Aug. 25, 1959 H. C. GRANT, JR 2,901,253

SIMULATED BASEBALL GAME APPARATUS

Filed Jan. 11, 1955 3 Sheets-Sheet 1

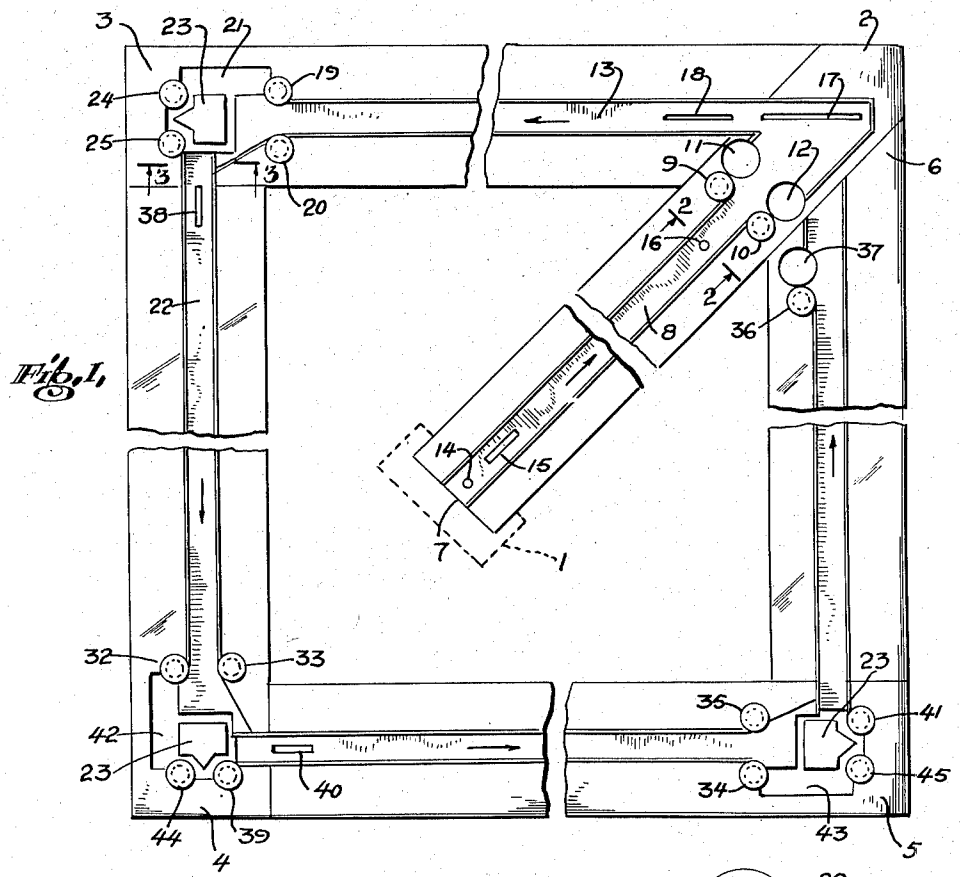

Fig. 1.

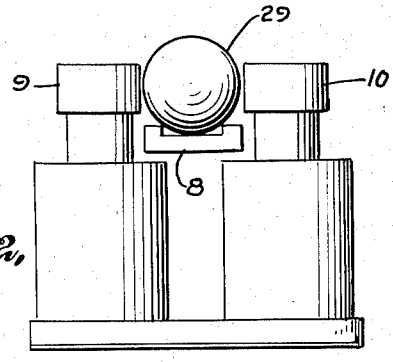

Fig. 2.

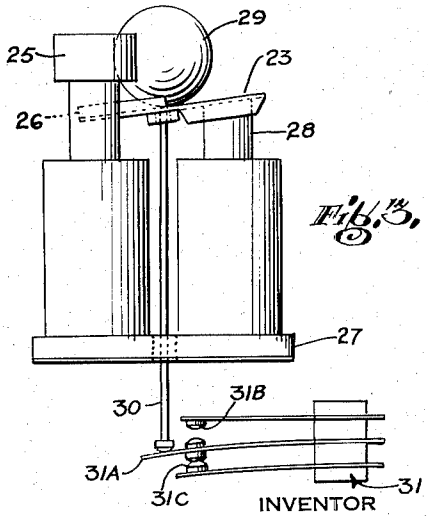

Fig. 3.

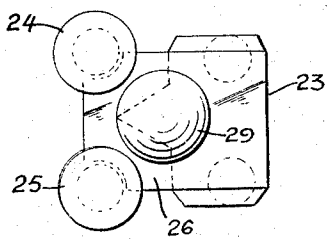

Fig. 4.

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Aug. 25, 1959 H. C. GRANT, JR 2,901,253

SIMULATED BASEBALL GAME APPARATUS

Filed Jan. 11, 1955 3 Sheets-Sheet 2

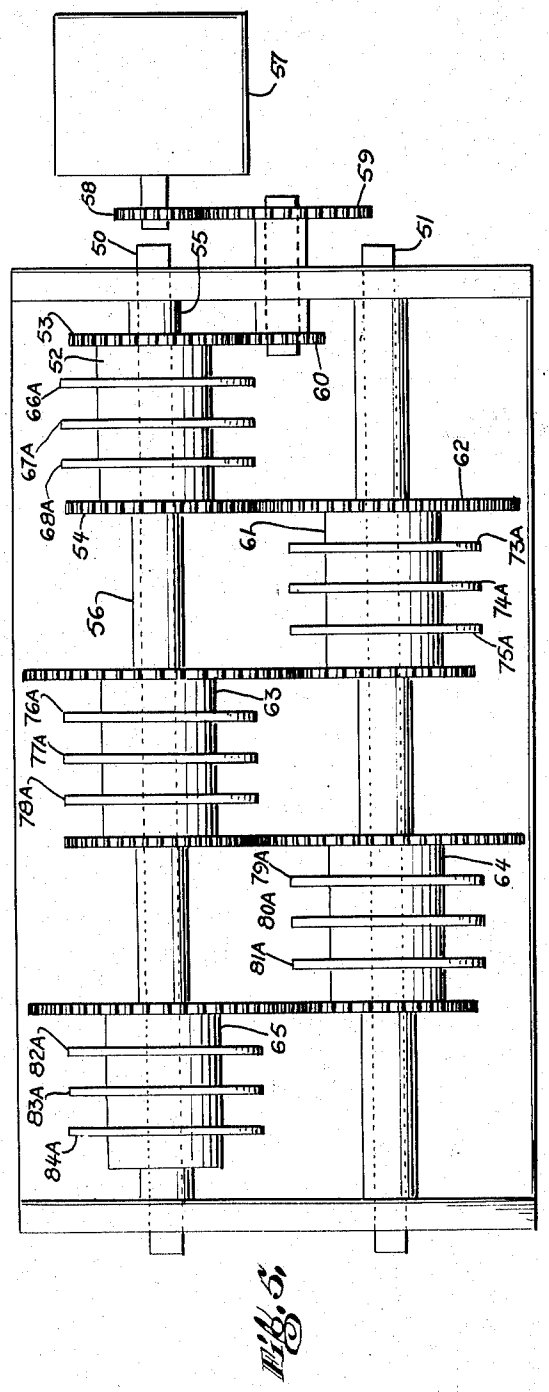

Fig. 5.

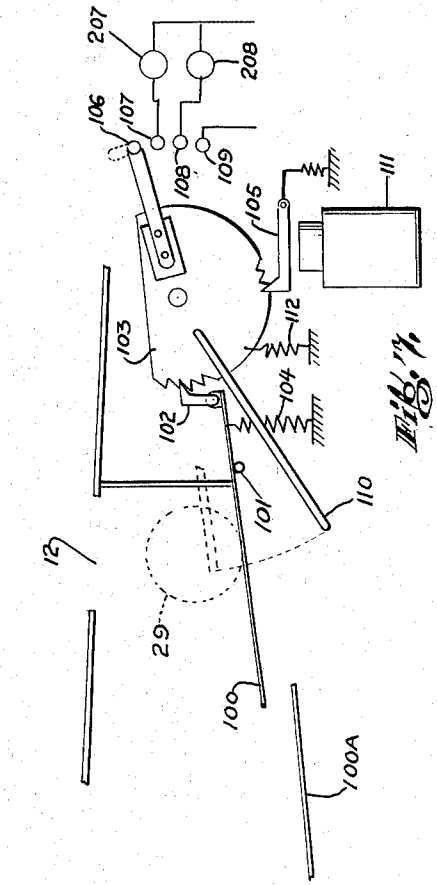

Fig. 7.

