Aug 5, 1941. J. P. TARBOX 2,251,305

TARGET BASEBALL

Filed May 27, 1937 8 Sheets-Sheet 1

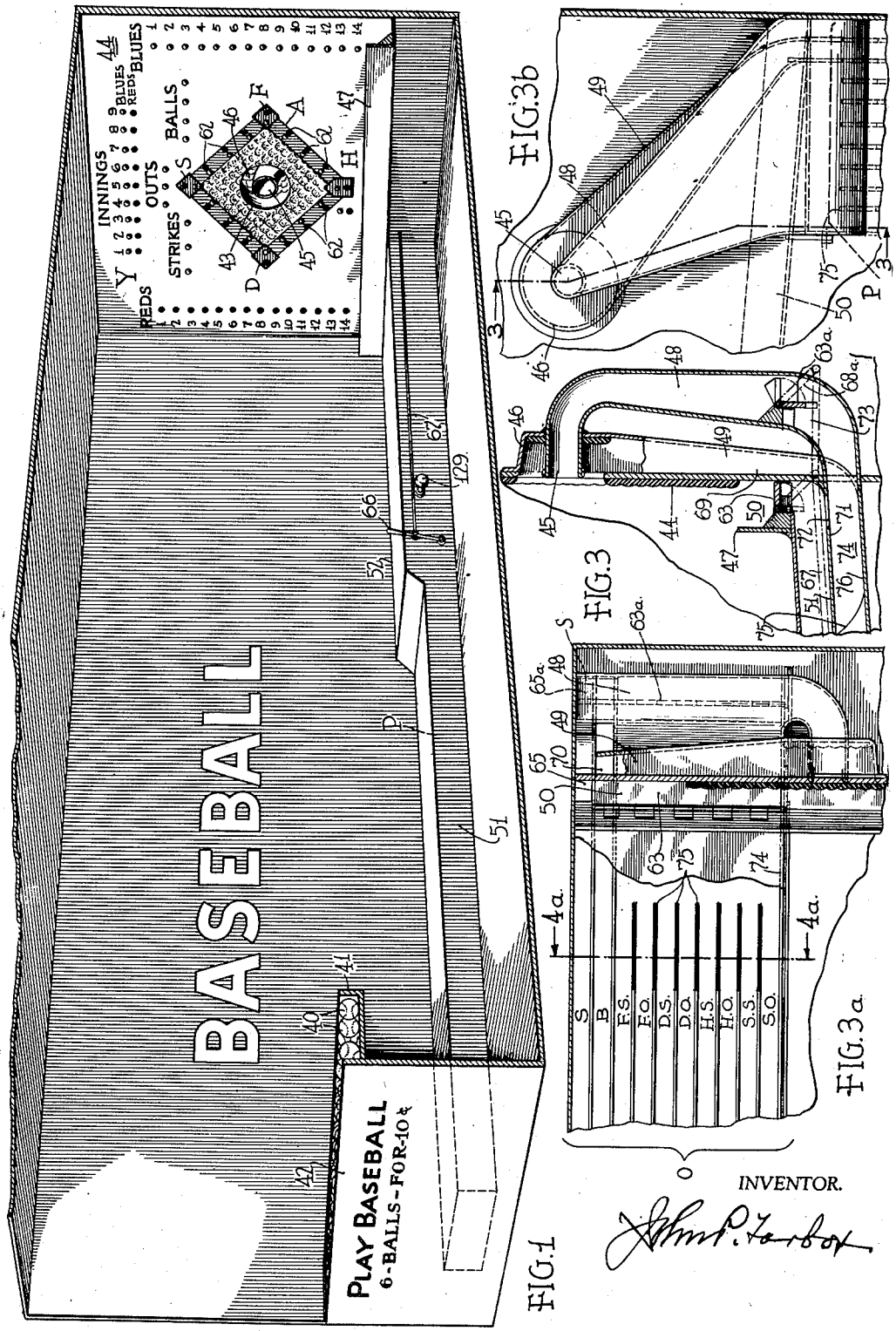


FIG. 1

FIG. 3b

FIG. 3

FIG. 3a

INVENTOR.

John P. Tarbox

Aug 5, 1941. J. P. TARBOX 2,251,305

TARGET BASEBALL

Filed May 27, 1937 8 Sheets-Sheet 2

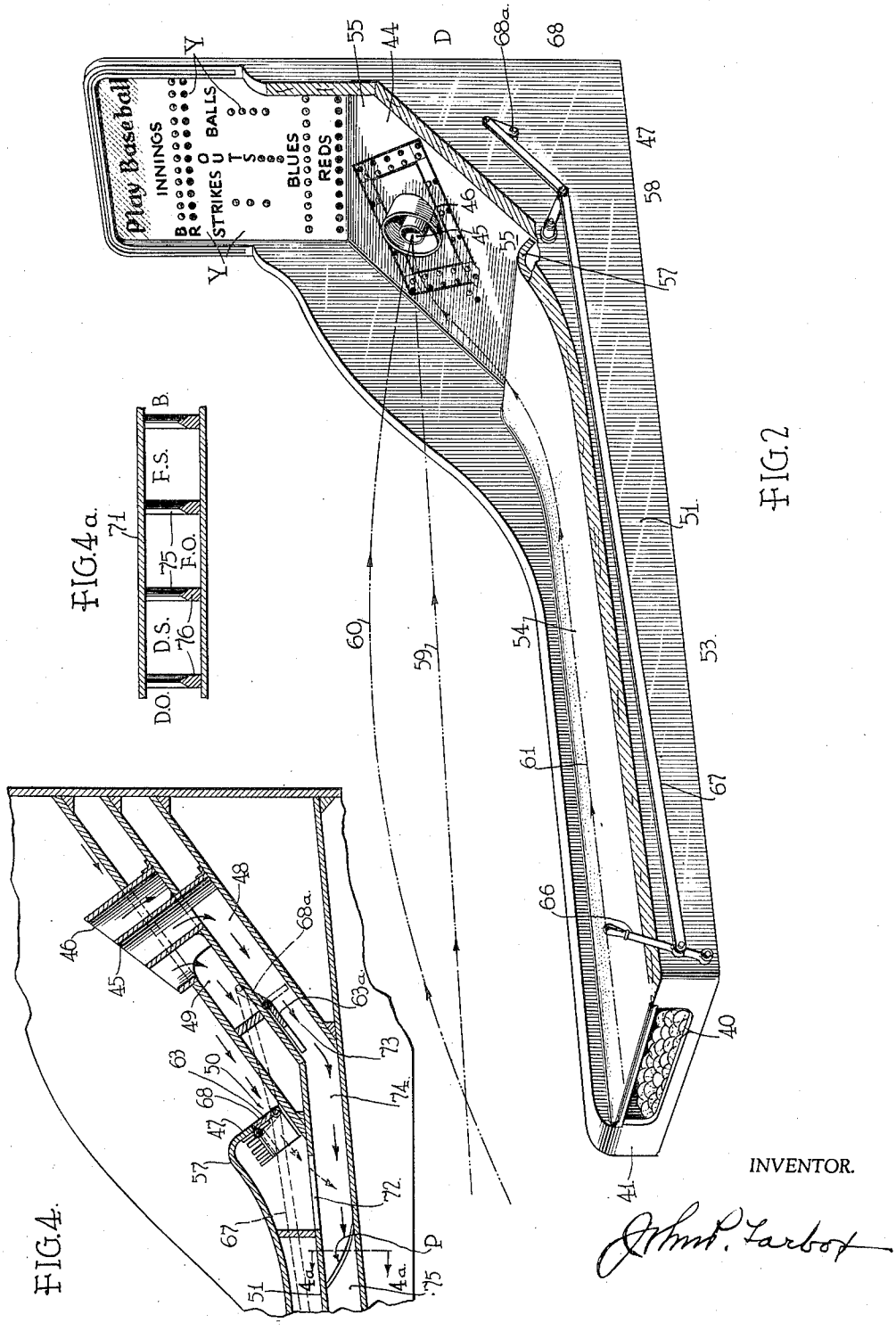


FIG. 4a.

FIG. 2

FIG. 4.

Aug 5, 1941. J. P. TARBOX 2,251,305

TARGET BASEBALL

Filed May 27, 1937 8 Sheets-Sheet 3

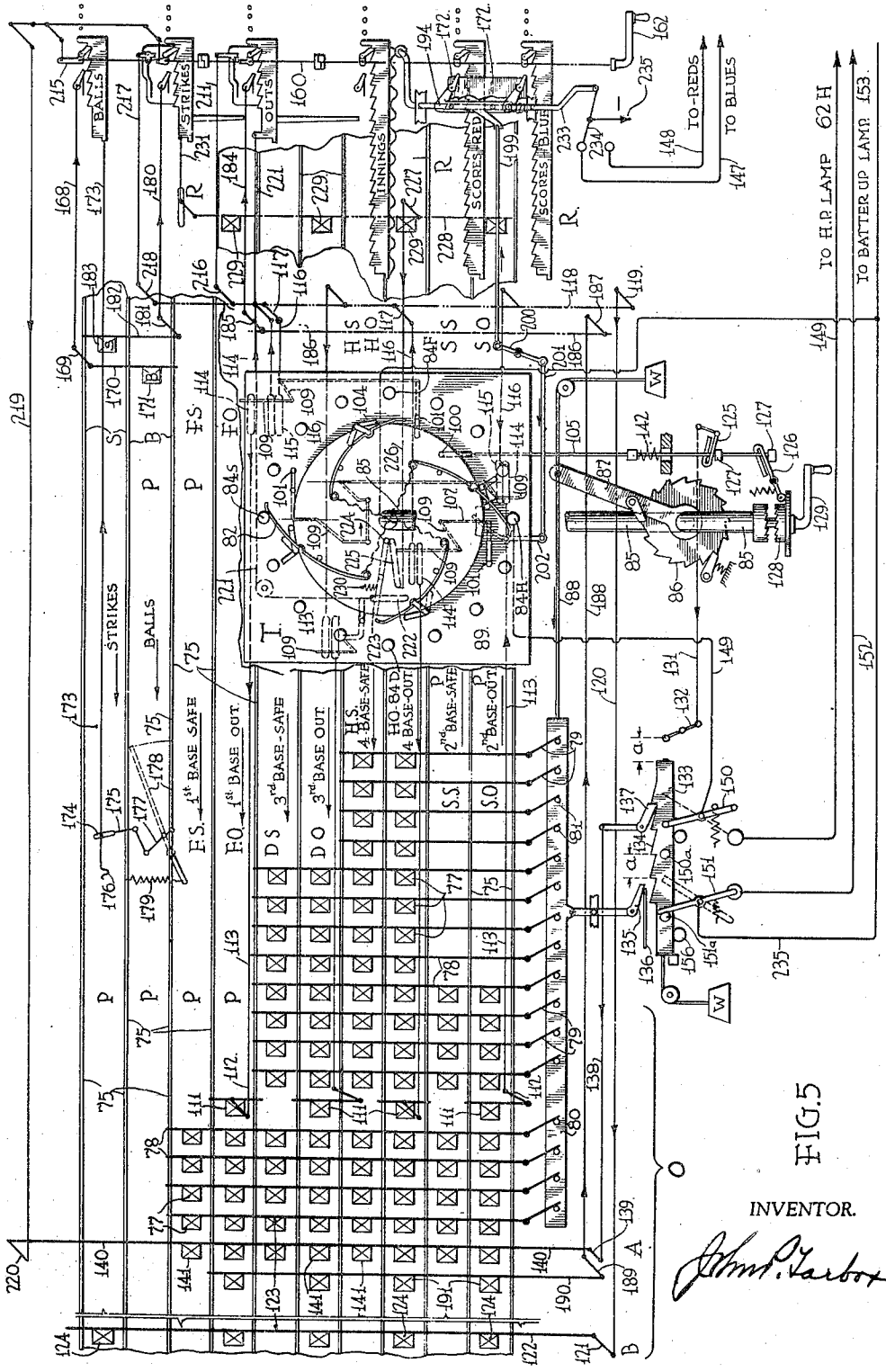


FIG.5

INVENTOR.

