Feb. 3, 1953 T. C. BARTLAM ET AL 2,627,411

BALL ACTUATED RACING GAME

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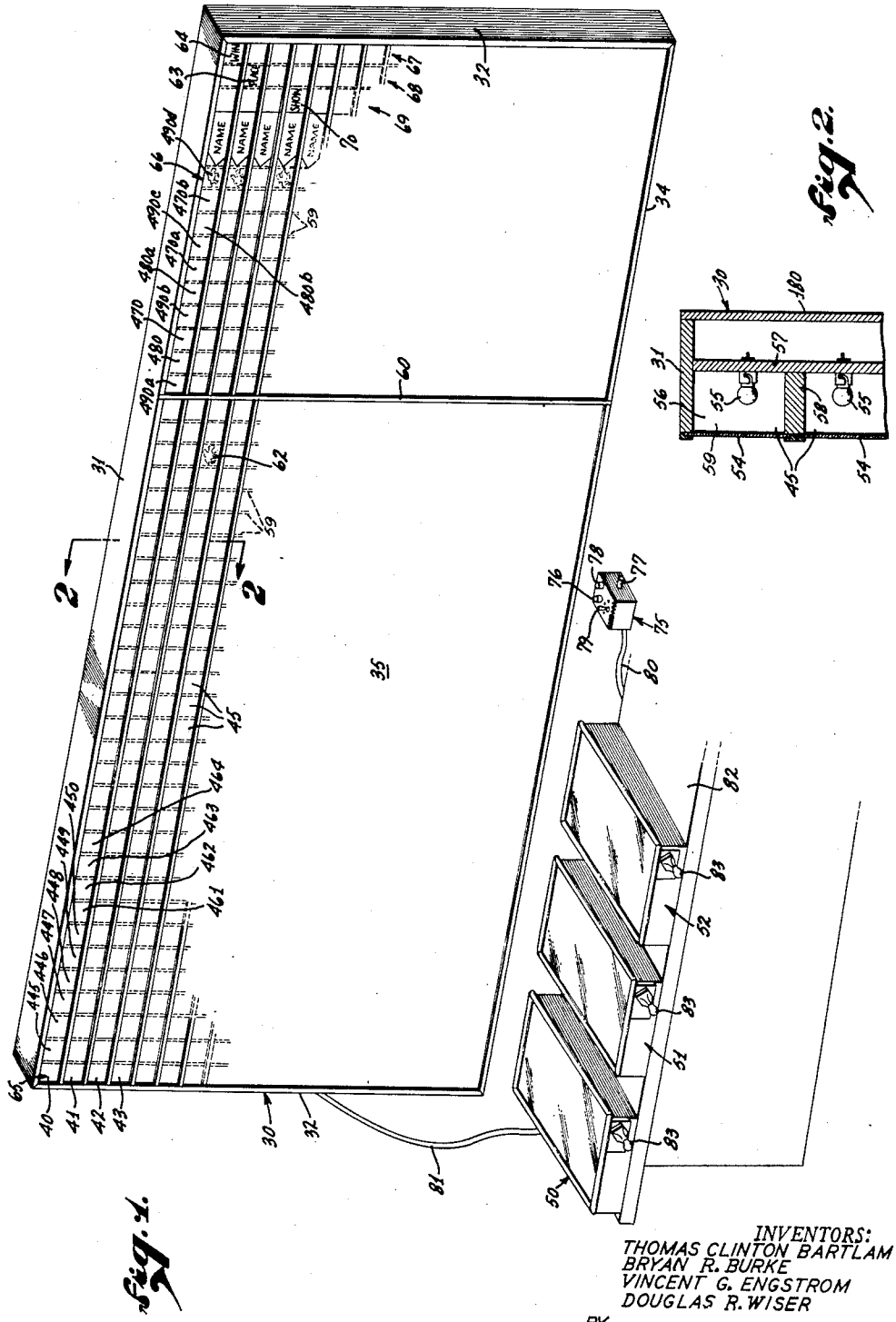


Fig. 1.