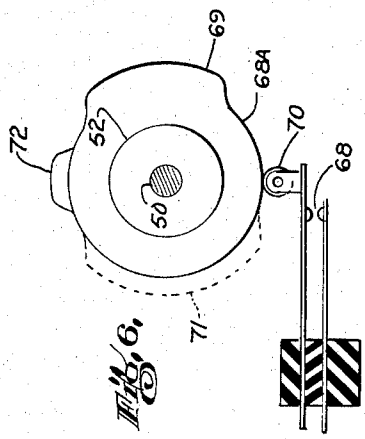

Fig. 6.

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SIMULATED BASEBALL GAME APPARATUS

Filed Jan. 11, 1955 3 Sheets-Sheet 3

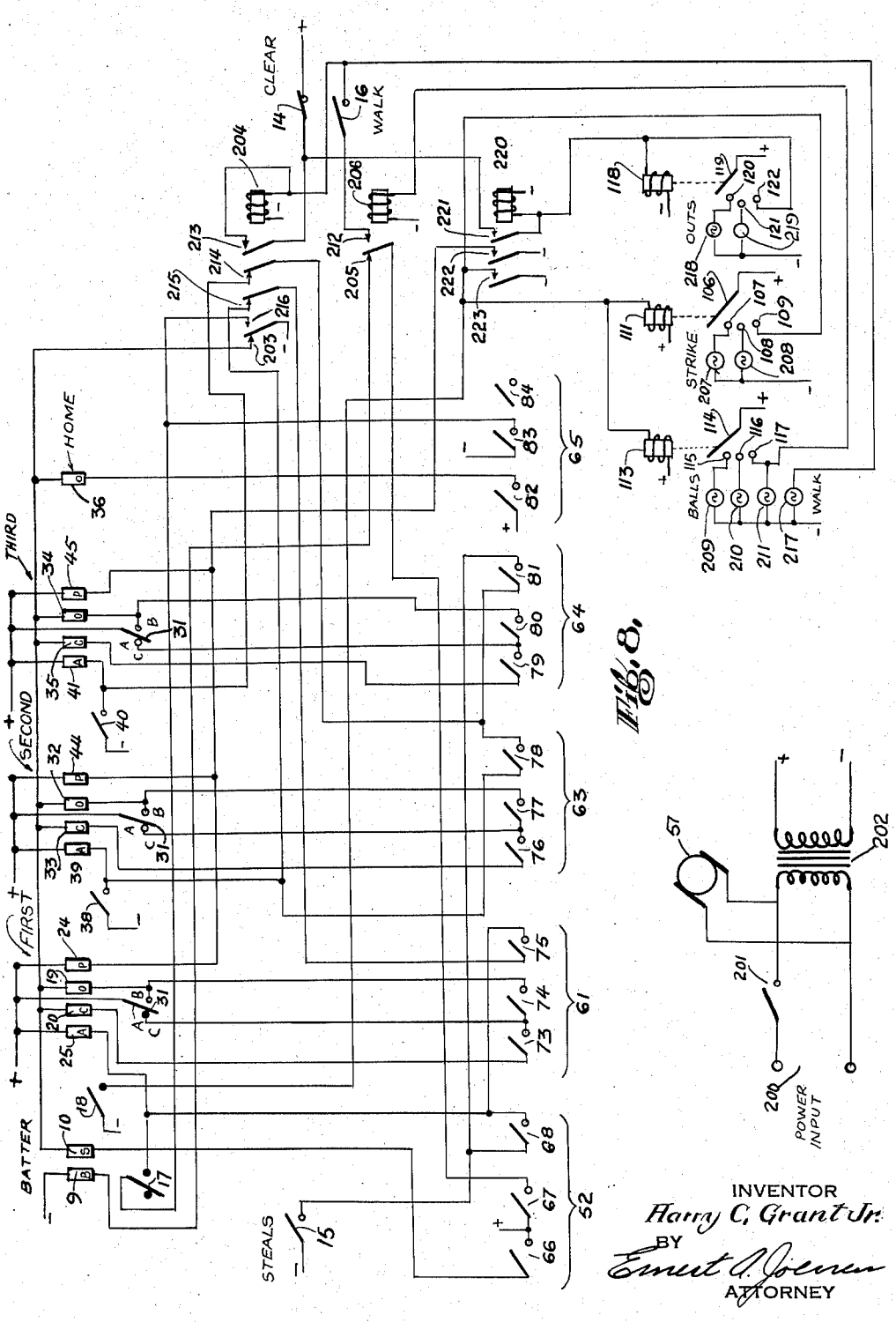

Fig. 8.

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United States Patent Office 2,901,253 Patented Aug. 25, 1959

2,901,253

SIMULATED BASEBALL GAME APPARATUS

Harry C. Grant, Jr., Ridgewood, N.J.

Application January 11, 1955, Serial No. 481,122

26 Claims. (Cl. 273—88)

The present invention relates to amusement and game devices, and, more particularly to improvements in chance controlled apparatus for simulating a baseball game.

Heretofore, apparatus for simulating a baseball game has been proposed which included runways from the pitcher's box to home plate, home plate to first base, first to second base, second to third base and third base to home plate, openings adjacent the first runway for receiving a movable element, such as a ball, to designate as a ball, strike or hit, the hit opening communicating with the first base runway, and openings adjacent the other runways near each base and home plate for receiving the movable element to designate safe or out, with the safe openings communicating with the runway to the next base.

Such apparatus made no provision for stolen bases, fielder's choice putouts, double and triple plays and other situations which occur in a live baseball game, since the ball, upon becoming a base runner, either circled the bases and scored a run or became an out. Obviously, such apparatus did not simulate a live baseball game, and consequently was uninteresting to baseball fans.

Accordingly, an object of the present invention is to provide simulated baseball game apparatus of the type indicated which is practically realistic of all live baseball situations.

Another object is to provide such apparatus wherein automatic devices are controlled by a chance mechanism adapted to cause average results to be duplicated as in a live game and, at the same time, avoid repetitive actions and enable the same deviations to take place that are normal in one game relative to another.

Another object is to provide such apparatus wherein the chance mechanism can be arranged to cause average results to differ from those occurring in a live game in any selected phase thereof.

Another object is to provide such apparatus adapted to be utilized by any number of players or teams of players.

Another object is to provide such apparatus wherein the action is sudden and unanticipated to accentuate suspense and interest.

Another object is to provide such apparatus wherein all advantages of one player over another by acquisition of skill or experience is eliminated.

A further object is to provide such apparatus which may be partially or completely automatic.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

As previously indicated, in this apparatus, movable elements, such as spheres, move about a miniature baseball diamond to closely simulate pitched balls and base runners, under control of automatic mechanisms which are designed and set to produce, on the average, a selected number of bases on balls, strike-outs, hit balls, singles, doubles, triples, home-runs, runs scored, put-outs at each of the bases, stolen bases tried from each of the bases and the like, in any nine inning game.

As a specific example, averages taken from box scores for 150 professional games where neither team scored more than 15 runs, showed that the average score was approximately 6 to 3. With the game controls properly set, the same number of hits and similar pertinent statistics will be attained for the same number of games and the average score will be approximately 6 to 3. Some games, however, will produce scores ending at 14 to 2, or 9 to 8, or 1 to 0, together with the usual number of games running into extra innings.

In a game of this nature, in some instances, it may be considered advisable to alter the controls, in certain selected phases, to deviate somewhat from actual statistical averages. For example, it may be desired to slightly increase the number of attempts for a stolen base, since these occur without warning and greatly enhance the suspense and excitement and, also, because very few stolen bases are actually attempted in any one game of professional baseball. In contrast, it may be desirable to decrease the number of home runs since, at the present time, these occur a disproportionate number of times in professional baseball.

As will be apparent from the detailed description, one deviation from an actual game is necessary. Since no outfield is provided and no balls are actually hit or fielded, fly balls, caught in the outfield or by players other than the first baseman, are represented as additional outs at first base. This, however, does not detract from the natural appearance of the game since, in all these cases, the batter normally runs to first base.