John P. Tarbox

Aug 5, 1941. J. P. TARBOX 2,251,305

TARGET BASEBALL

Filed May 27, 1937 8 Sheets-Sheet 4

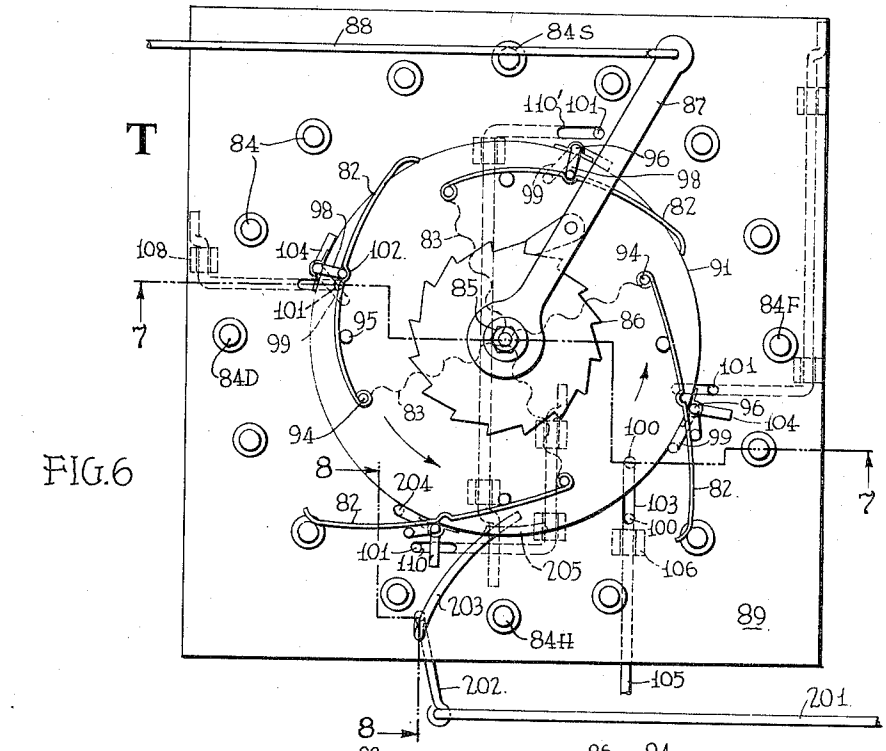


FIG.6

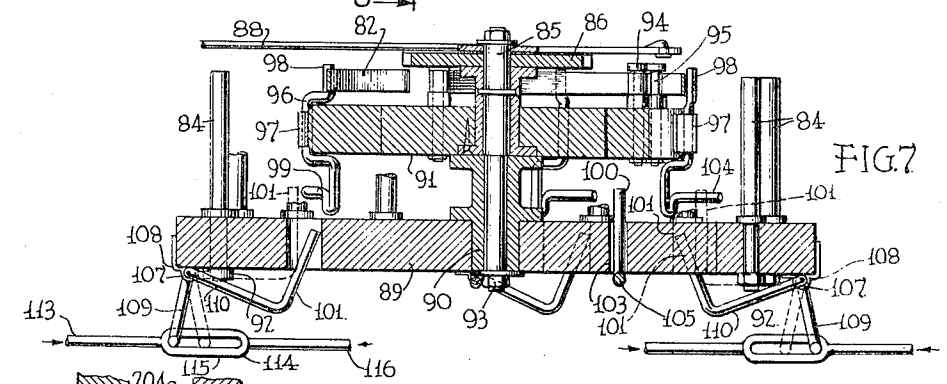


FIG.7

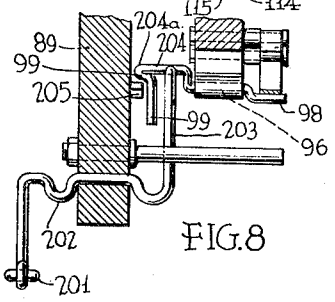


FIG.8

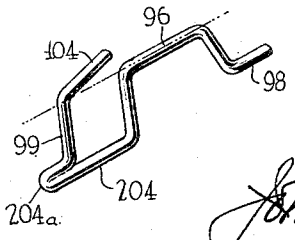


FIG. 8a.

INVENTOR.

John P. Tarbox

Aug 5, 1941. J. P. TARBOX 2,251,305

TARGET BASEBALL

Filed May 27, 1937 8 Sheets-Sheet 5

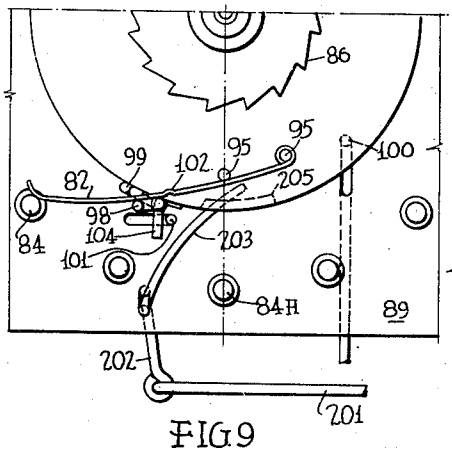


FIG.9

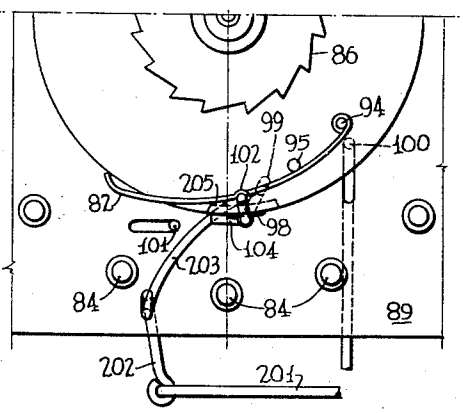


FIG.10

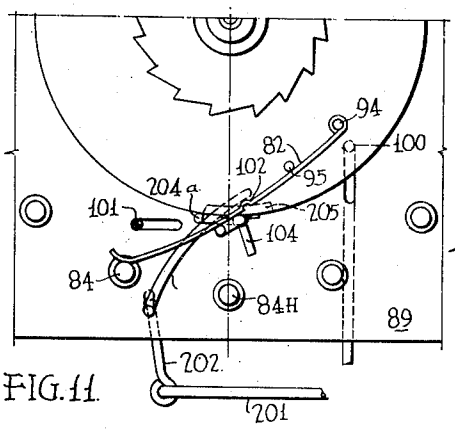


FIG.11.

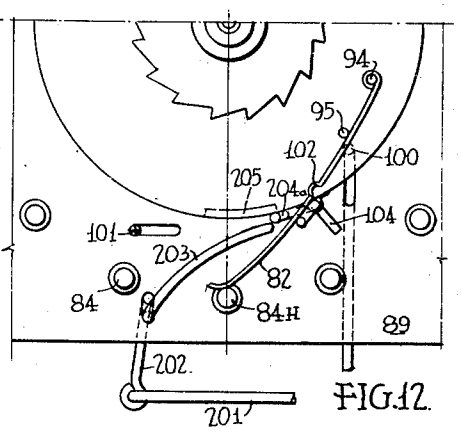


FIG.12.

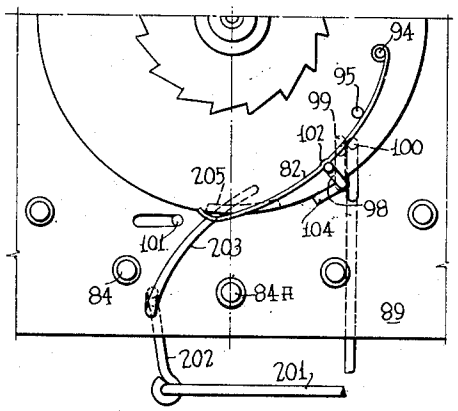


FIG.13.

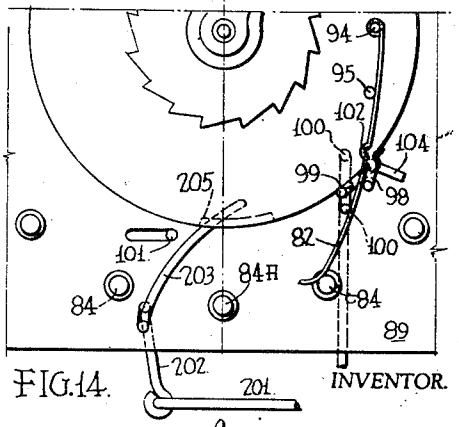


FIG.14.

INVENTOR.

John P. Tarbox

Aug 5, 1941. J. P. TARBOX 2,251,305

TARGET BASEBALL

Filed May 27, 1937 8 Sheets-Sheet 6

FIG. 17

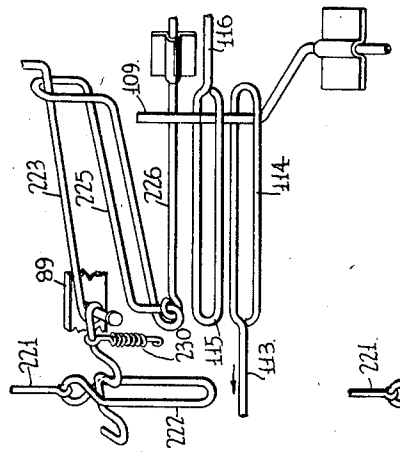


FIG. 17a

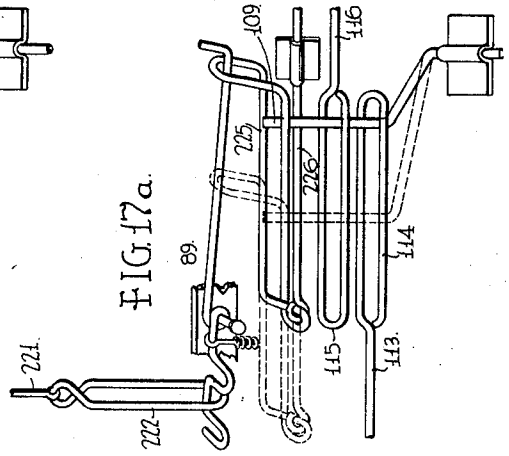
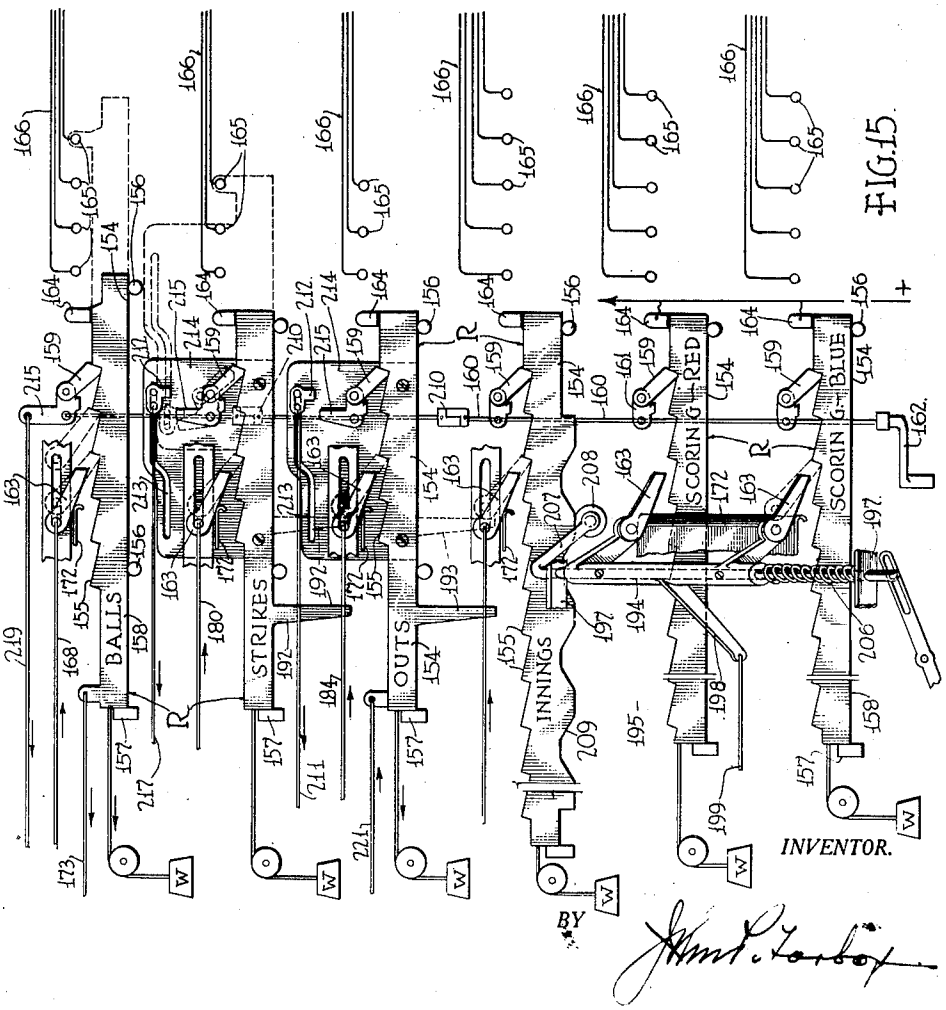


