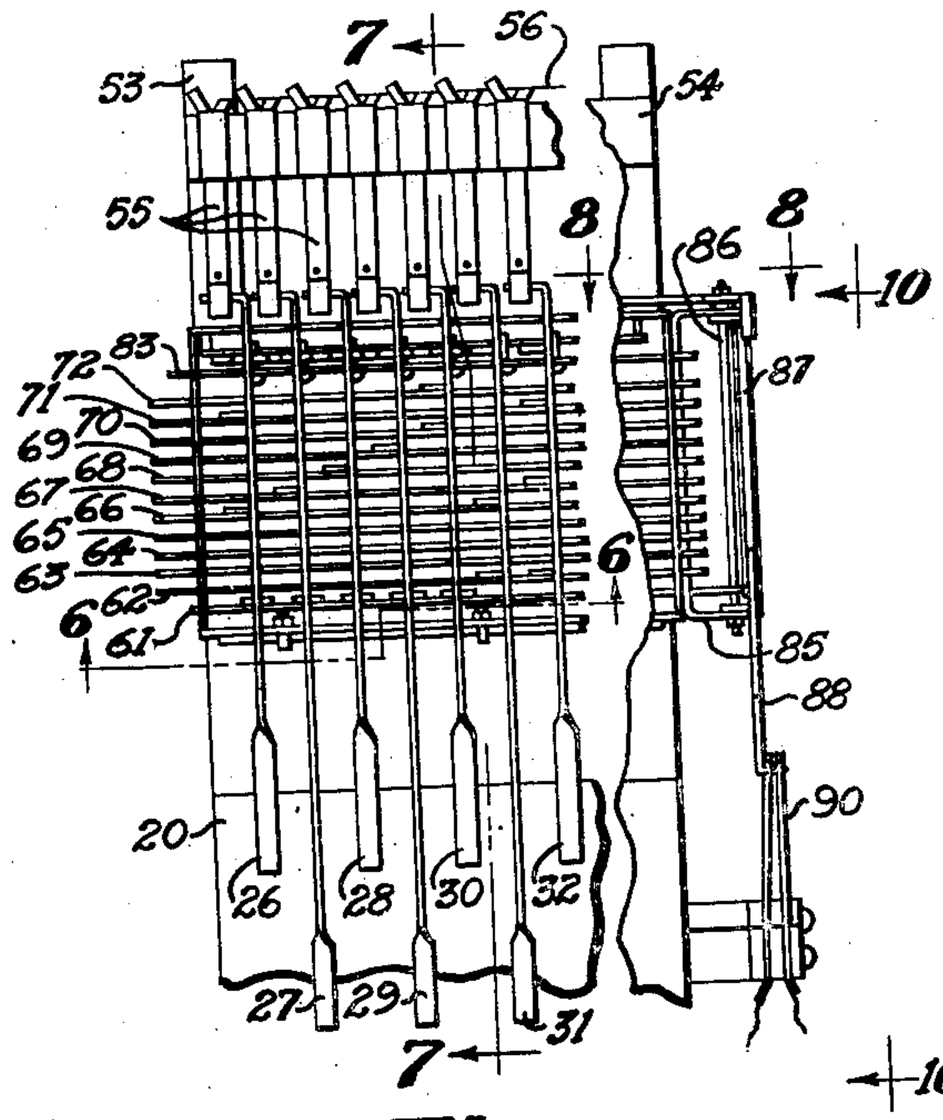

Fig. 5.

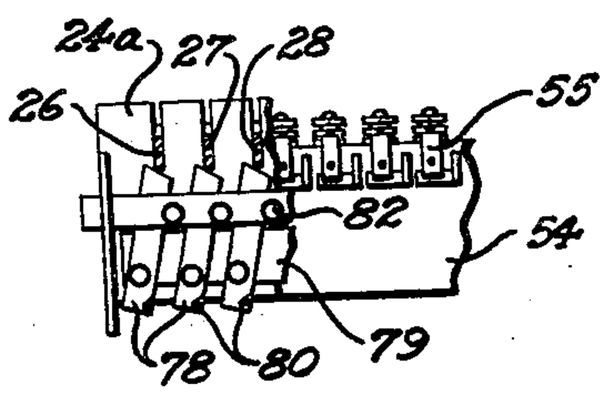

Fig. 4.