In general, this game provides for a player to release a sphere (such as a ¾" steel ball) at a point simulating the spot at which a pitcher normally throws a ball to a batter. Thenceforth, the sphere rolls in the guidance of a slightly inclined chute, without further influence on the part of the player, except where otherwise desired for special modifications of the game. Upon release by the player at the pitcher's box, the sphere rolls to the batter's box to represent a pitched ball. At this point, certain controls may declare this pitch to be a called ball, a strike or a hit ball. In the case of a hit ball, or for the case of a fourth ball, the sphere rolls onto another guiding chute to roll to first base. In any case, a pitched ball upon entering the chute guiding it to first base then represents a base runner, and will be referred to as a "runner" in the following description.

For a fourth ball, representing a walked batter, the runner will proceed safely to first base and will cause any runner occupying this base to advance to second base. Similarly, any runners on any base will advance a single base, if forced to vacate because of the walked batter.

In the case of a hit ball, the runner leaving the batter's box will advance to first base and, upon reaching this base, will be put out, will stop safely at the base (representing a single) or will continue past first base and enter a chute to be guided to second base. At second base, the runner may again be put out, stop safely or continue on to third base. At third base, the same possibilities exist and, if the runner should pass the base, he will be put out at home plate or will score a run.

When a "runner" leaves the batter's box to advance to first base, runners on other bases may also leave their base to advance to the next base, or they may hold their base.

Certain controls are operated by runners moving from one base to the next which may, or may not, cause certain actions on the part of other base runners.

In the following description, the possible actions per-

formed on the sphere, or runner, will be followed from the time of release by the player until, as a base runner, it is put out of play by one of the several possibilities. Some of the actions will be mentioned as simple statements in order that the full explanation may be more readily understood in connection with the detailed description of the wiring diagram.

While the general description pertains to essentially full automation of the game, it will be apparent that certain control elements can be omitted, or modified, without altering the general objectives or results of the game, where this may be desirable to permit lower cost of construction. For example, the control elements causing attempts at stolen bases can be omitted without affecting any other actions of the game. Similarly, certain obvious modifications or additions can be made, such as an automatic scoreboard, if low cost is not too important.

In the drawings:

Fig. 1 is a plan view of the game apparatus, simulating the general appearance of a baseball diamond, or infield.

Fig. 2 is a partial sectional view, taken along the line 2—2 on Fig. 1, to show one form of electro-magnetic controls for producing actions simultating balls and strikes, and which is used in an identical arrangement at other points.

Fig. 3 is a partial sectional view taken along the line 3—3 on Fig. 1, to indicate one arrangement which may be used at first base for controlling the actions of a runner occupying this base. Identical arrangements are used at both second and third bases.

Fig. 4 is a plan view of the controls shown in Fig. 3.

Fig. 5 is a plan view of a chance mechanism for actuating the various electro-magnetic controls.

Fig. 6 is an elevational view, partially in section, illustrating switch means of the mechanism shown in Fig. 5.

Fig. 7 is a schematic view of a counting device.

Fig. 8 is a complete wiring diagram of a preferred arrangement for essentially full automation.

Referring to the drawings in detail, Fig. 1 shows a baseball field, in miniature, but instead of being flat as an actual diamond, there is a continual slight slope from the highest point represented by a pitcher's box 1, to a batter's box 2, to first base 3, to second base 4, to third base 5, to home plate 6. Thus, the batter's box and home plate are actually located one above the other, instead of being identical. Guiding paths, or chutes, connect each of these points, in turn, so that a sphere released at point 7 may roll, due to gravity, from one point to the next.

When a sphere of magnetic material, such as steel, is released at point 7 to represent a pitched ball, it rolls down a chute 8, passing between the extending pole pieces of electro-magnets 9 and 10 (see also Fig. 2), just before reaching the position at which a batter would stand. If, at the instant of passing between the magnets, the magnet 9 happens to be energized, the sphere will be deflected from its straight path and directed to a hole 11. Lacking bottom support, the sphere will fall into the hole to represent a called ball. If the magnet 10 is energized instead, the sphere is deflected and directed to the opposite side to fall into a hole 12, representing a called, or swung strike. If neither magnet 9 nor magnet 10 is energized at the instant of passing, the sphere is not affected at all and rolls into a chute 13 to be guided to first base. For this case where neither magnet is energized, the sphere ceases representing a pitched ball and, at the instant of entering the chute 13, becomes a base runner advancing to first base on either a hit ball or a base on balls.

The magnets 9 and 10 are alternately energized, with an interval when neither is energized, for relative times that produce, on the average, the proper number of balls, strikes and hit balls. The frequency at which the full cycle occurs is so rapid (approximately twice a second is very satisfactory) that it is impossible for the player releasing the pitched balls to time the release with any of the magnetic actions. Since there is nothing visible or audible to indicate the timing of the various magnets, the resulting actions are completely a matter of chance, when the sphere reaches the batter's box.

When a pitched ball is released at 7, it immediately rolls over a rod projecting slightly in the center of the chute 8 causing it to open a switch 14, located below the chute, momentarily. As will be explained in connection with the wiring diagram, this switch is opened to release an electrically locked relay after a batter has received a base on balls, or at the start of a new half inning.

Immediately after opening the switch 14, the sphere rolls over a bar to close a switch 15. The length of this bar determines the duration of time the switch 15 is closed and this, in conjunction with other switch controls, determines whether runners on any of the bases may attempt stealing the next base. Just before the pitched ball reaches the magnets 9 and 10, it rolls over a rod end to close, momentarily, a switch 16. This switch is ineffective except when a count of three balls has been registered on the batter. If three balls have already been counted and certain automatically controlled switches happen to be closed for the instant the switch 16 is closed by the pitched ball, a relay operates to represent a fourth ball and, therefore, a walked batter. For this case, the operated relay cuts off the circuits ordinarily cycling the strike magnet 10 and ball magnet 9 so that the sphere will not be diverted into either of the holes 11 or 12. Instead, the sphere continues straight ahead to enter the chute 13 to advance to first base. Magnets at this base, which could otherwise cause an incoming base runner to be put out or to continue on to second base, are cut off by operation of the relay so that the runner advances safely to the base, but no farther. Similarly, control magnets at each of the bases and home plate are cut off so that any runners forced to advance by the walked batter will also advance safely just one base. Feeding of the next pitched ball, operating the switch 14, releases the relay operated by the switch 16, to restore normal control at all points.

When a pitched ball passes between the magnets 9 and 10 without being diverted as a ball or strike (or as a walked batter as above), it continues ahead to become a base runner advancing to first base on a hit ball. The runner enters the sloping chute 13 and immediately rolls over a bar to operate a switch 17, the duration of switch operation being determined by the selected length of the bar. This switch is in a multiple circuit with other switches which are automatically operated in a pre-set, but constantly changing manner. If the runner happens to operate the switch 17 when other switches happen to be in the proper position, runners on first, second or third base may advance, either all together or in any combination. For example, on a hit ball with runners on first and third, the runner on third may advance to home plate while the runner on first base does not move; or the reverse action may occur; or both runners may advance; or neither runner moves. When the runner in the chute 13 rolls over a projecting bar controlling a switch 18, immediately after releasing the switch 17, the operation of the switch 18 causes operation of electro-magnets to clear any ball and strike count which may have been registered on the batter.

When the "runner" reaches the first base area 3 it passes between two magnet pole pieces 19 and 20. These magnets are arranged identically to magnets 9 and 10 used for controlling balls and strikes, but no drop-out hole is provided adjacent the magnet 20. The magnets 19 and 20 are also momentarily energized, first one and then the other, with a period when neither is energized. The duration of each phase is timed to provide the desired average frequency of the three actions which may occur on the runner at this point. The full timing cycle is repeated constantly but at a rate which differs from those used

at other control points, this different rate causing a phase change which constantly alters the relative timing between this point and others. This action prevents repetition of plays which would otherwise occur for the same starting conditions. The speed at which a full cycle of magnet energization occurs can be faster or slower than the cycle speeds at other control points but would, generally, be made slower than the cycle used for ball and strike control. While it is important to make the ball and strike cycle short enough to prevent any possibility for the ball feeder (player) to control the action by synchronizing the time at which he releases the pitched ball, such synchronizing would be impossible relative to the controls at first base and beyond because the distance is greater and, more important, other automatic controls can act on the ball before reaching this point. For example, in most cases, on a hit ball the pitched ball can be slightly influenced by either magnet **9** or **10**, insufficiently to cause full diversion into either hole **11** or **12**, but enough to cause an effective change in time taken to enter the chute **13** and start its free roll to first base. Thus, controls at still more remote points can, if desired, be made to cycle at still lower rates. This is generally desirable to reduce the number of contact closures, to increase life. The important function is that the full cycle of related but opposed actions (such as balls, strikes and hit balls) be timed to give the average frequency at which each of the actions would occur and that there be a random changing relationship between one group of such related controls at one point with those at others.