FIG. 15



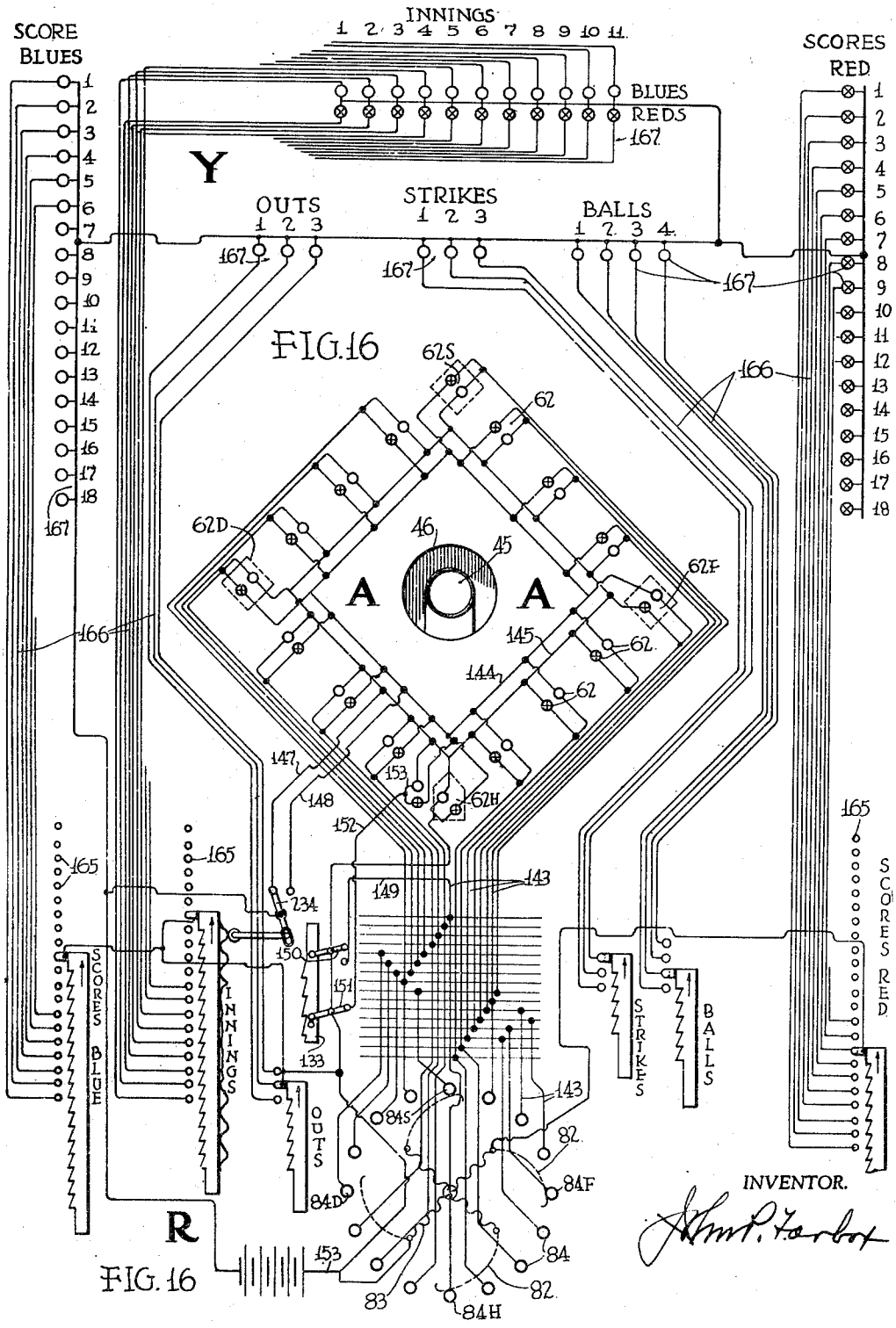
INVENTOR.

BY

Aug 5, 1941. J. P. TARBOX 2,251,305

TARGET BASEBALL

Filed May 27, 1937 8 Sheets-Sheet 7



Aug 5, 1941. J. P. TARBOX 2,251,305

TARGET BASEBALL

Filed May 27, 1937 8 Sheets-Sheet 8

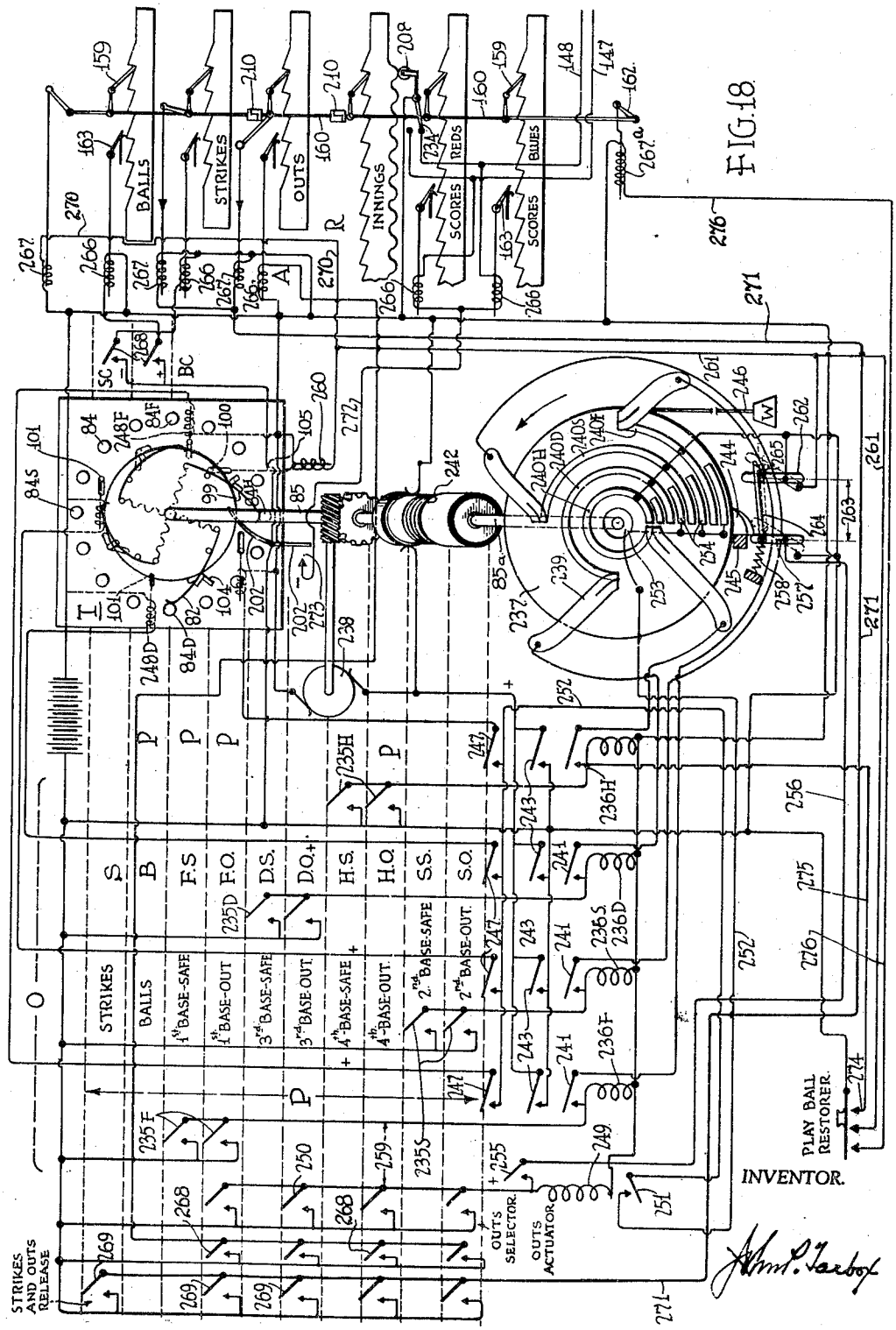


FIG. 18

Patented Aug. 5, 1941 2,251,305

UNITED STATES PATENT OFFICE

2,251,305

TARGET BASEBALL

John P. Tarbox, Philadelphia, Pa.

Application May 27, 1937, Serial No. 145,119

9 Claims. (Cl. 273—102.2)

The ball throwing game of my invention is devised with especial reference to improvement upon prior known ball throwing games in the following important respects.

I. The attainment of a target game which will simulate real baseball to the maximum possible degree. This simulation is attained jointly through the baseball diamond display and runs displays with respect to this diamond. It is furthered and intensified by registering displays of the plays of the game and its scoring in a manner almost, if not quite so complete, as that employed in a real baseball game. Base running both to and between bases is simulated upon the diamond display. Running on "safe" plays fixes display on safe arrival at base. Running on "outs" plays terminates without fixing arrival at the base. Registering displays of "strikes," "balls," "outs," "innings" and scoring of opposing teams are afforded, all inter-related precisely as in the actual game. Even the play of "four balls" results in a "runs" display giving "safe" display on first base and advancement of any runner previously on first base. Still further, enlivenment is provided through the duplex constitution of the diamond displays and the "innings" and "scorings" displays in colors alternately used on alternate innings to represent opposing teams.

II. The constitution of such a game in a form generally adapted for indoor use in dimensions and quarters of any available accommodation, from the accommodation of the nickel in the slot spring projected ball games, through the room length portable installation, and by way of the accommodations of the varying sized stalls of amusement parks and vacation resorts (such as skee ball and hand ball type gaming stalls) to full length throwing alleys which will accommodate a full pitched ball, even to the accommodation of the well known bowling alley.

III. The end of utmost simplicity, reliability, economy, and freedom from installation costs and supervisions incident to underwriter and municipal engineering, construction and power regulations. This latter is attained by an organization utilizing the power in the projected ball to do most of the work of operation of the mechanisms through which the displays are effected, and low voltage lights to effect the displays, of the order for example, from 10 to 20 volts. Thus the transformer of a toy train can be utilized to supply the electric power. There follows not only a low cost of installation but also a low cost of maintenance.

The accompanying drawings disclose those forms of my invention now best known to me.

Figure 1 is a three quarter perspective view from the right with the right side broken away, of the installation of my game in a stall or an alley of an amusement park or vacation resort, the showing being that of a room having one end open as common in such stalls and the other end closed, the target and display board of the game being provided at the closed end.

Figure 2 is a similar perspective three quarter view from the right of a skee ball type of installation of my game.

Figure 3 is a detail longitudinal vertical section (in the main) of certain of the paths coursed by the ball at the foot of the display board of Figure 1. (This section is approximately on line 3—3 of Figure 3*b* in rear view of the portion of the board.)

Figure 3*a* is a top plan view of the portions of the pathway shown in Figure 3 in which the left hand portion of the top coverings have been removed to show in full lines the horizontally extending portions of the paths.

Figure 3*b* is a rear view of those portions of the display board and the paths shown in Figure 3.

Figure 4 is a similar view to that of Figure 3 showing in cross section in a longitudinal vertical plane paths coursed by the ball in connection with the skee ball installation of Figure 2.

Figure 4*a* is a cross sectional detail of one of the troughs defining their paths shown in Figures 3 to 4*a*, approximately on line 4*b*—4*b* of Figures 3, 3*a* and 4.

Figure 5 is a diagrammatic plan view of a plurality of paths P commonly coursed by a projected ball and showing super-imposed thereon diagrammatically the various display operating devices, T the unit play integrating device in the form of an electric switch, R the various display registers, and O operating means for the device T and the display registers R located in the courses of the ball over the various paths P.

Figures 6, 7 and 8 are, respectively, top plan, transaxial section on line 7—7, and section on line 8—8 of Figure 6 of the unit integrating device T of Figure 5.

Figure 8*a* is a perspective of a wire crank.

Figures 9 to 14 are a series of diagrammatic illustrations in plan view as respects the device T, of various of the operations of the device T related principally to home plate conditions of the game.

Figure 15 is a diagrammatic enlargement of

the details of organization and operation of the display registers R of Figure 5.

Figure 16 is a diagram of the electric circuits of connection between the electric switch which is constituted the integrating unit T and a baseball diamond display A and between the display registers R and the lamps of the associated play and scoring displays Y.

Figure 17 is a showing in perspective of the lever link crank mechanism which prevents scoring on three "outs."

Figure 17*a* is a showing in perspective in another position of the lever and crank mechanism of Figure 17.

Figure 18 is a diagram similar to Figure 5 superseding mechanical operating means O by electrical operating means O associated with the paths P coursed by the ball.

Let us examine first the perspective views of full installations portrayed in Figures 1 and 2 and the manner of playing the game. The game in the stall type shown in Figure 1 is played by pitching balls **40**, taken from trough **41** and counter **42**, one by one at the target **43** in the face of the display board **44** at the closed end of the stall. The players purchase from an attendant or through a slot mechanism a number of balls with which to play the game. They stand before the counter **42** and throw the ball at the target **43** upon any desired projectory and at any desired velocity. The target **43** is in the form of a plurality of concentrically arranged receptacles **45**, **46** received in the face of the display board **44** and discharging to the rear thereof as appears in Figure 3. The aim of the player is to hit, if possible, the central receptacle **45**, the bull's eye of the receptacle type target. Failing this, the ball may be received by the annularly surrounding receptacle **46**, or may even strike the face of the display board **44** and drop to a trough shaped receptacle **47**. In any case it is discharged from the receptacles **45**, **46** and **47** by a system of channels **48**, **49** and **50**, respectively, to the paths collectively designated P which are located in housing **51** extending from the display board **44** to the counter **42**. Over the ball paths P contained in the housing **51**, the projected ball courses in common, sometimes over one path and sometimes over another. In its varying coursings on the paths P it variably operates the diamond display A and the various play and scoring and register displays Y indicated as mounted upon the display board **44** about the target **45**, **46**. The integrating device T and the registering display devices R are located in the raised portion **52** of the housing **51** immediately above the paths P, in which position they are most directly operable from the operating devices O associated with the paths P as appearing in Figure 5.

In the skee ball form of the game shown in Figure 2, the balls **40** are contained in a trough **41** at the fore end of the skee alley **53** and the paths P and the mechanisms O, T and R are housed beneath the flooring **54** of the alley **53**. The target receptacles **45**, **46** and the diamond display D are received in the face of the inclined target board **55** of the general form and dimension commonly found in skee ball installations. The play and scoring displays Y are received upon the face of a vertical extension **56** from the inclined board **55**. Intermediate the inclined board **55** and the alley flooring **54** at the juncture between the alley flooring **54** and the inclined board **55**, the alley flooring **54** is given a rise **57** providing jog **58** between it and the inclined board **55** which is constituted trough **47** as clearly appears in Figure 4. Figure 4 also shows the return channels **48**, **49** and **50** associated respectively, with receptacles **45**, **46** and **47** in their relation to the paths P contained beneath the flooring **54** of the alley **53**. In this skee ball type of installation the game is played either by throwing a pitched ball at velocity, or a tossed ball, or a skee rolled ball, as indicated by the respective trajectories designated **59**, **60** and **61**.