Fig. 2.

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BALL ACTUATED RACING GAME

Filed Sept. 18, 1947 10 Sheets-Sheet 2

Fig. 3.

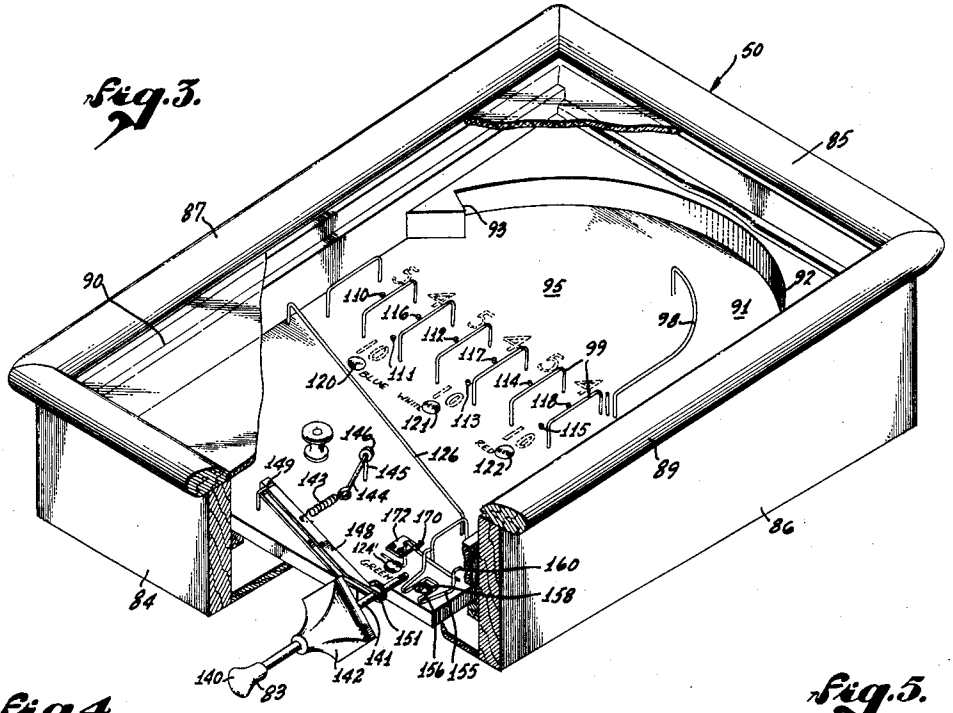


Fig. 4.

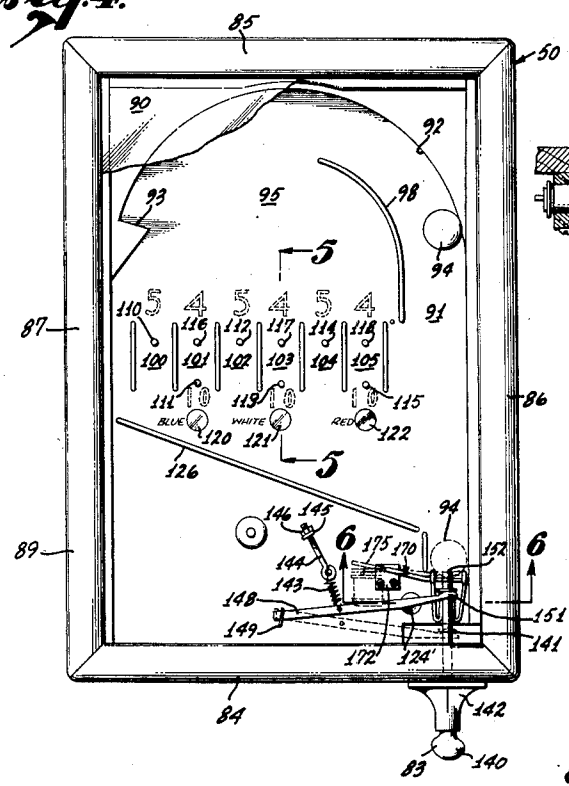


Fig. 5.