If, when the runner advancing to first base passes between the magnets **19** and **20** at the instant the magnet **19** happens to be energized, the runner is deflected to the outside to fall into a hole **21** (which may be provided with a chute to return the ball for subsequent replay as a pitched ball) to represent a put-out. If, instead, the magnet **20** happens to be energized, the runner is deflected to the inside to drop into a chute **22** to lead the runner to second base. This represents a batter making an extra base hit, or attempting to stretch a single into a double. If neither magnet happens to be energized at this instant, the runner continues straight ahead to be safe at first base. This represents a single, fielder's choice (where a runner leaves first base upon operation of the switch **17** and is put out at the next base) or a base on balls. In this last case, as previously mentioned, both the magnets **19** and **20** are automatically out of action the instant the fourth ball is registered, remaining so until the next pitched ball is delivered to actuate the switch **14**.

When a runner comes into first base when neither the magnet **19** nor **20** is energized, the ball runs onto a plate **23** (Figs. 1, 3 and 4) midway between the pole pieces of magnets **24** and **25**. Since the runner strikes the magnets **24** and **25** with considerable velocity, excessive bounce-back at a slight angle can cause the runner to fall into the out hole **21**, or into the chute **22**, leading to second base. Any of numerous methods can be employed to absorb the energy in the sphere to assure proper holding of the base and also provide for almost instantaneous coming to a rest position, and at the same time leave it free for subsequent actions.

For example as shown in Figs. 3 and 4, the plate **23** is provided with a raised step **26** having a V-notch shape so that the runner must ride up on the step before contacting the magnets **24** and **25**. This riding up on the step **26** absorbs considerable energy, the amount depending on the rise. When the ball is stopped by the magnets **24** and **25**, however, the center of the ball is not supported by the step **26**, causing the ball to drop back to the level of the plate **23**. The V-notch resists lateral movement to either side. Thus the runner appears to come to rest instantly, in a position equidistant from the magnets **24** and **25** and with a slight air gap remaining between the runner and the pole pieces of the magnets **24** and **25**.

For the particular arrangement shown in Figs. 3 and 4, the pole of the magnet **24** and the pole of the magnet **25** are parts of a double coil magnet mounted on a common magnetic material base **27**, with the second coil having a shorter pole **28**. The sphere, representing a runner **29**, rests on the plate **23** thereby almost closing any magnetic circuit between the poles. The second magnet **28** is not essential for acceptable operation.

The thin, non-magnetic plate **23** is normally supported by a rod **30** which, in turn, is supported by a spring arm **31A** of a switch **31**. The shape of the plate **23** permits it to dispose itself freely between the poles of the magnets **24** and **25** and, together with the socket retainer for the upper end of the rod **30**, loosely holds the plate in proper position, out of contact with pole **28** and the similar pole associated with the pole of the magnet **24**. When a sphere rolls on the plate **23**, its weight overcomes the force exerted by arm **31A**, causing the plate to move downward to rest on the short poles (as **28**) and, at the same time, open the normally closed contacts **31B** and close the normally open contacts **31C**. This action also absorbs considerable energy from the rolling sphere.

Operation of the switch **31** disconnects the magnet **20** from its normal control circuit so that it remains inoperative as long as a runner **29** is resting safely on the base plate **23**. This switch also causes the magnet **19** to be continuously energized, independent of its normal cycling control. This is done so that a second runner attempting to come into an occupied base will be put out, instead of passing the base or attempting to take the base also. The instant a runner leaves the base, the switch **31** restores its normal setting, causing the magnets **19** and **20** to resume their normal cycling.

When the third out occurs to end the half inning, an "out-counter" operates a switch which, in turn, causes a relay to operate and lock operated. Operation of this relay energizes the magnet **24**. If a runner **29** occupies the base when the magnet **24** is energized, the sphere of magnetic material attempts to reduce the air gap to zero, by moving to the pole of the magnet **24**. The inertia imparted by this action causes the sphere to roll around the pole, out of the V-notch of step **26**, permitting the sphere to drop off the plate **23** into the hole **21**. The sphere may then return by a gravity chute to a common ball receptacle for subsequent replay (or be merely retained by **21** for manual removal). The area of pole of the magnet **24** contacted by the sphere in this action may be covered with a film of non-magnetic material to eliminate any tendency for the sphere to freeze to the pole.

In the event of an attempted steal, or when a runner is advancing from a preceding base, or on a hit ball, the magnet **25** may be energized, momentarily, causing a runner occupying the base to be acted upon in a manner similar to that described in connection with the magnet **24**, but in the opposite direction, so that the runner drops into the chute **22** to advance to second base.

An arrangement of magnets, plate switch and other parts, such as is used at first base, is duplicated at second and third base. Magnets **32** and **33** at second base, and magnets **34** and **35** at third base are operated at a different cycling duration, however, to suit the different average response action required at each of these bases.

At home plate a single magnet **36** and an out hole **37** are used to cause a runner to be put out if the magnet **36** should be energized at the instant a runner passes. If the magnet **36** is not energized at the instant a runner passes, the runner continues straight ahead to score a run.

A runner, when leaving or passing first base, enters the chute **22** and immediately rolls over a bar to actuate a switch **38**. Operation of this switch energizes a magnet **39** to cause a runner on second base, if any, to vacate the base to advance to third base. In some cases where

automatic controls happen to be in the proper position at the instant the switch **38** is operated, a runner on third base may leave that base to advance to home plate, by momentary energization of a magnet **41**, even though there may be no runner on second base.

On some occasions, due to combinations of steals and hit balls (hit and run) and other special variations, it is sometimes possible for a runner to pass the switch **38** before a preceding runner has reached second base. In this case, if the leading runner stops safely on second base, the following runner is automatically put out by the action previously described, where the magnet **32** is continuously energized and the magnet **33** is shut off.

A switch **40** is similarly actuated by a runner leaving or passing second base and, if the associated automatic controls happen to be in the proper position, a runner on first base may be caused to advance to the now vacated second base, or may not. Operation of the switch **40** will cause a runner on third base to advance to home plate. No switch is necessary after third base, but can be used, if desired, to provide for additional back actions affecting runners on second or first base, when the runner on third attempts to steal home.

As previously mentioned, certain of the magnets are intermittently energized in a definite timed relationship with others in a common group. At the same time, phasing between one group and all others is constantly changing. A mechanism adapted to cause the desired actions, generally characterized herein as a chance mechanism, is shown in Figs. 5 and 6.

In the illustrative arrangement shown in Fig. 5, all of the parts are mounted on a common base. Two shafts **50** and **51** are locked in position. A hub **52** is mounted on the shaft **50** and is free to rotate on this shaft and gears **53** and **54** are secured to respective ends of the hub **52**. Freely mounted spacers **55** and **56**, together with other similar hubs and spacers, hold the hub **52** in its proper longitudinal position on the shaft **50**. A continuously running motor **57** drives the hub **52** thru a speed reducing train, such as gears **58**, **59**, **60** and **53**, to provide a selected rotational speed of the hub **52**. A similar hub **61**, free to turn on fixed shaft **51**, is rotated by hub **52** thru speed reducing gears **54** and **62**.

Similarly, the hub **61** drives a hub **63**, which drives a hub **64**, which drives a hub **65**, each hub rotating at a slower speed than the previous one. It is not necessary, of course, to use an identical gear ratio between each of the groups or units, nor is it necessary to have each group rotate at a lower speed than the preceding one. As previously mentioned, it is desirable to use the hub having the highest speed, in this case the hub **52**, to control the ball magnet **9** and the strike magnet **10**. There is no particular advantage, for example, in using the hub **61** instead of, say, hub **64** for controlling actions at first base.