In each form of game the action is rapid and enlivening. The projected ball courses through the several receptacles **45**, **46**, **47**, in accordance with the relative accuracy of the throw and in its return course by way of channels **48**, **49** and **50**, and follows to some extent at random and to some extent, as will be seen later, influenced by the accuracy of the throw, one of the various paths P on its return course toward the thrower. On paths P it engages operating means O and operates the integrating unit T and the various play and scoring registers R. First the integrating device T is operated, progressing the illumination from the home plate position H by successive stages **62** to the first base position F and thence by yet other immediate progressive stages **62** ultimately to home plate H and a scoring. If the run should be a home run illumination is progressed successively to second base position S, 3rd base position D, then on again to the home plate H, and immediately upon the reaching of the display illumination at the home plate H a score is registered on the board for either the "Reds" or the "Blues," as the case may be. So are registered in accordance with the paths P coursed by the ball successively but variably, strikes, balls, outs, and yet further scores, until on three outs the innings display is changed. The diamond and innings displays initially illumined say in red as shown by the black dots, then immediately shift to blue, as shown by the open circles, and further play results in diamond display for the "Blues" and scoring for the "Blues," the scoring for the "Reds" remaining undisturbed.

Reverting now to Figures 3 and 4, it will be seen that the coursing of the ball from target receptacles **45**, **46**, **47** through the channels **48**, **49**, **50** is an organized one. The channels **48** and **50** leading from receptacles **45** and **47**, respectively, are interchangeably connected through hinged gate **63**, **63***a* with single trough S (meaning "strike") of the paths P, and the group at large consisting of eight parallelly extending troughs designated, respectively, FS, FO, DS, DO, HS, HO, SS and SO (which designations refer to safe and out conditions connected, respectively, with first base F, second base S, third base D and home plate or fourth place H). These latter can be denominated the "hits" group of paths P. Gate **63**, **63***a* is simply a hinged board, the hinge **64** clearly appearing as arranged at an angle of inclination transversely of the channels **48** and **50** in such manner that it serves as the one wall of a trough to course the ball when desired, to an aperture **65** (or **65***a*) through which it courses to path S, identified with "strikes." Operation of the gate **63**, **63***a*, is by means of a lever **66** alongside paths P (see Figs. 1 and 2) connecting by link **67** with the gate arm **68**. Gate **63**, **63***a* is duplex, one half hinged in channel **48** and the other in channel **50**. From that half **63** hinged in channel **50** the ball is coursed along the face of the gate and dropped into the aperture **65** of the

"strike" path S. When this half of the gate 63 is opened parallel to channel 50 the ball is free to drop through channel 50 into the region of paths FS, FO, SS, SO, etc., the "hits paths."

Similarly, whenever the half gate 63 in channel 50 is transversely of that channel, closing it, the half 63*a* in channel 48 is opened parallel to channel 48 as clearly appears. When gate 63*a* is opened parallel to channel 48 the ball is free to drop to course in the "hits" channels FS, FO, SS, etc., whereas when the gate is athwart channel 48 the ball is carried along the incline of the gate to drop through a second aperture 65*a* (see Fig. 3*a*) again into the strikes path S.

Thus the bull's eye target receptacle 45 may be alternated in function between relation to "strikes" and relation to "hits" with the trough receptacle 47, with the result that players may play the game with or without taking sides. If no sides are taken, as for example, when a man plays the game alone, target receptacle 45 is associated with "hits" paths FS, etc., in order that the player may score through accuracy of pitching to the bull's eye of the target. If sides are taken, bull's eye 45 is associated with the "strikes" channel S, whereby the accuracy of the pitcher's throw may be utilized to strike out his opponent.

The annular receptacle 46 surrounding the bull's eye receptacle 45 is connected always through channel 49 and a laterally extending inclined trough 69 through an aperture 70 with that one of the paths P, designated also B, associated with the display registry of "balls" for the entire game. This path B is intermediate the path S and the first of the "hits" paths, FS, this first one being that associated with one base hit as distinguished from 2, 3 and 4 base hits. (See again Figure 5.)

The lateral extent of the several channels 48, 49 and 50 and their relation to the lateral extent of the several paths S, B, and the group of paths FS, FO, etc., is best shown in the plan views, Fig. 3*a* corresponding to Fig. 3 and depicting in plan as if in section taken on line 3*a*, 3*a* of Fig. 3, the general direction and extent of the paths P and the openings in the covering wall 71 of these paths through which the ball courses as it is discharged from the channels 48, 49 and 50. Thus there appear more extended apertures or approaches 72 and 73, which when either gate halves 63 are opened, respectively communicate with the broad channel 74 which leads to that group of paths P designated, respectively FS, FO, etc. These latter paths are defined by a series of vertical partitions 75 forming channel-shaped troughs. These partitions as appears clearly in each of Figures 3*a* and 4*a*, and in Figures 3 and 4, emanate from that portion of the channel 74 which lies in advance of the foremost of the apertures 65, 72, 73, etc. through which the channels 48, 49 and 50 communicate therewith. Moreover, the partitions 75 are started on a gradual upward sweep from the flooring 76 of the paths, and as shown in detail in Figure 4*b* taken on line 4—*b*, 4—*b* of Fig. 3*a*, are of inverted V-cross section on their upper edges, whereby approaching balls are not stopped by the partition as they course along as might be if the partitions rose abruptly from the flooring 76, and are not jammed between them and the cover 71, but if they engage the partitions 75 at all, ride upwardly but for a moment and then fall to one side or another of the V-shaped edge to course fully and freely along one of the paths FS, FO, which partitions 75 define.

The operating means O for the display system at large are located in the paths P. In the form of my invention shown (see Fig. 5), these are shown to be a system of oscillable flaps 77 which are suspended across the paths P from a system of oscillable shafts 78, journaled transversely of the tops of the partition walls 75 which define the paths. These flaps 77 shown diagrammatically as projecting to some extent at least horizontally from the shaft 78, actually depend from the shafts downwardly into the troughs 75. In this position, they will be struck by the balls coursing the paths P defined by these troughs. All of the flaps 77 are fixedly connected to the shafts, and most of the shafts (all of those in the group of paths FS, FO, etc.) are provided with a multiple number of flaps. Each flap struck by the ball in succession as it courses upon any given path, is raised by the ball, the ball passing under it and to the next succeeding flap, etc., etc., and the raising of the flap oscillates the shaft which supports it. Each shaft is provided with a lever 79 or a crank which has a lost motion connection with a common sliding bar 80 mounted for longitudinal reciprocation. The arm 79 appearing by virtue of the diagrammatic showing to extend in the horizontal plane, actually extends downwardly, depending from the shafts 78 as do the flaps 77. Likewise, the bar 80 appearing by reason of the diagram to be edgewise in the horizontal plane, is arranged vertically edgewise in the general vertical plane of the various ratchet and pawl mechanisms with which it is associated. The connection as illustrated is by the bearing of the levers 79 freely against one side only of pins 81, whereby oscillation of the shafts 78 in one direction positively moves the bar 80 but oscillation in the opposite direction may take place without moving the bar. Thus conversely, the bar may be freely reciprocated from any one of the flaps 77 but does not through its reciprocation affect oscillation of any of the shafts 78 excepting the one involved. Thus reciprocating bar 80 is utilized to operate the unit integrating device T from which the diamond display A is operated and certain of the registering displays are controlled. Let us now examine the device T.

As appearing in Figures 5 and 6 to 8, more particularly in Figure 5 for the moment, device T consists of an electric step-by-step switch of four blades 82 having a common electrical connection 83 with each other. These blades sweep over or past a series of electric contacts 84 and effect the energization of various electric circuits connected with contacts 84. There are, as shown, 16 of these contacts 84 designed to control 16 electric circuits, four for each base run of a baseball diamond. Step-by-step movement for the contacts 82 is provided by mounting them on axis shaft 85 to which step-by-step motion is imparted from a ratchet and pawl 86, 87. This ratchet and pawl is operated through a linkage connection 88 with the reciprocating common bar 80 of the depending flap operating mechanism O. In fact, the ratchet and pawl may be said to be a part of the operating mechanism O at large.

In detail with especial reference to Figures 6 to 8, the step switch integrating unit T is comprised of a base 89 in the center of which the axis shaft 85 is rotatably journaled in a suitable bearing 90. The four switch arms 82 are mounted on one face of a mounting disc 91 fixed on

the rotatable axis 85, preferably the upper side (Figure 7). The contacts 84 over which they sweep are in the form of studs projecting upwardly from the base 89 on a circle about the axis 85 and having terminals 92 beneath the base for electrical connections. The axis 85 likewise has a terminal 93 for its electrical connection.

Each one of the switch arms 82 is in the form of a leaf spring oscillably fixed at one end, 94, to the side of the mounting disc 91 and borne under spring pressure normally toward engagement with contacts 84 by fixed pins 95 carried by the mounting disc and bearing upon their radially inner faces in such manner as to develop a spring pressure of their free ends against the contacts 84 as shown in the instance of certain of the contacts in Figure 5 and in full lines in Figure 6 in the instance of one of the contacts on the upper left.

However, blades 82 are not normally permitted to rest on contacts 84 but are variably permitted to engage the contacts 84 by a corresponding series of blade-enabling mechanisms 96. These mechanisms are essentially small cranks of bent wire of a substantial gauge journaled in their main bodies in transverse bearings 97 on the periphery of the mounting disc 91 and substantially parallel to the axis 85. A crank arm 98 engages the balde 82 on one side of disc 91. A crank arm 99 on the other side of disc 91 serves as an operating means for the crank 96. This latter crank arm is variously engaged by systems of "on" and "off" stops 100 and 101, respectively, projectible into and out of the path of movement of the crank arm 99 from the base 89. When crank arm 98 is moved to point radially inwardly as shown in the instance of the upper and left hand blades 82, Fig. 6, these blades are flexed over pins 95 as fulcrums (the cranks lying toward the free ends of the blades from the biasing pins 95) to remove the free ends of the blades from passage over contacts 84. They are retained in this position through engagement of the crank arms 98 in small inward offsets 102 in the plates. When the cranks 96 are reversely operated to carry the arms 98 in positions tangent to the blades 82, as shown in the lower and right sides of Figs. 6 and 7, the blades are sprung into contact with contacts 84.

The "on" stop 100 is in the form of a pin or wire projecting through slot 103 in the base 89 and reciprocable as so projected back and forth along the length of the slot 103. At the inward extremity of slot 103 projection 100 lies in the paths of the crank arms 99 when crank arms 98 are engaged in the offsets 102 in the blades 82, and the blades are in "off" positions, not contacting with the studs 84. Each crank arm 99 in such position, as disc 91 is rotated counter-clockwise, may come into contact with stop 100 and thereby be operated counter-clockwise to dis-engage arm 98 from the offset 102 and permit blade 82 to spring into "on" position, contacting with the stud 84. However, when the stop 100 is at the outward end of slot 103, instead of engaging crank arm 99 it will engage the crank arm extension therefrom designated 104, in the instance of any crank 96 which approaches stop 100 in the "on" position, thereby moving crank 96 clockwise until arm 98 again engages offset 102 and moves the associated blade 82 to "off" position. The so-called "on" stop 100 is normally in the "on" position at the inward end of slot 103 but may be moved temporarily to the "off" position at the offset end of slot 103 by reciprocation of wire or rod 105 of which it is of integral right angular extension. Rod 105 is carried in clip type bearings 106 beneath the base 89.

The normal "off" stops 101 are in the form of wire pins projectible into and out of the paths of crank arms 104 by the oscillation of crank shafts of bent wire 107, of which they are a part. These crank shafts are mounted in journals 108 beneath the base for oscillation through connections to crank arms 109, whereby the arms 110 from which the stops 101 are extended, are oscillated to project stops 101 vertically from the upper side of the base 89 or to withdraw the stops within slots 110'. There are four of these oscillable stops 101 provided at substantially 90° to each other, one in connection with each of the studs 84 connected with the bases of the diamond display A. These particular studs 84 are subdesignated by coupling number 84 with the letter designating the bases of the diamond A (see Fig. 1) thus 84H designating the stud controlling the circuit of the home plate display H, 84F designating the stud controlling the circuit of the first base display, etc. Stops 101 in the embodiment shown are indicated as located just in advance of these studs 84H, 84F, etc. It is to be noted that the directions of oscillation of the "off" stops 101 connected with studs 84F and 84D are such that when in "projected position," engagement of the cranks 104 tends to maintain them in projected position; and in the cases of those stops 101 associated with 84H and 84S the directions of oscillation are on lines generally tangential to the path of movement of the cranks 104, whereby when pressed upon by cranks 104 they are supported in upright position by the side walls of the slots 110.