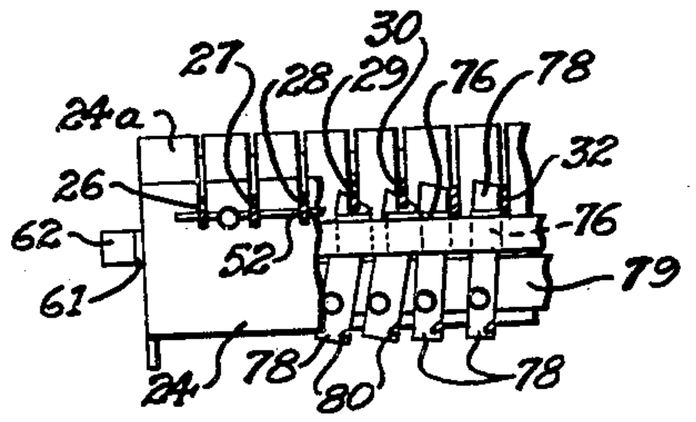

Fig. 6.

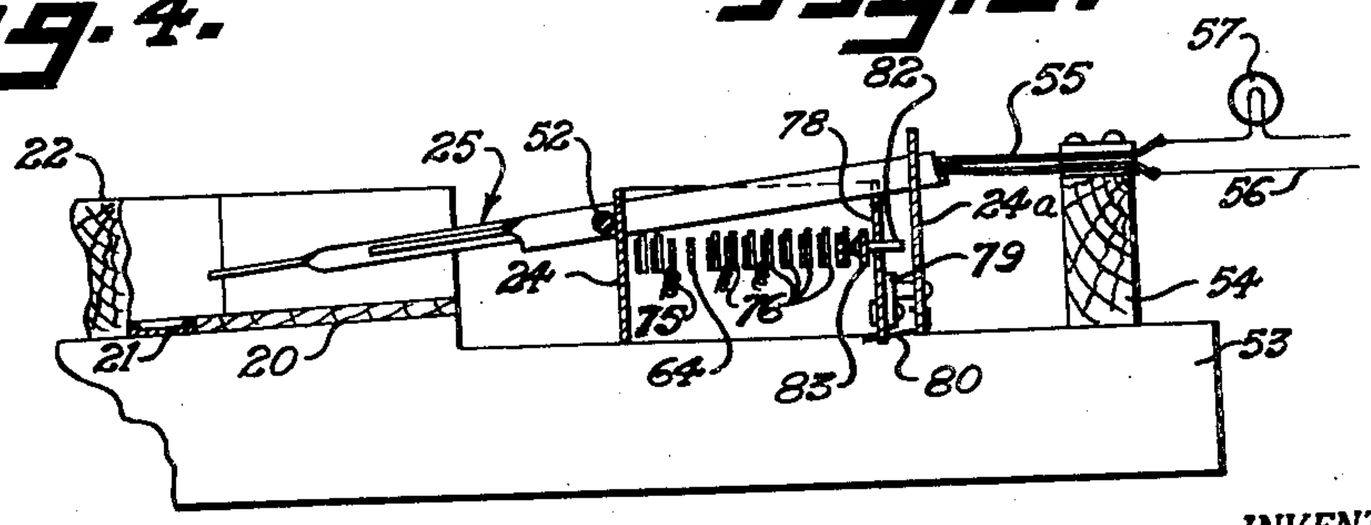

Fig. 7.