A very satisfactory gear reduction between each of the hubs is 5 to 4. Thus, if the hub **52** rotates at 120 revolutions per minute, the hubs **61**, **63**, **64** and **65** rotate at about 96, 77, 61 and 49 revolutions per minute, respectively. Since each hub carries several controls employing only a portion of the full circle, and, since several seconds must elapse between delivery of each pitched ball (with this time interval varying greatly until the resulting plays are completed), the resulting alignment of the controlling switches is completely unpredictable at the unknown instant they may be called upon to act.

The hub **52** carries three cams **66**A (controlling the switch **66**), **67**A and **68**A. Additional, or fewer, cams may be used on any hubs depending on the degree of automation desired.

Fig. 6 shows the profile of cam **68**A and its associated switch **68**. The cam **68**A carries a lobe **69**, the surface of the cam turning in contact with the roller **70** mounted on one of the arms carrying the switch contacts **68**. When the lobe **69** reaches the roller **70**, the contacts **69** are closed, but are open at all other times. The lobe **71**, shown in broken lines, is part of the cam **67**A functioning with the switch **67** in the same group. Similarly the lobe **72**, shown shaded, is part of the cam **66**A functioning with the switch **66**. Any number of cams may be carried by any one hub, depending on the relationship of the actions each controls. Fig. 5, however, shows each hub as carrying three cams, to simplify illustration. Fig. 8, showing the wiring diagram of the full circuit, specifies each hub and the switch it controls.

As an example, but not corresponding to the length of the cam lobes as illustrated, the switch **66** could control the "strike" magnet **10** in Fig. 1 and the switch **67** could control the "ball" magnet **9**. The switch **68** could control some other non-related action (such as base stealing). If the lobe **72** of the cam **66**A spans 108° (3/10 of a circle) and the lobe **71** of cam **67**A spans 144° (4/10 of a circle), then the magnet **10** will be energized 3/10 of the time, magnet **9** will be energized 4/10 of the time, with neither magnet energized 3/10 of the time. This, of course, applies regardless of the actual rotational speed of hub **52**. Thus, on the average, for every ten pitched balls, three would be strikes, four would be balls and three would be hit balls.

The frequency with which some particular action is wanted to occur can be controlled, not only by the lobe length on a single cam but, also, by using two or more switches in series, one actuated by a cam on one hub and another actuated by a cam on another hub. This can be extended to any desired degree, particularly where the action is to occur very infrequently. The greater the number of switches in series and the shorter the length of the switch closing cam lobes, the less will be the chance of all switches being closed at the precise instant a sphere happens to roll over some initiating switch, such as the switch **15**, in series with the cam switches. The average frequency at which some such combination will act can, of course, be calculated. There is no difficulty in reducing an average action to less than one per nine inning game.

For practically full automation of the game, as described, there are innumerable types of existing counters, which by slight modification can be adapted for registering strikes, balls, outs and runs. For a game construction where minimum cost is important, no counters of any kind are necessary. Instead the spheres may be trapped at each of the "out" points, such as the hole **21** at first base, and the "ball" and "strike" holes, **11** and **12**, requiring the players to keep mental count and to remove trapped balls at the end of each half inning, as well as to manually place a runner on base following four balls. In addition, certain electrical controls may then be omitted, as will be explained in connection with the description of the wiring diagram.

Fig. 7, however, shows one form of counter for strikes and the method for adapting this to the control circuits. No automatic run counter is described since this does not require interconnected circuits and controls and any suitable counter may be used for this purpose.

Fig. 7 shows a strike counter in elevation. This may be located directly below the strike hole **12** (Fig. 1) for most rapid response, or more remotely located with a connecting gravity chute. Inter-related electrical actions are merely mentioned here but are fully explained in the circuit description, relative to Fig. 8.

When a sphere drops through the hole **12**, it falls on the spring retained arm **100**, causing this to deflect downward about its pivot **101**, and allowing the sphere to roll off to be guided by a chute **100**A into a common receptacle for subsequent replay. Deflection of the arm **100** causes a pawl **102** to move a segmental ratchet **103** through one step. When the sphere rolls off the arm **100**, this arm returns to its normal position, as shown,

under action of a spring 104. The pivoted pawl 102 permits this action.

A detent 105 retains the ratchet 103 in the first step position. Movement of the ratchet to the first step position also causes a contact 106 to close a circuit with a fixed contact 107. Closure of this circuit causes a lamp 207, or other suitable indicator, to show a count of one strike. The next sphere dropping on the arm repeats the action to advance the ratchet 103 to cause the contact 106 to close circuit with a contact 108, actuating a signal lamp 208 designating strike two. If desired, the contact 106 may be elongated so that it continues to close circuit 106 and 107, as well as 106 and 108, to show two lamps for two strikes.

When the ratchet 103 is in its normal position, or in the one or two strike count position, an extension 110, securely attached to the ratchet 103, is clear of the path of the sphere rolling off the arm 100. When the ratchet 103 is in the three strike position, however, it moves upward to bring the end of the extension 110 into the normal path of the sphere. If a third strike sphere drops on the arm 100, it is deflected by the extension 110 to drop into an adjacent chute (not shown) for guiding to an out counter (Fig. 8), to register the strike-out. At the same time, the ratchet in the third position causes closure of the contacts 106 and 109. Since a third strike constitutes an out, there is no need to specifically indicate "strike three." Instead, the closure of contacts 106 and 109 causes a magnet 111 to be energized, resulting in withdrawal of the detent 105, to free the ratchet 103 and allowing a spring 112 to restore the ratchet to its normal zero count position, as soon as the third strike sphere is deflected off the side of the arm 100, by the extension 110.

When the magnet 111 is energized, an equivalent magnet 113 of a similarly constructed ball counter (Fig. 8) is also energized to release any ball count that may have been registered. This action restores both the ball and strike counters to zero to be ready to start a new count on the next batter. Similarly, both of these counters are restored to zero when a batter is walked, when a third out is registered or when a base runner moves over the switch 18, following a hit ball. The details of these actions can be best understood in connection with the wiring diagram description.

A ball-counter, shown only in the wiring diagram of Fig. 8, is arranged in an identical manner, except that the arm 110 is not required but includes a magnet 113 (like 111), a contact 114, and contacts 115, 116 and 117 for ball one, two and three signal lamps 209, 210 and 211, respectively. Upon registering of a third ball, the contacts 114 and 117, which are equivalent to contacts 106 and 109, in addition to lighting the "ball three" lamp 211, cause a relay 206 to be operated to alter the control circuit so that if a fourth ball should occur, the pitched ball will not drop into the hole 11 which leads to the ball counter but, instead, will permit the sphere to continue to first base, as a walked batter. A signal lamp 217 may indicate a fourth ball, or walked batter, to distinguish the action from a hit ball.

The out-counter is arranged in a manner identical to the strike-counter, omitting the arm 110, but includes a magnet 118 (like 111 and 113), a contact 119 and contacts 120 and 121 for one and two out signal lamps 218 and 129, respectively (Fig. 8). The spheres enter this counter from any of the several guiding chutes (not shown), leading from the diverted "third strike," first base out hole 21, second base out hole 42, third base out hole 43 and home plate out hole 37. When a third out is counted, closure of the contacts 119 and 122, which are equivalent to the strike-counter contacts 106 and 109, causes a relay 220 to be operated and self-locked, as well as releasing the out-counter ratchet by operation of the magnet 118 to restore the out-counter to zero, ready to start the next half-inning. Operation of this relay releases the detents of both the ball and strike-counters and continuously energizes the base clearing magnets 24, 44 and 45 (Fig. 1) at each of the three bases, to return any runners left on base to the ball storage pit.

The relay 220 controlling this action is self-locked so that any runners still moving between the bases after the third out is counted, will be removed from any base they may otherwise attempt to occupy and, also, because several seconds are required for the runners left on base to return thru the out-counter to the common pit or receptacle for subsequent play. If this lock-up were not provided, the returning base runners would start a new, and false, out-count. When the first pitch is delivered after the third out (start of a new half-inning), actuation of the switch 14 (Fig. 1) releases the locked relay to permit all the counters to return to action. Spheres passing thru the out-counter, either in registering outs or after the third out, as well as those passing thru the ball and strike-counters, return to a common receptacle ready for immediate replay as pitched balls.