The mechanism for operating the four "off" stops 101 (see now Fig. 5) consists of four independent flaps 111, respectively located in the "outs" series of paths P identified with the four bases, respectively paths HO, FO, SO and DO. Each of these flaps is connected, respectively, to the stop 101 identified with the corresponding stud 84H, 84F, etc. Connection in each case is by means of crank arms 112, wire links 113 and lost motion wire loops 114 into which the crank arms 109 of cranks 107 are projected. The loops 114 are of such length that when the ball coursing in one of the paths HO, etc., strikes a flap 111 and operating through link 113, oscillates shaft 107 to carry stop 101 into the path of a crank 104, and coursing on of the ball leaves the flap 111; the flap on its return carries loop 114 backward without backward movement of stop 101. It is assumed that the friction of the cranks 107 in their bearings 108 is such as to hold stops 101 in position against this backward movement of the loops 114, and those stops 101 remain in their operated positions until retracted by another mechanism.

This other mechanism for retracting stops 101 consists of a system of complemental loops 115 also threaded over cranks 109 and connected by wire linkages 116 and crank arms 117 commonly with an oscillating release shaft 118 having a crank and link connection 119, 120, 121 (follow Fig. 5) with a common release shaft 122 journaled transversely of the paths P a distance 123 behind (to the left in our diagram) of the hindmost flap 77 of the operating mechanism O. The shaft 122 is provided with flaps 124 depending across each one of the eight paths identified with the bases displays of the diamond A. Thus FS,

FO, SS, SO, etc., each is provided with a flap 124 on shaft 122. The lost motion relation of the loops 115 to the stops 101 is the opposite of the loops 114, with the result that when a crank arm 109 of a stop 101 has been moved through a loop 114 to project the stop, it has been moved to a position in loop 115 from which it may be next operated to retract stop 101, operated by a movement of loop 115 opposite to the movement of loop 114, a movement brought about through the coursing of the ball into engagement with one of the flaps 124. Passing flap 124 the ball releases the flap, and the dimension of loops 115 is such that (friction of shafts 107 again coming into play to hold stops 101 in retracted position) loops 115 return to the normal relative position with respect to loops 114. Thus through the lost motion of the loops projection and retraction of stops 101 is brought about by the respective flaps 111, 124 without interference with each other, thereby permitting stops 101 to remain in each case in the position to which moved by the one flap until that position is changed by the other flap.

The "on" stop 100 is operated out of and again into "on" position by connection of the wire link 105 with cranks 125 and 126, respectively. The connection in each case is by means of passage of the link 105 through wire loops in the engaged ends of the crank shafts 125, 126 and engagement of the loops by the abutments 127, 128 on the link 105. Crank 126 is oscillable from the movable element of a clutch 128 between the manually operable handle 129 and the shaft 85 of the integrating switch unit T. Crank 125 is oscillated by the wire link connection 131 with an oscillable crank or lever 132 engaged to produce its oscillation by a register device 133. Register device 133 registers a limited number of the reciprocations of the bar 80 of the operating mechanism O. That is to say, it registers a limited number of coursings of a projected ball over the paths P and hence a limited number of movements of the integrating switch unit T. The device 133 consists of a longitudinal reciprocable bar having ratchet teeth 134 on one edge engaged by an actuating pawl 135 carried from the bar 80. Pawl 135 is normally held in dis-engaged position by a shield plate 136, but whenever the bar 80 is retracted following a step of switch unit T, pawl 135 leaves the shield 36, engages a tooth of ratchet 134 and moves the bar 133 one step forward. There the bar is held by a pivoted retaining pawl 137. Pawl 137 may be released through a pull on wire link 138 from crank arm 139 on an oscillating shaft 140 provided commonly with one flap 141 in each of the channels of the "hit" series FS, FO, SS etc. Thus whenever in one case a projected ball courses under the flaps 77, a determinate number of times, the register 133 operates lever 132 to move stop 100 from its "on" position toward the center of the switch unit T and to an "off" position away from the center of the switch T. Thus whenever switch T is operated by the manual crank 129 the same is true. After release from any such operation stop 100 is always restored to its "on" position toward the axes of switch T, by the restoring spring 142.

Each one of the studs 84 of the integrating switch unit T is connected by a conductor 143 (see now Fig. 16) commonly with a corresponding pair of lamps 62 (see Figs. 1, 2 and 16) of the diamond display A on the display board 44, whereby as the integrating switch unit T is stepped from one stud 84 to another, the lamps 62 are illumined in succession. The lamps associated with the respective base positions are provided with appropriate suffix designations, thus 62H, 62F, etc., corresponding to those used in connection with other parts identified with base positions. One lamp of each pair is one color and the other another, as for example, red and blue. All lamps of a given color are connected to a common return circuit, thus 144 for the red lamps and 145 for the blue lamps of the diamond display. A common power connection 83 is provided for the switch arms 82 shown in dotted lines in Fig. 16, but dual power connections 147, 148 are provided for the respective common return circuits 144, 145. These dual power connections are shown, Fig. 5, to have connection with the "innings" register presently to be described.

In the connection 143 of the home plate lamps 62H, however, there is provided a loop 149 which extends, Fig. 5, to a switch 150 operable from the register device 133, the same register device 133 which controls the "on" stop 100 as just now described. Also operated from this register 133 is a switch 151 which controls the loop 152 in the circuit of the "batters up" lamps 153 (see again Fig. 16). The arrangement of switches 150, 151 is such with respect to loops 149, 152 that after a pre-determined number of registers of device 133 power is cut from one of the loops 149, 152 and put on the other, and when register device 133 is released the connections are again restored to normal.

The play and scoring displays as distinguished from the running displays of the diamond A are designated Y, Figs. 1, 2 and 16. These displays are also in electric lamps as has heretofore been said. They are operated not from integrating switch unit T directly, but indirectly through the registers R. These registers R as well as the corresponding displays Y are designated by legends as follows, in accordance with the play and score. Thus as they appear in each of Figs. 1, 2, 5, 15 and 16, and particularly in the order from top to bottom as they appear in Figs. 5 and 15, they are designated "balls," "strikes," "outs," "innings," "scores red" and "scores blue."

All of the registers are generally of the same type as the register 133, comprising longitudinally reciprocable bars 154 provided on one side with ratchet teeth 155 and reciprocable longitudinally by means of systems of pawls. The showing is diagrammatic but it is believed quite clear. The bars 154 are borne on roller bearings 156. They are biased normally by weights (or equivalent devices) W to normal so-called 'zero" registering positions against stops 157. Suitable guides and retaining devices not shown may be used to keep the bars in given paths. Preferably they are located side by side in parallel relation and with their bottom edges 158 in a common plane. As shown diagrammatically, however, it is as if they were located one above the other. The ratchet teeth 155 provided are of the same dimension and their operating and retaining pawls have in general the same length of stroke, but the number of ratchet teeth on each register is different. The retaining pawls 159, however, are located in transverse alignment with each other and are commonly operable from a compound operating shaft 160 through operating crank arms 161, whereby all of the registers may be released at one and the same time by oscillation of shaft 160 through the manual crank arm

162. The operating pawls 163 are, however, not commonly operable but provided each with a different operating mechanism, excepting only the case of the "scoring" registers. Each register is provided with a contact arm 164 which plays over a series of contacts 165. These contacts 165 vary in number according to the number of lamps in the corresponding displays Y and are connected each with its corresponding display Y by a corresponding number of conductors 166. Thereby whenever any register is operated, connection to a source of power is effected for the lamps of the corresponding display Y over one or another of the conductors of the groups 166 and successively the lamps 167 of the displays Y are illumined.

The operating pawl 163 of the "balls" register is connected for reciprocatory operation by wire link 168 (see Figs. 15 and 5) to the crank arm 169 of an oscillating shaft 170 provided with a flap 171 depending into that one of the paths P designated B. Thus whenever a ball courses path B engaging the flap 171, pawl 163 of the "balls" register is moved forwardly, leaving the shield 172 which normally holds it out of engagement with ratchet teeth 175, engaging the nearest ratchet tooth 155 and moving the register forward one tooth's distance (plus a fraction), whereupon the retaining pawl 159 engages the next succeeding tooth and retains it one tooth advanced. In such position contact 164 engages the first of contacts 165 and illumines the first of the four lamps 167 associated with the "balls" display Y (see Fig. 16). As the ball passes beyond the flap 171 on the path, the pawl 163 is restored to its normal position in which it rests upon the shield 172 as shown.

There are provided four ratchet teeth 155 in position to be engaged successively by successive operations of pawl 163, whereby "four balls" may be registered. Connected with the rear end of the bar 154 of the "balls" register is a wire link 173 (see Fig. 5) which extends rearwardly (to the left) and projects through wire loop 174 on the end of a horizontally disposed bell crank 175, and terminates in abutment 176. Movement of the register bar 154, four teeth forwardly to register the fourth "ball" results in engagement of the wire loop 174 by the abutment 176, swinging bell crank 175 about. This bell crank connects through a link 177 with a gate 178 in that wall 75 which separates the "balls" path B from the path FS immediately adjoining. This path is that coursed by the ball for the registration of a one base hit and contains (as inspection will show), four of the flaps 77 of the operating mechanism O of the switching unit T. Thus when gate 178 is opened to its dotted line position against its restoring spring 179, the ball on the path B is deflected (or switched) by it into the path FS and a one base advance may be registered on the diamond display A.

The operating pawl 163 of the "strikes" register is similarly operated by a link connection 180 (Figs. 15 and 5), with crank 181 of an oscillating shaft 182 on which depends flap 183 into the "strikes" path designated S. In this case there are provided three ratchet teeth in position to be engaged successively by pawl 163 when it leaves shield 172 and in each case contact 164 may effect over conductors 166 a display of one of the three lamps 167 shown in connection with the "strikes" display Y of Fig. 16.

The "outs" register has its pawl 163 operable similarly by link 184 connected to the crank arm 185 of an oscillating shaft 186 (reference now to Fig. 5) having an arm and link connection 187, 188, 189, with an oscillating shaft 190 provided with flaps 191 depending in the paths of the "out" series designated, respectively, HO, FO, etc. Each of a series of three coursings of the ball over the paths of this series at large may therefore operate the "outs" display Y as has been described in connection with the operation of the "balls" and "strikes" displays, there being provided three ratchet teeth 155 in position for successive operation of the bar 154 from its normal "zero" position.

The "strikes" register is also arranged to operate the "outs" register. This is through the provision of a latterally projecting arm 192 on the bar 154 of the "strikes" register adapted to engage and move forwardly the pawl 163 adapted as shown in dotted lines to engage and move forwardly the pawl 163 of the "outs" register, but only when the third strike is being registered. This is because there is provided a distance between the zero position of arm 192 and pawl 163 of the "outs" register substantially equal to the length of two ratchet teeth 155.

The "innings" register does not have its pawl 163 operable from any one of the paths P coursed by the ball. Instead its pawl 163 is operable only through engagement with a laterally projecting arm 193 on the "outs" register similar to the arm 192 of the "strikes" register. The distance between arm 193 and pawl 163 which lies in its path is likewise the length of two ratchet teeth 155, whereby after two "outs" have been registered and a third "out" is in process of being registered, pawl 163 of the "innings" register is operated from its shields 172 into engagement with the innings bar 154 to move it one tooth forward, and thereby register one inning, and effect the corresponding display on the "innings" display Y of the board 44. Every time three "outs" are registered, one inning is registered.

The scoring registers on the other hand have their pawls 163 connected in common to a bodily transversely reciprocable but transversely extending shaft 194 provided with crank arms 195, slidably journaled in a fixed frame 197. This shaft 194 is oscillable through a crank connection 198 with a wire link 199 connected through reverse lever 200 and wire link 201 with a wire crank 202 journaled in base 89 of the switching unit T adjoining the home plate stud 84H. This crank 202 (see Figs. 6, 8 and 9 to 14) has an upper arm 203 in the form of a sweep which lies directly in the path of the bight 204 of the crank arms 99 of the cranks 96 through which the contact blades 82 are moved into and out of contacting relation with the studs 84 controlling the diamond display A. The arrangement is such that whenever one of the cranks 99 reaches a position opposite the home plate stud 84H and associated contact blade 82 is "on," thereby completing a run display to the home plate, the sweep arm 203 is engaged by the bight 204 of the arm 99, crank 202 is oscillated and through the connections just described, the pawls 163 are moved forwardly to engage one or the other of the bars 154 of the "scoring" registers, thereby to register one score. Crank arms 99 are held steady in the engagement of their bights with the sweep 203 through the passage of their small offsets 204a in this region beneath a projection 205 from the top of the base plate 89. The length of projection 205 is but sufficient to retain the

crank arms 99 in engagement with the sweep arm 203 sufficiently long to effect the registration, and insufficiently long to affect the action of the stops 100, 101.

Determination of which of the scoring registers "red" or "blue" shall be operated is effected by transverse movement of the oscillating shaft 96 against the pressure of spring 206 (see Fig. 15) by means of an arm 207 connected with the shaft 196 and bearing by small roller 208 against the sinusoidal formation 209 on the bar 154 of the "innings" register. The pitch of the sinusoid is measured by the length of two of the teeth 155 of the "innings" register, whereby the roller 208 bears alternately upon the crests and the depressions of the sinusoid and alternately therefore shifts pawls 163 laterally in opposite directions. The lateral spacing between the pawls 163 is such that in the one case pawl 163 of the "red" register is in alignment with its teeth 155 and in the other case pawl 163 of the "blue" register is in alignment with its teeth. The shield 172 is of such form and arrangement that both pawls are normally held out of engagement. Due to the fact that the distance between the two pawls 163 is different from the distance between the respective bars 154 only one of the corresponding rows of teeth 155 can be in engagement at a time. The distances differ by the amplitude of throw of the sinusoid 209. Thus on alternate "innings" the display on register Y is for the "Reds" and the intermediate "innings" for the "Blues."