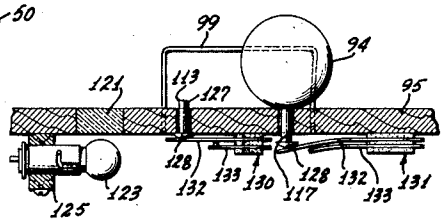
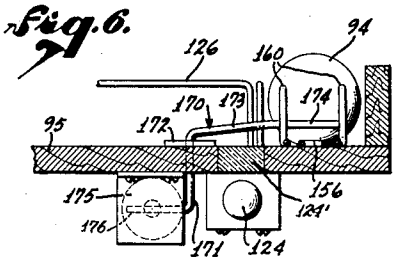


Fig. 6.



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BALL ACTUATED RACING GAME

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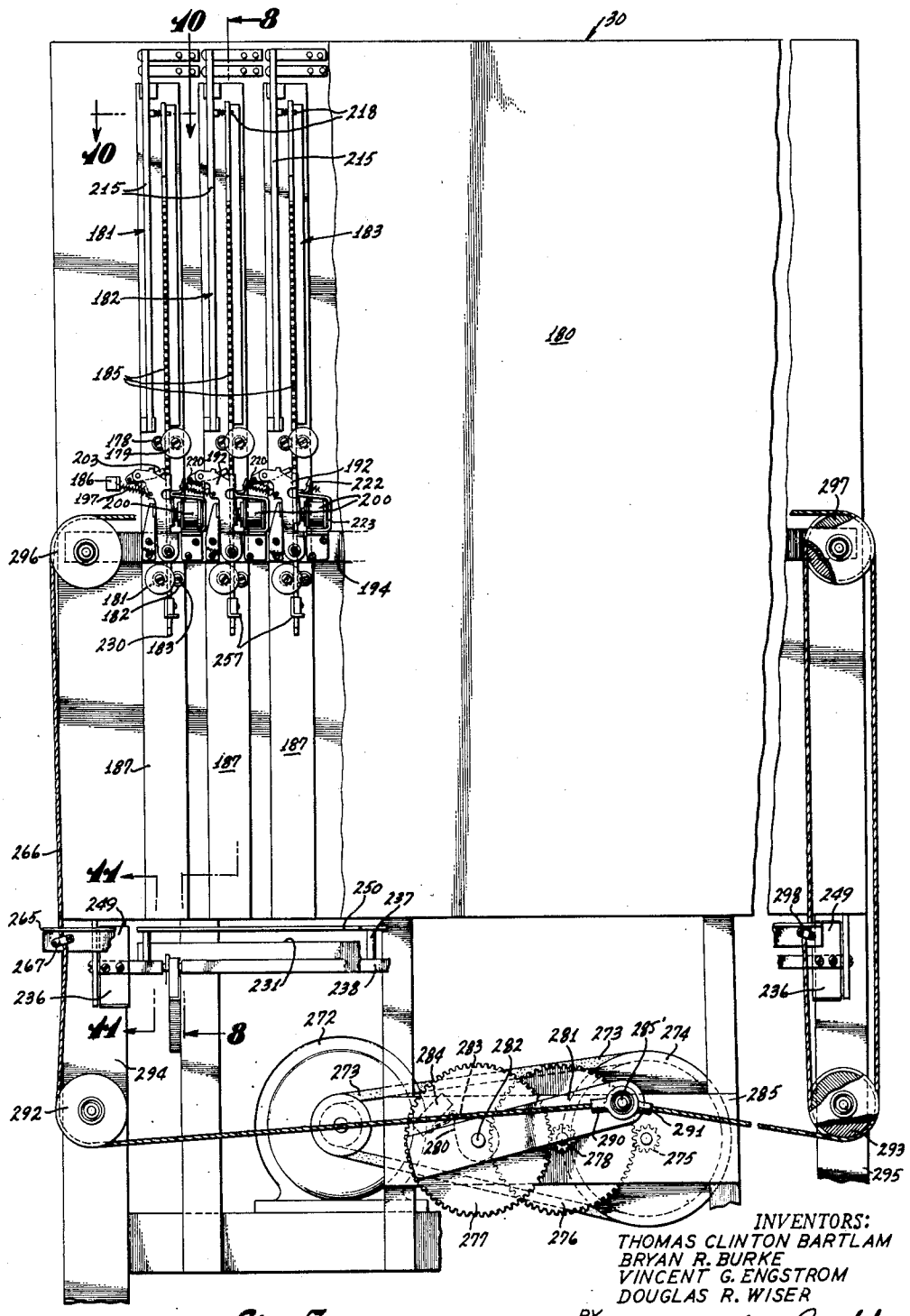