Spheres may be put into play by the player, either by picking them up out of the common receptacle and depositing them, one at a time, at point 7 (Fig. 1) or by means of a suitable mechanical feeding device, which is not shown herein because it constitutes the subject matter of another invention functionally indifferent to the control circuit of Fig. 8.

While the preceding description has covered direct electro-magnetic action on the spheres, it will be understood that the spheres may be influenced by indirect acting electro-magnetic means or electro-mechanical means, such as sphere directing arms, levers or plungers. This in no way changes the principle of action and the same wiring diagram would apply.

Direct magnetic action on the moving spheres is preferred, however, since this reduces cost of construction and eliminates moving parts which would be subject to wear and adjustment, as well as being a source of audible and visual distraction to the players.

Fig. 8 shows a preferred arrangement of the electrical circuits for essentially full automation. The power supply, as indicated, is alternating current but it will be obvious that direct current would be equally effective. In order to eliminate much wiring line work, to simplify tracing of the circuits, certain points have been marked positive (+) and others have been marked negative (—). All such points marked + are considered as connected together and are one side of the power supply. All points marked — are interconnected and are the other side of the power supply. The symbols + and — do not designate a specific polarity (except instantaneously, or if the system is powered by direct current). If the system is to be powered by direct current the transformer would be eliminated and a direct current source, such as a battery, would be connected to the respective points marked + and —.

The components of the wiring diagram carry numerical designations corresponding to those of the previous figures and descriptions but certain components have additional designations which may simplify tracing of the diagram by one familiar with baseball.

Thus, the magnet for first, second and third base have each been identified by the letters A, C, O and P to designate the magnet at each of these bases which cause a runner to Advance, Continue, be put Out or to be returned to the Pit (not shown). Similarly the magnets at the batter's box have been identified as B and S to designate the Ball and Strike controls.

All components, such as relays, are shown in the power off, or released positions.

When the power source is connected to terminals 200 and a master switch 201 is closed, all points + and — receive the proper potential thru a transformer 202. In

addition, the motor 57 is energized and runs continuously while the game is being operated. As described in connection with Figs. 5 and 6, this motor 57 causes the hub units or groups 52, 61, 63, 64 and 65 to continuously close and open the switches in a timed sequence, these switch groupings being correspondingly designated in Figs. 5 and 8. The switch 84 of group 65 is not connected into the illustrated circuit and is included merely to reduce confusion relative to the description of Fig. 5.

When the switch 66 of group 52 closes, a circuit is established from +, thru switch 66, thru solenoid 10 (battery S), thru closed contacts 203 of released relay 204 to — to energize the magnet 10. Opening of the switch 66 deenergizes magnet 10, the two actions determining whether a pitched ball will be called a strike.

When the switch 67 of group 52 closes, a circuit is established from +, thru switch 67, thru closed contacts 205 of released relay 206, thru magnet 9 (batter B), to — to energize the magnet 9 for calling of a ball.

When a pitched ball is deflected by the magnet 10 into the hole 11 (Fig. 1) it causes the closure and detent-hold of strike-counter contacts 106 and 107 (Fig. 7). Closure of these contacts causes lighting of the lamp 207, designating one strike. A second strike causes closure of contacts 106 and 108 to light the lamp 208, cutting off the lamp 207. Obviously, the contact 106 could be provided with a tail extension, or equivalent, so that the lamp 107 would remain lighted if it is preferred to have two lamps designate a count of two strikes. A third strike causes closure of contacts 106 and 109 to complete a circuit from +, thru contacts 106 and 109, thru both magnets 111 and 113, to + to energize the magnet 111 and retract the detent 105 (Fig. 7) to release the contact arm 106 for return to the zero count position. Energizing of the magnet 113 similarly restores the contact arm of 114 to the zero count position, if any count had been registered on the batter. Thus, in all cases, the ball count and the strike count are restored to zero together.

When a pitched ball is deflected by the magnet 9 into the hole 11, the contact 114 closes similarly, successively, with contacts 115, 116 and 117. When contacts 114 and 117 are closed to designate the third ball by lighting of the lamp 211, a circuit is also closed from +, thru contacts 114 and 117, thru relay 206, to —, causing the relay 206 to operate to open contacts 205 and close contacts 212. Opening of contacts 205 breaks the circuit to magnet 9 (batter B) from the ball control switch 67 (of 52) so that the magnet 9 becomes inactive whenever a ball count has been run up to three. This is in anticipation of a possible base on balls for the batter, in which case the fourth pitched ball must not be put out of play by being deflected into the ball hole 11, but, instead, must advance to first as a base runner.

Following a count of three balls, with the relay 206 now operated, and regardless of any intervening called strikes, if a pitched ball happens to close the switch 16 (Fig. 1) at the same instant that switch 67 (of group 52) is closed, a circuit will be established from +, thru switch 67, thru closed contacts 212 of relay 206, thru momentarily closed switch 16, thru relay 204, to —, causing operation of relay 204.

Operation of the relay 204 closes its contacts 213 and 216, opening contacts 203, 214 and 215. Closure of contacts 213 establishes a circuit from +, thru closed switch 14, thru contacts 213, thru relay 204, to —, to hold relay 204 in the operated position upon opening of the momentarily closed contacts 16, as the pitched ball continues ahead. A circuit is also established from +, thru the closed switch 14, thru contacts 213, thru lamp 217, to —, causing lamp 217 to indicate a fourth ball, or walk. This "walk" light remains lighted until the next pitched ball is delivered to show the players that the runner advanced to first base on a walk rather than a hit ball.

Opening of contacts 203 breaks the circuit thru the magnet 10 (batter S) so that this magnet cannot be energized by closure of the switch 66 (of group 52) at the instant the pitched ball, which caused operation of relay 204 to represent a base on balls, passes thru the possible range of influence of the magnet 10. This assures that the pitched ball will pass both magnets 9 and 10 without deflection, thereby continuing to first base as a walked batter.

When the runner (walked batter) actuates the switch 17, immediately upon entering chute 13 to first base, a circuit is momentarily established from +, thru magnet 25 (first A), thru switch 17, thru contact 216 of operated relay 204, to —, causing the magnet 25 to be momentarily energized. Energization of the magnet 25 will cause a runner on first base, if any, to vacate the base and advance to second. This runner immediately closes the switch 38 to establish a circuit from +, thru the magnet 39 (second A), thru switch 38, to —, causing the magnet 39 to be momentarily energized. Energization of the magnet 39 will cause a runner on second base, if any, to vacate the base and advance to third. This runner will immediately close the switch 40 to establish a circuit from +, thru the magnet 41 (third A), thru the switch 40, to —, causing the magnet 41 to be momentarily energized. Energization of this magnet will cause a runner on third base, if any, to vacate the base and advance to home.

As will be explained later, other circuits can cause energization of the A magnets at second and third bases but, at the instant a fourth ball is registered, by operation of the relay 204, these other circuits are cut off by opening of contacts 214 and 215 of the relay 204. Thus, in no case, when a batter is walked, will any runner advance a base unless forced to do so in order to make room for a following runner.

When the walked batter, advancing to first, actuates the switch 18, momentarily, a circuit is established from +, thru both magnets 111 and 113, in parallel, thru the switch 18, to —, causing energization of both magnets to restore the ball and strike count to zero. The fourth ball lamp 217, remains lighted thru the contacts 213 of the self-locked relay 204.

When a batter walks, it is essential that this runner, as well as any others forced to advance, will move safely only one base. When a walk occurs, operation of relay 204 cuts off the C and the O magnets at first, second and third bases and, also, the O magnet at home plate. It will be noted that the C magnets 20, 33 and 35, which are used to cause a runner to continue past a base, as well as the O magnets 19, 32, 34 and 36, which are used to cause a runner to be put out, are all connected to one side of the power supply (—) thru contacts 203, which are opened by operation of the relay 204.

Following a walked batter, the instant the next ball is pitched, the switch 14 is momentarily opened by the pitched ball, to break the locking circuit holding relay 204 in the operated position. Release of this relay causes the "walk" lamp 217 to be cut off and restores all magnets to normal functioning. Release of the ball-counter to zero count releases the relay 206.