The release shaft 160 as operated by the crank arm 162 commonly operates all of the retaining pawls 159, and all of the registers R are commonly released. However, there is a one direction coupling 210 in shaft 160 between the "innings" register and the "outs" register and a similar one direction coupling 210 between the "outs" register and the "strikes" register. Shaft 160 is, however, unbroken between the "scoring" registers, and "innings" register and again unbroken between the "strikes" register and the "balls" register, whereby the retaining pawls 159 of the stated groups fixedly connected together are at all times of operation operated in common. The direction of the one way couplings 210 is such that whenever the release of the "innings" and scoring registers is effected the releases of all the others is effected. This same directional relation results in the fact that the "outs" register may be released without affecting the "innings" and "scorings" registers, but requires that whenever the "outs" register is released the "strikes" and "balls" registers are also released.

Release of the "outs" register is by means of a wire link 211 (see Figs. 15 and 5), connected to reciprocate a hook 212 in a direction changing slot 213 in an upright plate 214 carried by bar 154 to move therewith. Normally, slot 213 keeps the dog 212 raised so that it cannot engage the upper end of the bell crank 215 which carries the retaining pawl 159, but the direction of the slot 213 changes downwardly after a distance of two ratchet teeth 155, whereby after registration of the second "out" dog 212 drops behind the crank 215, and then when link 211 is operated, pawl 159 will be released. Wire link 211 (now see Fig. 5) connects through crank arm 216 with that same general release shaft 118 already described as governing the retraction of the "off" stops 101 associated with the contact plates 82. This shaft 118 is operated from the hindmost system of flaps 124 associated with the paths P over which the projected ball courses. 124 are the final release system of flaps. The "outs" register is released as a result of registration of the third "out," because after the second out (see Fig. 15) hook or dog 212 lies in the lower portion of slot 213.

A similar system of the parts 212 to 215, respectively, is connected with the "strikes" register effective to bring about release of the "strikes" register after the third strike has been registered, the drop in the groove 213 being removed a distance equal to the length of two teeth 155 from dog 212. Such release due to the absence of one way coupling 210 between "strikes" and "balls" registers will also bring about release of the "balls" register. Moreover this release is effected by a wire link 217 and crank arm 218 with the same general release shaft 118 from which the "outs" register is released.

The "strikes" register, however, is provided with another means of release, a release from the "balls" register, for it is necessary to release the "strikes" register whenever four "balls" have been registered, just as surely as it is necessary to release the "balls" register whenever three "strikes" have been registered. This release from the "balls" register is effected by a connection of its bell crank 215 over link 219 and through crank arm 220 with that same shaft 140 lying immediately behind the shafts of the operating mechanism O, from which release of the register device 133 is effected.

The "outs" register R (see now Fig. 5) is provided with a special connection 221 with a lost motion wire link 222 which is looped over one end of a lever 223. The opposite end of the lever 223 supports slidably by an eyelet 224, the end of a wire loop 225 which is connected by a wire 226 with crank 227 operable from a shaft 228 which is oscillable by four depending flaps 229, one of which depends in each of the paths P of the "out" series FO, SO. Lever 223 is normally biased to the position shown (see Figs. 5 and 6) by means of a spring 230, but when lever 223 is oscillated the lost motion link 225 becomes hooked over the end of crank arm 109 associated with that off-stop 101 associated with the home plate position 84H. The length of lost motion link 222 is such that operation of lever 223 to affect this hook-up occurs only after two "outs" have been registered. Thus on the third coursing of a ball through an "outs" channel of the FO, SO series "off" stop 101 associated with the home plate position is raised and all contact blades 82 are moved to off position before they reach the home plate position 84H.

The "innings" register at every change of inning through an extension 233 from the shaft 196 operates switch 234 alternately connecting the source of power by common lead 235 to the common control conductors 147, 148 governing the red and the blue displays, respectively.

The apparatus so organized functions as follows in the play of the game.

Either of the board organizations of Fig. 1 and Fig. 2 being in use and the ball being rolled, tossed or pitched at the target 45, 46, if it strikes within the confines of the large diamond A, has its further course determined by lodgement in one or another of the three receptacles 45, 46, 47. The receptacles 45, 46 and the ground of the diamond A surrounding receptacle 46 are related to each other as are the rings of a bull's eye target. An inaccurate throw at the bull's

eye receptacle 45 may lodge either in the receptacle 46 or upon the ground of the diamond A just outside of it. If the latter it drops to trough 47.

Let us assume the two players are playing innings against each other, the one playing for the "reds" and the other for the "blues," and follow the game with each player. In this case the lever 66 has been previously moved to set the sections of gate 63, 63a to the dotted line positions shown in Fig. 3 whereby receptacle 45 is connected through channel 48 and aperture 65a to the "strikes" path S and receptacle 47 is opened by path 50 to the "hits" paths of the series FS, FO, SS, SO, etc. When a pitched ball strikes the bull's eye receptacle 45 of the target, therefore, it courses the strike path S and registers a "strike." When it strikes the outer ring receptacle 46 it courses channel 49 and aperture 70 and the balls path B to register a "ball," and when it strikes the ground outside of the concentric receptacles 45, 46 it drops to the trough 47 and courses channel 50 and one of the eight paths of the "hits" series FS, FO, etc., to register either a "safe" hit or an "out" hit. Thus the pitching of the one player is to the bull's eye in an endeavor to strike the other out by three coursings of the ball through the "strike" channel S. A skillful player may readily effect three "strike" registers in succession. If his skill is short on one or more throws he may register one or more balls through striking within the annular receptacle 46. The manner in which the coursings of the ball over the paths S and B of Fig. 5 effects operations of the "strikes" and "balls" registers and through the "strikes" register the operation of the "outs" register, has been so recently and fully described as to need no repetition at this point. Suffice it to say that the registration and the displays follow the throws of the ball so rapidly and so accurately that the game can proceed with any desired rapidity without error and with all the zest of a regular ball game. Even with an intermediate base or two on "balls," three "outs" on "strikes" out can be effected by a skilled player in the same number of pitched balls and less elapse of time interval than in the actual baseball game.

Bases on "balls," it will be remembered, become displayed on the diamond A as a result of four successive coursings of the ball in channel B within playing by a given player short of three strikes, an "out," or a base hit. The "base on balls" display is effected through the opening of gate 178 to the dotted line position upon the coursing of the fourth ball in channel B. To this end gate 178 is located in the path B between the depending flap 171 through which the "balls" register is operated and that series of four flaps 77 on shaft 78 lying in the path FS. Gate 178 is a sufficient distance in the rear of the flap 171 and a sufficient distance in advance of the flaps 77 to give time for the "balls" register to fully open the gate before the ball in its course reaches the gate. The four shaft oscillations caused by the coursing of the ball under the flaps 77 operate pawl 87 and ratchet 86 four times to move that contact blade 82 of the switch T which at the beginning of the coursing lies at the home plate position 84H successively into contact with the contact studs 84 from home plate to the first base position 84F (see also Fig. 5), and to bring blade 82 to rest at the first base stud 84F. Thereby the source of power is connected successively to those conductors 143 which control the lamps 62 which extend from the home plate position 62H to the first base position 62F coming to rest on the first base position 62F and displaying therefore the movement of the player to and his rest upon first base. As this operation closes the further coursing of the ball along the path FS, which it now occupies carries it under flap 141 connected with the oscillable release shaft 140 and this through connections 219 and 220 effects release of both the "balls" and "strikes" registers as heretofore described, not only obliterating the balls and strikes displays theretofore existing, but also enabling spring 179 to restore the gate 178 to its normal position as part of the wall 75 between the "balls" path B and the one-base hit path FS.

Should the player's skill be ineffective and the ball strike the face of the diamond A and course through the receptacle 47 to the "hits" channels of the series FS, FO, SS, etc., it will result in the display upon the diamond A of the run of a player for base in a manner entirely similar to that described in connection with the "base on balls" procedure just now described, except that in the instance of coursing in the second, third or fourth base "safe hit" channels of the series SS, DS, HS, the contact blade 82 which lies on the home plate contact 84H at the outset of the coursing of the ball will be progressed, respectively, through eight contact positions to the contact 84S, 12 contact positions to the contact 84D and 16 contact positions to the contact 84H, thus displaying, respectively, second base and third base hits and home runs. In each such case, the stepping of the switch T of the integrating unit by the ratchet and pawl 86, 87 is as rapid as the coursing of the ball along its path, the successive flaps 77 being engaged in rapid succession. The speed of the ball on its course depends jointly upon the initial velocity of the throw of the player and the incline of the paths P downwardly toward their ends. This return inclination of the path may be made of any degree desired and thereby the rate of "runs" displays on the diamond A controlled relatively independently of the initial velocity of the pitched ball. Relative inclinations and abruptness of the receptacles 45, 46, 47 and the channels 48, 49, 50 and of the gates 63 and trough 69, etc., may likewise be alternatively adapted to appropriately regulate the velocity of the ball upon the paths P.

If the ball once entered upon the "hits" paths of the FS, FO, SS, SO, etc., series, instead of striking the "safe" hits FS, SS, etc., strikes in one of the "outs" paths FO, SO, the integrating switch T is moved the same number of steps by the ratchet and pawl 86, 87 by reason of the identity of the number of depending flaps 77 in these complementary paths, but while the running of the player is displayed through successive contacting of the blade 82 commencing its movement from the home plate 84H at the opening of the coursing, over the contacts 84 intervening between the home plate position 84H and that particular contact 84F, 84S, 84D or 84H measuring the value of the hit, this particular blade 82 commencing the play never comes to rest upon the contact which is the measure of the hit. This for the reason that just ahead of the fourth flap 77 from the last in the channel FO, SO, etc., coursed by the ball, is a flap 111 on an oscillating shaft individual to that "off" stop 101 identified with the particular base contact in question, and when the ball strikes flap 111, through connection 112, 113, link 114, etc., stop 101 is pro-

jected into the path of crank arm 104 identified with that blade 82 in question, and when crank 104 strikes the stop 101, crank 96 is turned to engage its crank arm 98 in the offset 102 of the blade, thus removing it from the contacts 84 and retaining it so removed. By locating the flaps 111 between the last of those flaps 77 identified with the base immediately preceding the base measuring the value of the hit, and the first of the flaps 77 identified with the base measuring the value of the hit, the completion of runs from plays previously reaching bases is not interfered with on an "outs" hit. Thus if there be runners displayed on first, second and third base through illumination of lamps 62F, 62S and 62D and an "outs hit" of a fourth base valuation is in process of display through the coursing of a ball in channel HO, then the two blades 82, respectively, at the outset resting upon contacts 84H and 84D remain in contact with studs 84 until the home plate position 84H is reached, and there effect the display of a home run and appropriate scoring. However, immediately following the reach of that blade 82 which may have been initially resting on contact 84F to show a run on first base, reaches stud 84H and displays its run, stop 101 identified with the home plate position is projected by the then engagement of the flap 111 lying in the HO path, and the while the run display being made by that blade 82 whose coursing was initiated at contact 84H by the four base "outs hit" is permitted to continue right up to the home plate position 62H, it is prevented from making the home plate 62H, for just before blade 82 reaches the home plate contact 84H 104 strikes its now projecting stop 101 and is moved to an "off" position.

The same is true in connection with each of the stops 101. For example, if there be a display at the first base position as by illumination of one of the lamps 62F from contact of blade 82 with stud 84F, and a play is made to course the ball on path SO of two base "outs hit" value, this results in advancing the display then on the first base position 62F to a display position at third, 62D. However, the "out" stop 101 identified with the second base position 84S is not projected until that blade 82 at the outset of the operation on the first base position 84F has reached and passed the second base position 84S. The same reason applies, in that the "outs" flaps 111 in each channel are located between the first flap 77 of the series associated with the base of the hit and that last flap 77 of the immediately preceding base series.

In any case of coursing of the ball over a "hits" path, whether "safe" or "out," the ball strikes and also operates one of the flaps 141, thus releasing the "balls" and "strikes" registers and any displays of "balls" or "strikes" which may have preceded the "hit," thus making ready for the next play or player as the case may be.

In any case in which the "hit" has coursed an "outs" path as FO, SO, etc., the ball also strikes the flap 191. Thus through connections 189, 188, 185, 184, registering an "out" as previously described. In any such case, when there have been previously registered two "outs" the third such "outs" registered just as in the case of the third "out" registered as a result of "three strikes," results in release of each of the "outs," "strikes" and "balls" registers. This is by reason of the striking of one of the flaps 124 in the channels of the FO, SO series yet further in advance of the flaps 77, 191 and 141, the operating connection being crank 121, the wire 120, the shaft 118 and the release connections 211 and 217. Flaps 124 are a sufficient distance 123 in advance of the flaps 77, 191 and 141 to give time for the making of the last of the displays occasioned by coursing of the ball under these latter flaps before the release is effected. A matter of from one to three feet would be a correct such distance.

This release operation through the connections 115 and 117 tied to the oscillated shaft 118 also effects the release of any of the "out" stops 101 which may have been projected into its "contact off" position through coursing of the ball past flaps 111 in paths of the FO, SO series.