Fig. 7.

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BALL ACTUATED RACING GAME

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Fig. 8.

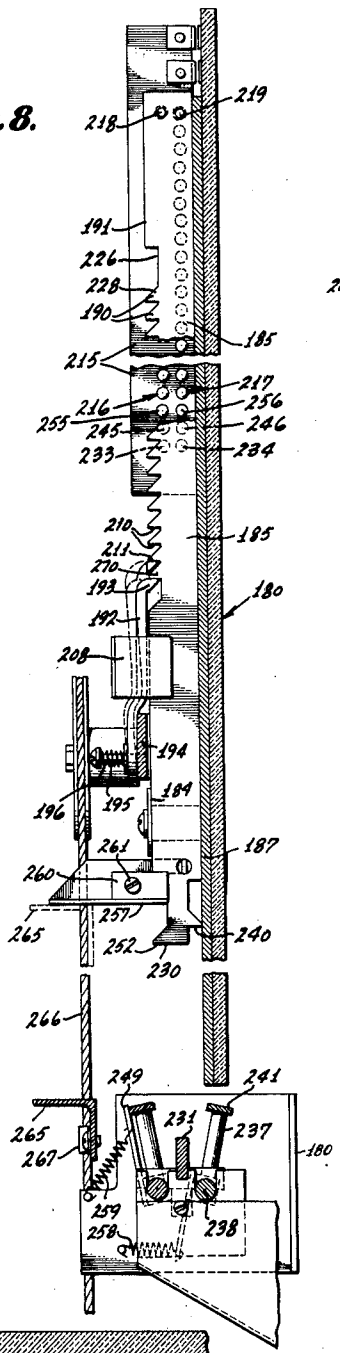


Fig. 9.