Closure of the switch 73 (of group 61) completes a circuit from +, thru closed contacts A and C of the switch 31, thru switch 73, thru the magnet 20 (first C), thru contacts 203 of the relay 204, to —, causing the magnet 20 to be energized. If any sphere (runner) passes this magnet while energized, it will be deflected into chute 22 to continue on to second base. Similarly, closure of the switch 76 (of group 63) causes the magnet 33 to be energized momentarily, causing any runner coming into second base at this instant to pass the base and continue on to third base. Similarly, close of the switch 79 (of group 64) causes the magnet 35 to be energized momentarily, causing any runner coming into third base at this instant to pass the base and continue on to home plate.

In event that a runner occupies first base when a hit ball occurs and the batter (now a runner) closes the switch 17, when the switch 83 (of group 65) is open, the magnet 25 (first A) will not be energized and the runner will hold first base, in spite of the approaching runner. In this case, the runner on first will hold contacts A and C of the switch 31 open and close contacts A and B. The open contacts A and C break the circuit, described above, so that the magnet 20 (first C) cannot be energized by the intermittent, regular closure of the switch 73. The approaching runner cannot, therefore, be diverted to second base while first base is held by a runner. Closure of contacts A and B of the switch 31 establishes a circuit from +, thru contacts A and B, thru the magnet 19 (first O), thru contacts 203 of the relay 204, to —, thus energizing the magnet 19. Any runner attempting to come into first base, while already occupied, will therefore be diverted into the out hole 21. This action may represent a caught fly with the runner holding first base. Similarly, runners holding second or third base, in spite of an approaching runner, disconnect the C magnet at these points and continuously energize the O magnet.

When the switch 74 (of group 61) closes, a circuit is established from +, through contacts A and C of the switch 31, thru the switch 74, thru the magnet 19 (first O), thru contacts 203 of the relay 204, to —, thus energizing the magnet 19 momentarily. If a sphere (runner) passes this magnet at this instant, it will be deflected into the out hole 21. Similarly, closure of the switches 77 (of group 63), 80 (of group 64) and 82 (of group 65), at the correct instant, will cause a runner to be put out at second, third and home plate, respectively. As previously explained, the C magnet and the O magnet, at any one base, cannot be energized at the same instant so that there cannot be any attempt to divert the runner in opposite directions.

In event that a runner holds first base when a hit ball occurs and the runner (batter) closes the switch 17 when the switch 83 (of group 65) is closed, a circuit will be established from +, thru the magnet 25 (first A), thru the switch 17, thru the switch 83, to —, causing magnet 25 to be energized momentarily, thus causing the runner on first to advance to second. The C and O magnets at first base then resume their normal cycling so that the approaching runner may be put out at first (fielder's choice), continue on to second or stop safely at first base. Similarly, runners occupying second or third base may or may not advance when the runner (batter) momentarily closes the switch 17, as controlled by the simultaneous position of the several motor-driven switches.

Thus, a runner on second will advance upon closure of the switch 17 by energization of the magnet 39 (second A), if switches 75 (of group 61) and 83 (of group 65) are closed also, the circuit passing thru contacts 215 of the relay 204. The magnet 39 will also be energized upon simultaneous closure of switches 17, 78 (of group 63), 81 (of group 64), 68 (of group 52) and 83 (of group 65).

Similarly, a runner on third will advance upon closure of the switch 17, by energization of the magnet 41 (third A), if switches 81 (of group 64), 68 (of group 52) and 83 (of group 65) are closed also, the circuit passing thru contacts 214 or the relay 204.

When a pitched ball is delivered, the switch 15 is momentarily closed. If certain combinations of motor-actuated switches are closed, at the same instant, a runner occupying a base may be caused to leave the base thru energization of the A (Advance) magnet at that base, thereby attempting to steal the next base. In many cases, the combination of series switches may be closed but for an insufficient time to actually eject the runner from the base. In such cases, the runner makes a slight start but immediately settles back to the rest position, just as a runner in an actual baseball game makes false starts for the next base.

A runner on first base will attempt to steal second base by energization of the magnet 25, thru a circuit established from + to — when the switches are closed in either of the following combinations:

68 and 15, or
75, 215 (of relay 204), 78, 81 and 15

A runner on second base will attempt to steal third base by energization of the magnet 39, thru a circuit established from + to — when switches are closed in either of the following combinations:

78, 81 and 15 or
215 (of relay 204), 75, 68 and 15

A runner on third base will attempt to steal home by energization of the magnet 41, thru a circuit established from + to — when switches are closed in either of the following combinations:

214 (of relay 204), 81 and 15 or
214 (of relay 204), 78, 215 (of relay 204), 75, 68 and 15

It will be obvious from the above that innumerable combinations may be employed to control the frequency of attempted stolen bases and advances following a hit ball, as well as other similar actions.

In a multiple control circuit, such as shown in Fig. 8, "back-feeds" may cause other typical baseball plays. For example, with a runner on first and second, the runner on second may attempt to steal third the instant a pitched ball is delivered, thru a switch combination described above. The runner on first, however, does not attempt to steal second. When the runner leaves second, immediately closing the switch 40, momentarily, the runner on first may then leave the base to attempt to reach second, due to energization of the magnet 25 thru a circuit established from —, thru the magnet 25, thru 68, 81, 214 of relay 204, thru switch 40, to —, or thru magnet 25, 75, 215 of relay 204, 78, 214 of relay 204, switch 40 to —.

As previously explained, any "out" ball (at first, second, third, home, or the third strike passing thru the strike-counter) is guided by chutes to pass thru the out-counter. When the first out ball passes thru the out-counter, it causes closure of the contacts 119 and 120, with detent-hold, to light the lamp 218 designating one out. The next out ball causes closure of contacts 119 and 121 to light the lamp 219, designating two outs. The third out ball, ending the half inning, causes closure of contacts 119 and 122, establishing a circuit from +, thru contacts 119 and 122, thru the magnet 118, to —, causing the magnet 118 to release the out-counter to restore the contact 119 to the zero count position. At the same time the relay 220, in parallel with the magnet 118 is caused to operate.

Operation of the relay 220 closes its contacts 221 to establish a circuit from +, thru the switch 14, thru contacts 221, thru the relay 220, to —, locking the relay 220 in the operated position, when the initial operating circuit thru contacts 119 and 122 is broken. The magnet 118, in parallel with the relay 220 is also held operated to disengage the detent normally acting on the arm of contact 119. Thus, any additional balls passing thru the out-counter, after the third out is registered, have no effect on the counter, except to flash the lamp 218 momentarily.

Operation of the relay 220 closes its contacts 222 and 223. Closure of contacts 222 establishes a circuit from +, thru magnets 24, 44 and 45 (in parallel), thru contacts 222, to —, thus energizing these three magnets which cause runners occupying any base, or coming safely into the base after the third out, to be ejected to the out chute for return to the common ball pit, without registering on the inactivated out-counter.

Closure of contacts 223 establishes a circuit from +, thru the two magnets 111 and 113, in parallel, to restore any ball and strike-count to zero.

Thus, all runners are cleared from the bases and return to the common ball pit for replay and all counts restore to zero following a third out. When the first pitched ball is delivered at the start of the next half inning, contacts of switch 14 are momentarily opened to release the self-locked relay 220 which, in turn, restores all circuits to normal operating conditions.

As previously mentioned, the degree of automatic control could be extended, primarily by addition and interconnection of additional motor-driven switches, as well as relays which change the chances of some particular play occurring for a certain combination of ball and strike count registered on the batter; or if there are none out as compared to two out. Thus, if there were none out and a man occupied each base, the circuit controlling steals thru switch 15 could be disconnected, since in an actual baseball game no steal of home would ever be attempted under these conditions. It is felt, however, that the previous description fully explains how this would be done if the additional elaboration were considered advisable in spite of the added cost.

Conversely, the game can be made to function as effectively by eliminating some of the previously described elements, substituting manual operations by the players. For example, an automatic ball feeder, may be completely eliminated, and having the players feed the balls manually at point 7, Fig. 1. The ball, strike and out-counters may be eliminated, together with relays 204 and 206. Instead, the players can keep these counts mentally. In this case, a ball would be placed on first base following a fourth ball and any runners forced to move ahead one base by a base on balls, would be manually moved.

Elimination of these parts makes it unnecessary to provide switches 14, 16 and 18, as well as the magnets 24, 44 and 45 (used to return base runners to the common ball pit after the third out).