Thus the play integrating unit T carries forward the "base running" displays in an orderly and accurate manner. Thus each base hit made advances all previous "safe hits" in the degree to which the particular hit is evaluated by the path coursed. This is true whether the play is "safe" or "out." Thus "base on balls" similarly advances each "safe" display. Thus running displays of "unsafe" or "outs" hits are discontinued before the base of evaluation is reached and continues "out." This latter is to say that if there are displays on first and second base positions 62F and 62S and a one base "out" is made, the first and second base displays are run to second and third base positions, respectively, and the immediate play stops short of first base position. Thereupon if there ensues coursing of the ball on channel SS for example, the displays now on second and third bases are advanced successively to the home plate position and the absence of display on the first base position is advanced as an absence and without illumination of any of the lamps all the way from first base position to third base position synchronously with the advance of the latest display from home plate position to second base position, where the lamps 62S are illumined and continue illumined to display the safe hit. This is because that blade 82 which originally registered the "out" hit at first base through movement away from the studs 84 before reaching first base contact 84F, remains away from studs 84 throughout the remainder of its coursing to the home plate position H.

Every time any blade 82 reaches stud 84H identified with the home plate position in contact therewith, crank arm 99 engages by its bight 204 the arm 203 (see Figs. 5, 7 and 8) and operates the appropriate one of the scoring registers to register the display of a score. Very obviously in all cases where the crank arms 99 have been swung about by the "outs" stops 101 to move blades 82 to "off" position, the bight of the crank arm 99 lies beyond the end "radially inwards" of the crank arm 203 of the scoring registers and there is no score registered. This operation of the scoring registers and scoring display follows quite so rapidly as the display of runs indicates that runners have reached the home plate position simultaneously, in other words, simultaneously with or just following the operation of the display lamps 62H identified with the home plate position.

Each time that a contact blade 82 succeeding that initiating a display passes the home plate contact 84 and goes beyond, as for example, on account of any play of an evaluation above that of a one base hit, such succeeding blade 82 is either retained in the "off" position in which it reached the contact 84H, or moved from the "on" position in which it reached contact 84H

and there effected the display of a run to an "off" position. This is effected in order to prevent the integrating switch T from making more than one diamond display for plays of greater "hit" value than that of a one base hit. This is brought about through the stop 100 which normally occupies the position in the path which is followed by crank arms 99 in their "off" positions. In such normal position stop 100 engages the "off" crank arms 99 and trips the cranks 96 to release the blades 82 into contact with the studs 84. This is intended to happen for each blade 82 which reaches position 84H in the "off" position, whereby the "running" display is effected from the studs immediately in advance of the home plate stud 84H, irrespective of whether the blades 82 reach the home plate H in "on" position or not. On each play, however, beyond the first base contact 84F the stop 100 is moved to the "off" position radially outwardly of its "on" position, and in this "off" position in the path of the "on" positions of the crank arms 99, whereby the blade 82 initiating the play having passed beyond the stop 100, all succeeding blades 82 which during the continuance of the play thereafter pass it are moved to "off" position.

This is effected by the connections 125, 127, 131, 132, with the register device 133. The lever 132 is initially contacted by the bar 133 after pawl 135 has moved the device one tooth forward, that is to say, after the ratchet 86, 87 has moved the initiating blade 82 to the first stud 84 beyond the home plate position 84H. On the second step of switch T that from the first to the second stud 84 beyond the stud 84H, lever 132 is rocked to move the stop 100 into its "off" position as described. There being but two teeth as shown back of the actuating pawl 135 on the bar 133, bar 133 stops in this position, retaining stop 100 in the "off" position throughout the remainder of the immediate play. Thus it is that no other blade 82 than that which initiates the play from the home plate position 84H can bring about a "running" display. At the close of the running display the coursing of the ball past any one of the flaps 141 in the paths of the "hits" series, FO, SO, SS, etc., through connections 138, 139 operates release pawl 137 of the device 133, permitting it to be restored to its normal position against the stop, in which there again lie two teeth back of the point of the pawl 135.

These various functionings of the integrating unit T may be the better understood by a study of the detail of Figs. 6 to 14, especially of Figs. 9 to 14. Note first Fig. 9, in which is illustrated an approach of a blade 82 to the home plate position 84H while the blade 82 is yet in "on" position contacting with the studs 84, but in which a stop 101 has been projected upwardly as indicated by the dot within its head, (after electrical symbolism) and lies therefore in the path of the crank arm 104 in its "on" position. The crank arm 104 has just touched the stop 101. Fig. 10 shows relations of the parts upon the next ensuing step of the switch T. The crank 104 has swept over and past the upwardly projected stop 101 and thereby been turned through substantially 90° to sweep the associated crank arm 98 into engagement with the blade 82 and into latching engagement with the seat 102 on the blade 82, whereby the blade 82 is moved out of contacting engagement with the studs 84 and locked in such position.

Next note Figs. 11 to 12 which illustrate a "scoring" operation. In this case stop 101 is illustrated with a cross in its center, again using electrical symbolism, showing it to be retracted and blade 82 as reaching that stop 84 next preceding stud 84H identifying the home plate position in the "on" condition. Here the crank arm 104 has not been engaged by a stop 101. Accordingly its bight 204 is engaged over the upwardly projecting arm 203 of the scoring crank 202. The nib 204*a* of this crank arm 99 has also engaged just under the projecting ledge 205 of the base 89. Thereupon as the next step (see now Fig. 12) takes the blade 82 into contact with the stud 84H to display a run reaching home plate, the bight 204 frees the arm 203 and is itself freed from retension by the ledge 205.

Figures 13 and 14 illustrate in detail the functioning of the stop 100. A blade 82 in Figure 13 is shown as having reached the home plate position 84H in "off" position. Stop 100 is about to be engaged by crank arm 99. Figure 14 shows that stop 100 has been engaged by crank arm 99*a* and crank arm 99 swept downwardly to release the retaining arm 98 from blade seat 102 and enable blade 82 to contact with the first stud 84 beyond the home plate position 84H and commence the display of "running" to first base. It is the reverse of this which happens when stop 100 is in the dotted line position shown in Fig. 14. Here it lies in the paths of crank arms 104 in their "on" position just as do the stops 101 when projected to be swept over by the arms 104 and move them to "off" positions as shown in Fig. 13. Thereby blades 82 may not, after they leave the home plate stud 84H again contact with studs 84, except in of course blades 82 which initiate displays from the home plate position 84H as depicted in full in Figs. 13 and 14.

Through contact 151 identified with the register device 133 (see Fig. 5) the batter-up lamp 153 operated over circuit 152 and normally illumined is put out to obliterate the batter's display the moment that the integrating device T makes its first step. This is by reason of the engagement of the upper end of the lever 151 by the pin 151*a* on the side of the bar 133. The circuit 152 is not again closed until device 133 has been released. This is after the play has been completed and another "batter's" display should be made.

Simultaneously with the obliteration of the normal batter's display lamp 153, the circuit 149 of the home plate display at lamps 62H is enabled by closure of switch lever 150 upon its complemental contact. This does not happen at exactly the same moment, however, because the upper end of switch 150 is separated from stop pin 150*a* which is to engage it by the space of one tooth, the same space which separates the end of the device 133 from the upper end of lever 132. Thus upon the second step of switch T from the initial position of any play, the display lamps 62H are enabled, and they remain enabled until the end of the play. Thus runs completed to home plate are displayed during any play. Thus at the close of each play, fresh display of "batter up" is made.

So the game apparatus functions to enable the players to play the game and to enthuse their interest with the rapidity, the accuracy and the realism of the actual baseball play. Yet none of these numerous but simple movements of the simple apparatus are beheld by the players. They see but the results of their skill, and they feel

but the zest of the game, for all of this apparatus is housed beneath the coverings above the paths coursed by the ball. Only the target and the displays are exposed.

As innings are played, each time three "outs" are registered the "innings" register displays an additional half inning in appropriate red or blue and through the connection 233 and 234 similarly shifts the colors of the downward displays. The scoring registers respectively control lamps of different colors. Thus the game can be played for nine or any additional number of innings and to any reasonable number of scores, keeping up good order by the colors, as well as accurate inning indication and accurate scoring.

At the close of the game the players restore the apparatus to normal by simply pushing crank arm 129 inwardly to engage clutch 128 and turning blades 82 through one complete revolution, thereby through stop 100 (during this movement in its "off" position) moving all of the blades 82 commonly to "off" position, which position they properly occupy to start any game. Restoration is completed by oscillating the register crank 162 to release all six of the registers R. Thereupon a new game may be started by the same or different players.

If the new game is to be a game without innings, then lever 66 is moved to shift the gate 63 to the full line position shown in Figs. 3 and 4. Thereupon striking the bull's eye receptacle 45 courses the ball over the "hits" paths of the FS, FO, SS, SO series, and courses balls which strike the ground of the diamond to receptacle 47 and thence to the "strikes" paths S. A man playing alone or any number of players, then throws for the bull's eye to make the maximum of scores possible, each for himself. Lacking or failing skill, "balls" are registered or "strikes," according as the ring receptacle 46 or the face of the diamond are struck by the thrown balls. The arrangement of the scoring is such that two such players can play against each other for the highest score, irrespective of innings, or two teams can so play. As illustrated, the "innings" register or function after each three "outs" but its display is simply discounted. Each player or each team throws until three "outs" are registered, whereupon their opponents are given their turn.

An apparatus organization so fully meeting the game requirements and so flexible in adaptation necessarily is possessed of innumerable possibilities of modification without departing from its generic spirit. It is outstandingly true as it is true of most mechanisms, that the functionings may be carried out through the utilization of other kinds of power than those disclosed. Thus instead of mechanical power for all of the integrating and registering operations, pneumatic, hydraulic, electric or other power might be utilized. I have chosen to show in Figure 18 the operating mechanism O for the integrating mechanism T and the registers R as it may be electrified.

Referring to Fig. 18 which is a plan form diagram of the same order as of Fig. 5, similar reference numerals and legends are utilized to designate similar parts. However, instead of operation by flaps 77 depending in the paths P, electric contacts 235 are located in these paths in position to be closed by the ball as it variously courses them. These contacts control a group of four relays 236. These four relays through a limit switch 237 control driving motor 238 for the integrating device T. According to whether one or another of the relays 236 is energized, the limit switch 237 operates to limit the operation of the motor to the driving of the integrating device T through various multiples of 90° up to 360, thus driving it to the various base positions 84F, 84S, 84D and 84H.

The contacts 235 and the relays 236 have their numerals provided with suffixes F, S, D, H, indicating their relation to the various base positions 84F, 84S, etc. The relays are connected through brushes 239 with the similarly distinguished (through suffix designations) limiting contact segments 240 of the switch 237, each one of which from 240F to 240H in order is successively 90° greater in extent than the preceding one. There is one pair of contacts 235 provided for each base position, respectively, the safe and out position (thus one in each of the channels FS and FO) and this pair is connected in parallel to the corresponding relay 236 (thus contacts 235F connected to 236F). The relays are provided with locking contacts 241, respectively connecting with the brushes 239 of the limit switch 237, whereby they are locked up for that period required for the limit switch 237 to have the corresponding brush 239 traverse the corresponding segment 240 (thus in the instance of relay 236F the segment 240F extending through 90°).

Limit switch 237 is connected with the integrating switch T and the motor 238 through a clutch 242 connected in parallel with the motor 238. Contacts 243 of the relays in parallel control the motor and clutch circuit. Thus the motor and clutch circuits are closed as long as any one of the relays 236 is energized and this is as long as is required for the motor to drive the limit switch 237 through the extent of the particular segment 240 through which the relay 236 is locked up.

This phase of the electric operation should therefore be clearly apparent. Take an example from a base position. If the contacts 235—D associated with paths DS and DO are either of them energized relay 236—D is pulled up and locked up through segment 240D, whereupon the integrating switch T and the limit switch 237 are driven by motor 238 through 270°, the extent required to bring a contact plate starting from the home plate position 84H to the third base position 84D. At this juncture the associated brush 239 leaves segment 240—D and the circuits of motor 238 and clutch 242 are broken, bringing switch T to rest and unclutching the limit switch 237 therefrom.

The limit switch 237, because detachably clutched to the motor drive, is free to return to a determinate normal position each time it is operated, thus measuring from a determinate starting point each time, the angularity of its movement. This determinate starting point is fixed by the engagement of a dog 244 carried by the switch with a fixed stop 245. The switch is always brought back to this position through the bias effected by a weight 246 or its equivalent.