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GAME APPARATUS

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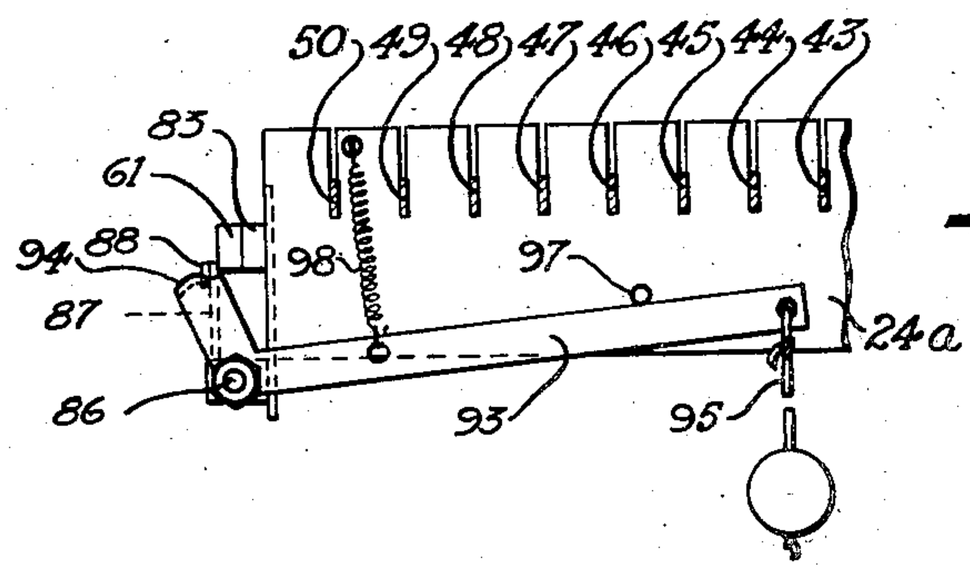
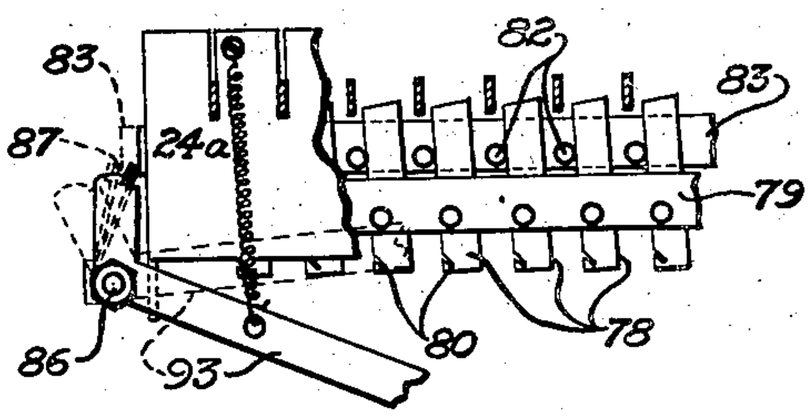


Fig. 8.

Fig. 9.



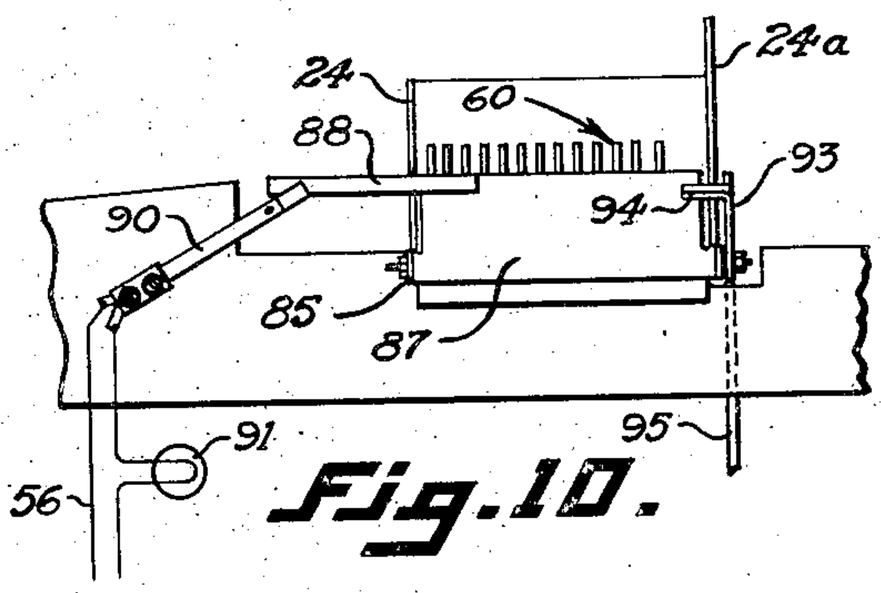
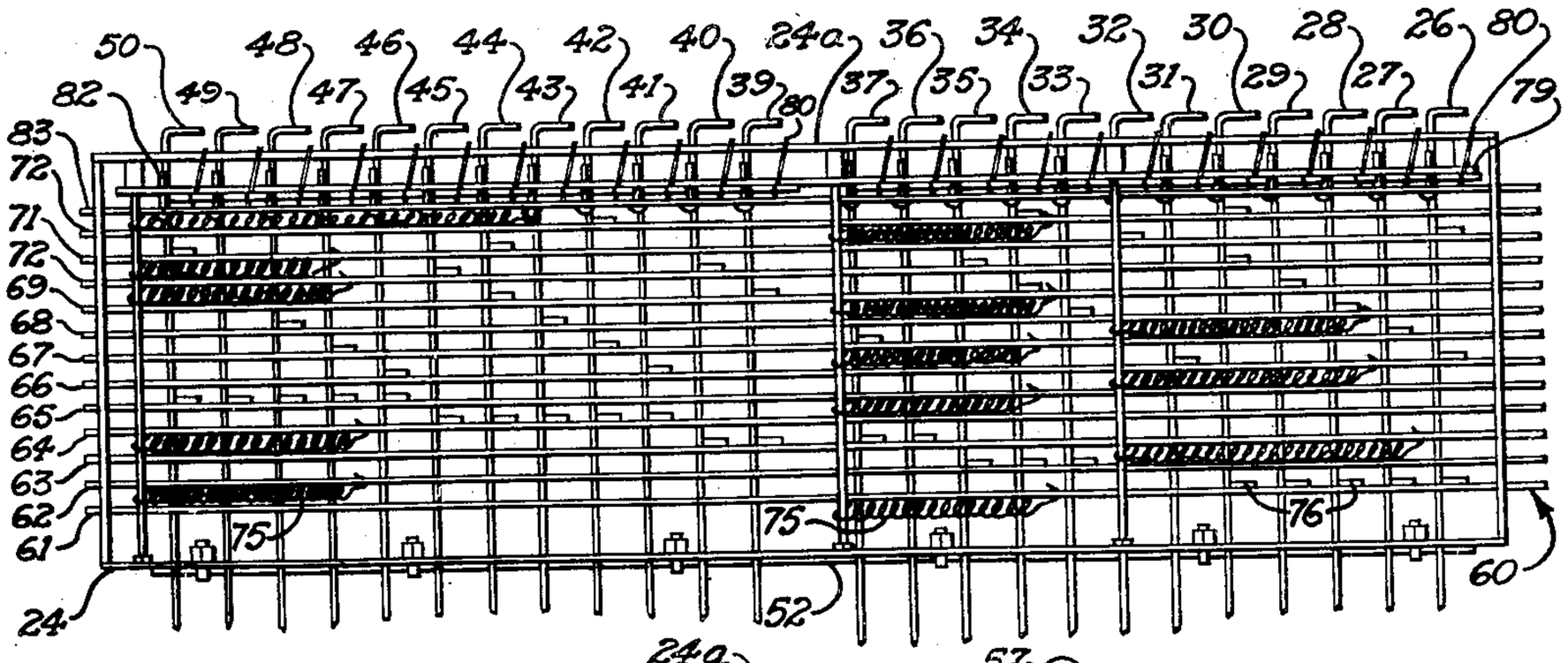