No illustration is included to show the simple changes which would be required in Fig. 8 for elimination of any or all of these components, since the explanation given in reference to Fig, 8 would make these obvious to anyone familiar with the fundamentals of simple control circuits.

From the foregoing description it will be seen that the present invention provides very realistic simulated baseball game apparatus, which, in spite of the many conditions simulated and executed, is relatively simple and practical in construction and is reliable in operation.

While the apparatus in accordance with the illustrative embodiment is primarily adapted for use in the home, it will be appreciated that the principle of operation and the mechanisms utilized therein may be embodied in apparatus of the coin-controlled type adapted for use in public places.

As various changes may be made in the form, construction and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in any limiting sense.

I claim:

1. Game apparatus comprising a simulated baseball diamond, a runway on said diamond having means at one end to which a ball is presented and having a base at the other end towards which the ball is delivered, a plurality of ball receiving means adjacent said base, means adjacent said receiving means for directing the ball to one of the receiving means, means for changing the condition of said directing means to perform one operation and then another to determine to which of the receiving means the ball is delivered, means for actuating said condition changing means at a predetermined frequency, and motor means for driving said actuating means.

2. Game apparatus according to claim 1, wherein said ball receiving means include a pair of spaced apart openings adjacent home base between which the ball is adapted to pass and a home base to first base runway on said diamond having an end connecting with the end of said first mentioned runway to which the ball is delivered for receiving the ball if permitted to pass between said openings.

3. Game apparatus according to claim 1, including a second runway on said diamond having said base at one end and having another base at its other end, said first mentioned base constituting one of said receiving means and another of said receiving means being an opening at the side of said first mentioned runway for removing the ball from the diamond.

4. Game apparatus according to claim 3, including means at said first mentioned base for directing a ball received by said first mentioned base into said opening, and an out counting and registering mechanism including a switch operable when the third out has been registered to effect actuation of said directing means for removing the ball from the base.

5. Game apparatus according to claim 3, wherein said second runway constitutes still another receiving means, whereby the ball can by-pass said first mentioned base.

6. Game apparatus according to claim 3, including means at said first mentioned base under the control of said condition changing means for directing a ball received by said first mentioned base onto said second runway.

7. Game apparatus according to claim 6, wherein said last mentioned directing means is under the control of said condition changing means through a normally open switch, and said first mentioned runway having means thereon operable by a second ball for closing said switch.

8. Game apparatus according to claim 6, including a pitcher to home base runway and a normally open switch on said last mentioned runway operable by a second ball to close the same to condition said condition changing means to control said last mentioned directing means to direct a ball received at the first mentioned base onto said second runway to simulate stealing a base.

9. Game apparatus according to claim 3, including a movably mounted member at said first mentioned base for receiving a ball and a switch operated by said member when a ball is thereon to condition said directing means to direct a second ball on said first mentioned runway into said opening.

10. In simulated baseball game apparatus, the combination of a base, an incoming base path runway having an opening adjacent to said base and an outgoing base path runway associated with said base, a magnetic ball adapted to move along said runways, a first magnet adjacent said incoming runway and said opening operatable for directing said ball into said opening, a second magnet at the juncture of said runways operatable for directing said ball from said incoming runway onto said outgoing runway to by-pass said base, a third magnet at said base adjacent said outgoing runway operatable for directing said ball from said base onto said outgoing runway and chance mechanism for selectively controlling the operation of said magnet, said chance mechanism including switch means for controlling the energization of said magnets, means for actuating said switch means at a predetermined frequency, and means for driving said actuating means, said switch means being constructed and arranged to effect energization of said magnets one at a time with respect to a given magnetic ball.

11. Game apparatus according to claim 10, including a fourth magnet adjacent said opening at said base operable for directing said ball from said base into said opening, and an out registering mechanism including a switch

operable when the third out has been registered to effect energization of said fourth magnet.

12. Game apparatus according to claim 10, including means at said base operable by the ball for rendering said second magnet ineffective to control the ball and said first magnet effective.

13. In simulated baseball game apparatus, infield structure including a home plate zone, first base, second base, third base, a pitcher's box to home plate runway, a home plate to first base runway, a first to second base runway, a second to third base runway, and a third base to home plate runway, said runways being adapted to convey a magnetic ball; ball and strike determining means including a pair of spaced openings which the ball is adapted to pass and a magnetic device for each opening operatable to direct the ball therein when energized; means at each of said bases for determining safe and out at said bases and controlling the rounding of said bases including an out opening and magnetic devices operatable to direct the ball at said bases; means for determining safe and out at home plate including an out opening and a magnetic device operatable to direct the ball therein; and a chance mechanism including an electrical network, a switch associated with each of said magnetic devices for controlling the energization and deenergization thereof, and power driven means for operating said switches in a predetermined sequence and at a predetermined frequency to simulate the statistical average of the action in a live baseball game.

14. Apparatus according to claim 13, wherein said means at each of said bases includes a magnetic device for directing the ball to leave said bases, switch means on said pitcher's box to home plate zone runway operable by the element to effect energization of said last mentioned magnetic device to simulate the stealing of a base, and a switch operable by said power driven means connected in series with said switch means for controlling the steals.

15. Apparatus according to claim 13, wherein said means at each of said bases includes a magnetic device for directing the ball to leave said bases, and switch means on each of said home plate to first base, first to second base and second to third base runways operable by the ball to effect energization of said last mentioned magnetic device to cause a ball at a base to leave such base in response to another ball.

16. Apparatus according to claim 15, wherein said magnetic devices for directing the ball to leave second and third base are under the control of individual switch means actuated by said power driven means, and said home plate to first base switch means is in series with each of said individual switch means to effect the leaving of a ball from second and third base in various combinations in response to a ball approaching first base.

17. Apparatus according to claim 13, wherein said power driven means include a plurality of rotatably mounted switch operating units, drive and driven gears having a predetermined ratio and operatively connecting said units to effect rotation thereof at predetermined speeds, and drive means for said units.

18. In game apparatus, the combination of a simulated baseball diamond having a pitcher's box to home plate runway for balls, said runway being provided with a side opening adjacent the home plate end thereof into which the balls are adapted to enter; means adjacent the entrance side of said opening operable to direct the balls into said opening; including switch means operable to actuate said directing means to change the condition thereof, means for actuating said mechanism at a predetermined frequency, and motor means for driving said actuating means, means at the exit side of said opening for sensing the number of balls passing through said opening, switch means rendered effective by said sensing means when a predetermined number of balls have been directed into said opening, and switch means under the control of said first mentioned switch means for rendering said chance mechanism switch means ineffective to actuate said directing means whereby the next ball passes said opening.

19. Apparatus according to claim 18, including a base, an opening adjacent said base, means operable under the control of said mechanism to direct a ball into said opening, and switch means on said runway operable by the ball and cooperating with said means under the control of said first switch means to render said last mentioned directing means ineffective.

20. Apparatus according to claim 19, including an outgoing base path runway for said base, means for directing a ball at said base onto said base path runway, and switch means adjacent home plate operable by the ball having passed said first runway opening for rendering said last mentioned directing means effective.

21. Apparatus according to claim 18, including first, second and third base, each having an incoming runway and an outgoing runway and each having an opening adjacent its incoming runway, first means at each base for directing a ball into the runway opening under the control of said mechanism, second means at each base for directing a ball at said base onto its outgoing runway, a switch on said first runway operable by a ball and cooperating with said means under the control of said first switch means to render said first means at said bases ineffective, and switch means adjacent home plate operable by the ball having passed said first runway opening for rendering said second means at said bases effective.

22. Apparatus according to claim 18, including switch means on said first base incoming runway operable by the ball to control the resetting of said sensing means.

23. Apparatus according to claim 18, including switch means adjacent home plate operable by the ball to control the resetting of said sensing means.

24. Game apparatus according to claim 18, including means for indicating a fourth ball to distinguish a walk from a single.

25. Game apparatus comprising a simulated baseball diamond having first, second and third bases and runways for directing a magnetic ball towards said bases, a pair of adjacent spaced apart magnets at each base facing one of said runways, ball receiving means between said pairs of magnets and their respective runways for maintaining the ball out of contact but under the control of said magnets, means for selectively energizing said magnets, means for actuating said last mentioned means at a predetermined frequency, and motor means for driving said actuating means.

26. Game apparatus according to claim 11, including a strike registering device having means for registering an out when the third strike occurs.

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