If the ball coursing the path P is coursing a safe path, as for example, DS in the instance just now assumed, the appropriate blade 82 of the integrating device T comes to rest on the contact at position 84D. If, however, the coursing is in an "out" path, as for example, DO, the appropriate one of the stops 101 is projected to bring about retraction of blade 82. To this end the relays 236 control each a contact 247, each of which is individually identified with one only of the actuating electrode magnets or solenoids 248 through which stops 101 are in this embodiment

operated through draft on a core or an armature in a manner so well known that no further description or detail showing is required. However, these stops 101 are not immediately operated to "outs" position upon the closure of contacts 247, but only during the final fraction of the last 90° of movement of the switch T, whereby all contacts "on" by reason of "safe" runs are kept "on" to the home plate contact 84H as in the mechanical embodiment. Thus the closure of contacts 247 merely enable the circuits of magnets 248 without completely effecting them. The complete effecting is through a supplementary "outs" relay 249 itself controlled by multiple contacts 250 in the "outs" paths P only, and in turn through contact 251 governing the connection of the contacts 247 by way of circuit 252 which it controls through contact ring 253 on the limit switch 237 in multiple to the short supplemental segments 254 identified one with each of the limit segments 240 and terminating in the same radial line with these segments. Segments 254 are electrically insulated from segments 240 but closely adjacent thereto, so close as to be respectively connected therewith by reason of the width of the respective brushes 239 individual each to a segment 240. Thus while at the instant of pulling up of any relay 236 and until the final 30 or 45 degrees of movement of switch T for any actuation, there is no energization of relays 248 and stops 101 are not projected in the paths of crank arms 104. In this last 30 or 45 degrees or thereabouts, stops 101 are projected and therefore the blade 82 representing a runner who is to be "out" at third base is moved to "off" position before the contact 84D is reached. The closure of contact 250 energizes relay 249 which locks up through contacts 255 and locking circuit 256, presently to be described, closing and maintaining closed contacts 251. The moment the wide ends of brushes 239 strike the short segments 254, power is placed upon contacts 247, and there is energized that relay 248 which is identified through contact 247 with that relay 236 which has pulled up—in this instance relay 236D energizing the solenoid 248—D identified with contact 84D.

Locking circuit 256 extends through a normally open limit switch 257 which is opened against the pressure of spring 258 by the dog 244 whenever the switch is in its normal position as illustrated, but closed when the switch moves a few degrees away from normal position and maintained closed until the switch is returned to normal position. Thus return of the limit switch 237 to normal position opens switch 257 and unlocks relay 249. This, however, is after any relay 248 energized as a result of energization of one of the relays 236 has been de-energized simultaneously with passage off contact 240 of associated brush 239 of the limit segments with resultant release of relay 236 and opening of contacts 247. Therefore, return movement of the switch 237 does not reenergize solenoid 248.

For orderly succession of operation the contacts 250 are located a considerable distance 259 (say from one to three feet) in advance of the nearest of the contacts 235. Contacts 235, if desired, may be located in rectilinear alignment transversely of the troughs.

There is required no special restoring device for stops 101 as in the mechanical embodiment, for the reason that the retracting springs (normally provided in connection with magnetically operated devices) restore these stops 101 to the normal positions when the magnets 248 are deenergized as described.

Stop 100 is simply operated through a magnet 260. Its normal position, as in the mechanical embodiment, is such that it operates crank arms 99 to throw the blades 82 into "on" position. When solenoid 260 is energized it is pulled radially outward into the path of movement of arms 104 to throw them into the "off" position. Magnet 260 is controlled from circuit 261 from a limit switch 262 normally open, but which is operated into closed position by passage of the dog 244 over its upper end. (Note the dotted line positions of the switches 257 and 262.) The distance 263 between the switches 257 and 262 is such that limit switch 237 and that contact which starts from the home plate contact 84H has passed beyond stop 100 before switch 262 is operated by lug 244. Thus the run is instituted. Yet immediately following, the magnet 260 is energized and stop 100 projected in the paths of arms 104, preventing any subsequent blade 82 from instituting a run until that blade which has started the run from contact 84H shall have completed its run. On the completion of the run the return of switch 237 to the normal position illustrated results in dog 244 passing switch 262 without operating it since its end is beyond the engagement of the dog, but when dog 244 strikes switch 257 to open switch 257 the hook 264 carried by switch 257 engages over a pin 265 on the switch 262 and operates it to open position, thus deenergizing solenoid 260 and restoring stop 101 to its normal position.

The registers R are most simply operated by applying to their respective operating and release pawls 163 and 159, operating and release magnets 266 and 267. These magnets "strikes" and "outs" are respectively operated by actuating contacts 268 and release contacts 269. The actuating and release contacts 268, 269 are respectively located in the same paths P and in the same relative positions in those paths as are the associated mechanical flaps in the mechanical embodiment. Thus the actuating contacts 268 for the "strikes," and "outs" registers are located in the respective strike, and outs paths S and FO, SO, etc. The energizing or actuating circuits from the contacts 268 need no special designation because they are outstandingly identified with the registers on which the legends are printed, "strikes" and "outs." However, it should be stated that the "balls," "strikes" release circuit 270 (for release on "hits" plays to paths FS, FO, etc.) corresponds to the release achieved through connections 219, 220 of Fig. 5 and is operated with solenoid 260 from circuit 261, while the release circuit 271 (for release on "three outs" or three "strikes") corresponds to that achieved through shaft 122 and connections 120 and 121 of Fig. 5 identified with release through three "strikes" and three "outs."

The operation of the scoring registers through the actuating magnets 266 results in simplification of the shift from "blues" to "reds." That magnet 266 is energized whose connection to the source of power is effected through that same switch 234 which controls the circuits 147 and 148 effecting shift of team colors on the display board (Figs. 5 and 16). Actual energization is over a circuit 272 controlled from contact 273 opened and closed by scoring crank 202 identified with the integrating device T.

Restoration at the ends of innings is simply achieved from a restoring push button 274 which energizes and locks up relay 236—H over circuit

275 for one complete revolution of the limit switch 237 and hence of device T. Simultaneously, the push button energizes circuit 271 and solenoid 260, and also release circuit 276 identified with that release magnet 267a which controls the entire release shaft 160. Thus simple depression and release of the push button 274 releases all the registers. Stop 100 initially moved to "out" position is held there by closure of contact 262 so that all blades 82 are moved to "off" position.

From the foregoing it is to be seen that the electrical embodiment brings about the feasibility of great condensation in size of the apparatus without electrical complications. Relatively few contacts are required, relatively few relays, and yet the entire operation is simple and completely automatic. The electric equipment may cost slightly more than the simple mechanical equipment, but this is doubtful since relays and motors of the small sizes and powers required here are of standard manufacture at the hands of the electric and telegraph and telephone companies. The compactness of the electric modification renders it especially suitable for small cabinet or table type embodiments of the game of the order of those commonly found in amusement halls and parlors of various description.

Not only do I wish to make it clear that modifications of embodiment as to kind of power are to be expected, but also in form and kind of the detailed apparatus to carry out the various functionings which collectively make up the effects of the game. Innumerable equivalent devices known to those skilled in the art, pertaining to various mechanical movements and electrical interconnections and effects may be employed as equivalents or as substitutions in the case of slight inaccuracies or mis-adjustments or short circuits or cross-circuits or the like, and as such are entirely within the purview of my invention.

In the claims there are used the terms "no hits" display and "batters up" display. The "no hits" display is a display such as "strike" or "ball" or any other having a "no hit" value. "Batters up" display refers to one of the colored lamps 153 adjoining the home plate position, see Fig. 16. These are the lamps which indicate that a new batter is up after a play has been finished.

The appended claims are intended to protect to me the invention in all components of its generic spirit, and this irrespective of the influence of mere circumstances upon the terminology chosen.

What I claim is:

1. A ball-throwing game embodying means pre-establishing a plurality of similar paths for balls affording them the same general course of travel, and comprising a plurality of ball paths commonly in the course of a projected ball, a target comprising a unit target recess to receive and further a ball projected upon its course and commonly connected with said paths to direct it in common to but variably to different ones of said paths, a baseball runs display arranged with the base indications in numerical progression counterclockwise, and means operable from the coursing of the ball upon the paths respectively to operate the runs display to operate the said runs display in numerical succession of the bases counter-clockwise, in which game the target is in the form of a unit receptacle upon a vertically extending display board, and a baseball diamond display is mounted on said board surrounding said receptacle target and centered thereon whereby the receptacle receives pitched balls in the location of the pitcher's box.

2. A ball-throwing game embodying means pre-establishing a plurality of similar paths for balls affording them the same general course of travel, and comprising a plurality of ball paths commonly in the course of a projected ball, a target comprising a unit target recess to receive and further a ball projected upon its course and commonly connected with said paths to direct it in common to but variably to different ones of said paths, a baseball runs display arranged with the base indications in numerical progression counterclockwise, and means operable from the coursing of the ball upon the paths respectively to operate the runs display to operate the said runs display in numerical succession of the bases counterclockwise, in which game the target comprehends a second ball target recess adjacent the first and there is provided an additional path for the coursing ball individual to said second unit receptacle, a strikes display, means for operating it from the coursing of the ball upon said individual path, together with means to alternate the connection of the target receptacles respectively with the paths of the runs and strikes display, respectively.

3. A ball throwing game embodying means pre-establishing a plurality of similar paths for balls affording them the same general course of travel, and comprising a plurality of paths commonly in the course of a projected ball, target means adapted variably to course the ball over one path or another of the plurality when the target is struck, a baseball "runs" display, and means operating it operable from the coursing of the ball over said paths, respectively, an "outs" display, and means operating it associated with some of the said paths, the "runs" and "outs" displays being combined together to constitute a baseball diamond display, means terminating the "runs" display in prolonged base displays, and means terminating the "outs" display in momentary displays between bases.

4. A ball throwing game comprising a plurality of paths commonly in the course of a projected ball, a baseball diamond display, and a unit "runs" integrating device having integrating movements progressively operating the display through successive ranges of 90° extent constituting each range a multiple, and means variably operated by the coursing of the ball upon the various paths to variably progress the integrating means together with means connected with the integrating means to indicate "outs" determinations corresponding with all of the bases, and means associated with said paths of the projected ball in common for operating said "outs" determination means, in which game the baseball diamond display operated by the integrating device comprehends both base and between base displays, and the coursing of the ball determining "outs" terminates the between-base display within the last multiple of its progress to designate "outs."

5. A ball throwing game comprising a plurality of paths commonly in the course of a projected ball, a baseball diamond display, and a unit "runs" integrating device having integrating movements progressively operating the display

through successive ranges of 90° extent constituting each range a multiple, and means variably operated by the coursing of the ball upon the various paths to variably progress the integrating means together with means connected with the integrating means to indicate "outs" determinations corresponding with all of the bases, and means associated with said paths of the projected ball in common for operating said "outs" determination means, in which ball throwing game the unit runs integrating device comprises a four-arm electric switch and juxtaposed contacts connected with the display, and there is provided means operable from the coursing of the ball and associated with each of said paths to separate the contact arms from their juxtaposed contacts when the arms have incompletely traversed the last multiple of their progress, whereby "out" is indicated.

6. A ball throwing game comprising a plurality of paths commonly in the course of a projected ball, a baseball diamond display, and a unit "runs" integrating device having integrating movements progressively operating the display through successive ranges of 90° extent constituting each range a multiple, and means variably operated by the coursing of the ball upon the various paths to variably progress the integrating means together with means connected with the integrating means to indicate "outs" determinations corresponding with all of the bases, and means associated with said paths of the projected ball in common for operating said "outs" determination means, in which ball throwing game the baseball diamond display operated by the integrating device comprehends between base displays and the "outs" determining means act upon the between-base displays to terminate the same short of the bases, and there are provided locking devices connected with the "outs" determining means and effective to lock out and thereby to prevent display from any terminated source during progress of the integrating unit through its remaining multiples of the display, together with means to release the lock-out associated with the first multiple of movement of the integrating unit.

7. A ball throwing game comprising a plurality of paths commonly in the course of a projected ball, a baseball diamond display, and a unit "runs" integrating device having integrating movements progressively operating the display through successive ranges of 90° extent constituting each range a multiple, and means variably operated by the coursing of the ball upon the various paths to variably progress the integrating means together with means connected with the integrating means to indicate "outs" determinations corresponding with all of the bases, and means associated with said paths of the projected ball in common for operating said "outs" determination means, in which ball throwing game the baseball diamond display operated by the integrating device comprehends both base and between base displays, and the coursing of the ball over certain of said paths terminates the display within the last multiple of its progress to designate "outs," there being provided means of such termination in connection with each multiple of integrating movement of the integrating unit, each such means being operable from a different one of said certain paths, together with means to release all of said display terminating devices commonly operable from all of said certain paths.

8. A ball throwing game comprising a plurality of paths commonly in the course of a projected ball, a baseball diamond display, and a unit "runs" integrating device having integrating movements progressively operating the display through successive ranges of 90° extent constituting each range a multiple, and means variably operated by the coursing of the ball upon the various paths to variably progress the integrating means together with means connected with the integrating means to indicate "outs" determinations corresponding with all of the bases, and means associated with said paths of the projected ball in common for operating said "outs" determination means, said ball throwing game including a scoring display, and means near the terminus of the fourth multiple of movement of the "run" integrating unit to operate said scoring display, which operating means is under the control of the "outs" determining means.

9. A ball throwing game comprising a plurality of paths commonly in the course of a projected ball, a baseball diamond display, and a unit "runs" integrating device having integrating movements progressively operating the display through successive ranges of 90° extent constituting each range a multiple, and means variably operated by the coursing of the ball upon the various paths to variably progress the integrating means together with means connected with the integrating means to indicate "outs" determinations corresponding with all of the bases, and means associated with said paths of the projected ball in common for operating said "outs" determination means, said ball throwing game including a scoring display, means between the "outs" determining means associated with the fourth multiple of movement and the terminus of the fourth multiple of movement of the "run" integrating unit to operate said scoring display, which operating means is under the control of the "outs" determining means.

JOHN P. TARBOX.