Fig. 10.

Fig. 11.



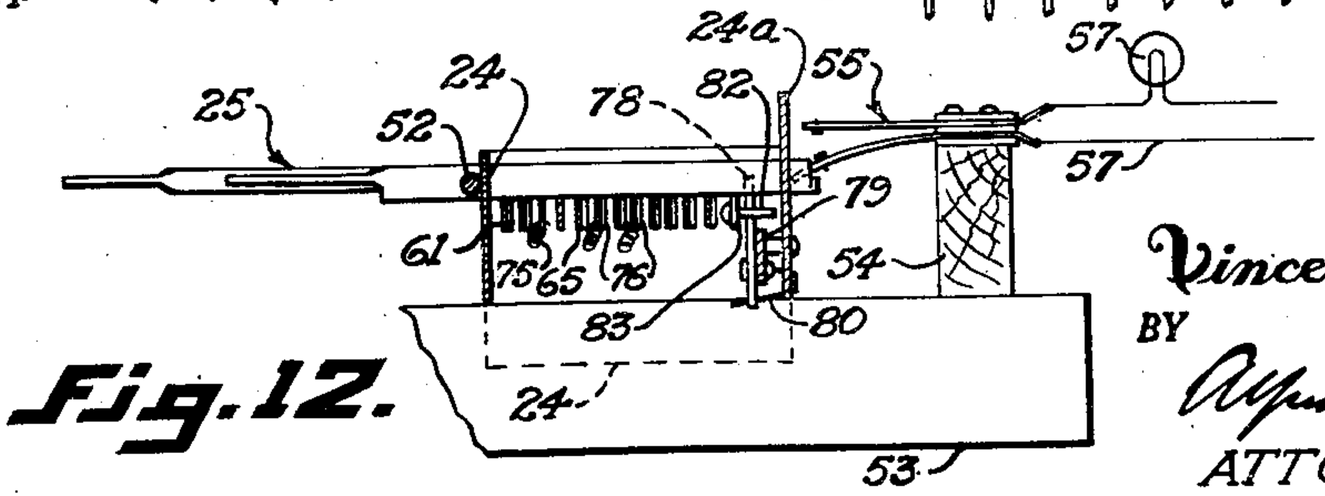


Fig. 12.

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Patented Oct. 25, 1949 2,485,721

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 24*a* 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-

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

members **78** and to frame wall **24***a*, 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 **86**, 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 **91** 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 **66** 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**, **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 **73** 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 occuring 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.

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

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.