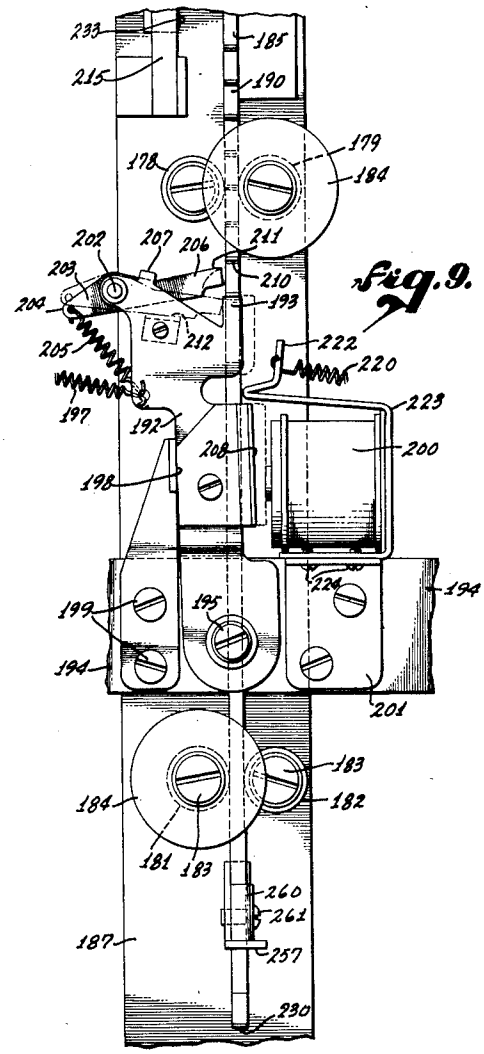


Fig. 11.

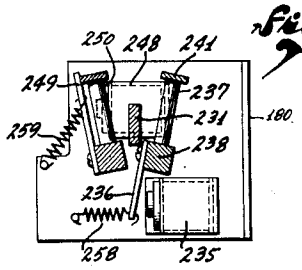
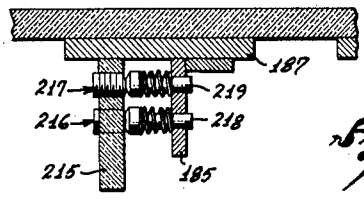


Fig. 10.



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BALL ACTUATED RACING GAME

Filed Sept. 18, 1947 10 Sheets-Sheet 5

Fig. 12.

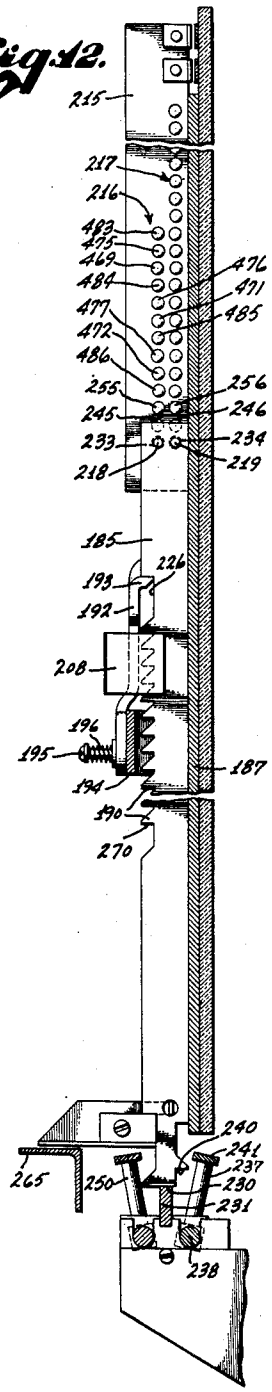


Fig. 13.

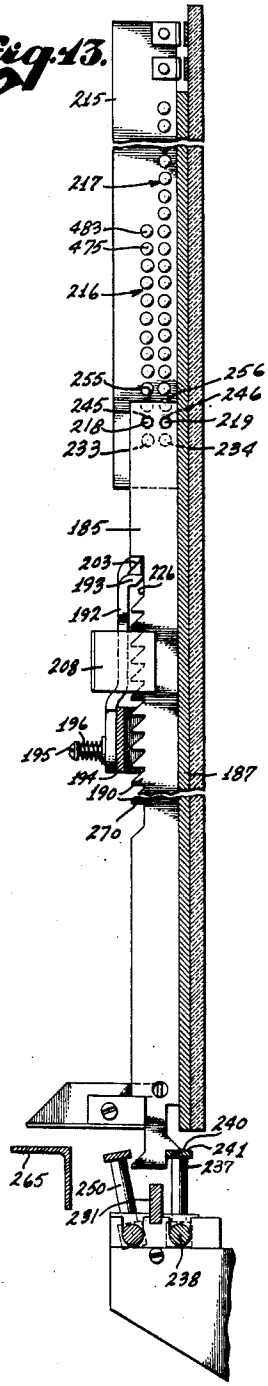
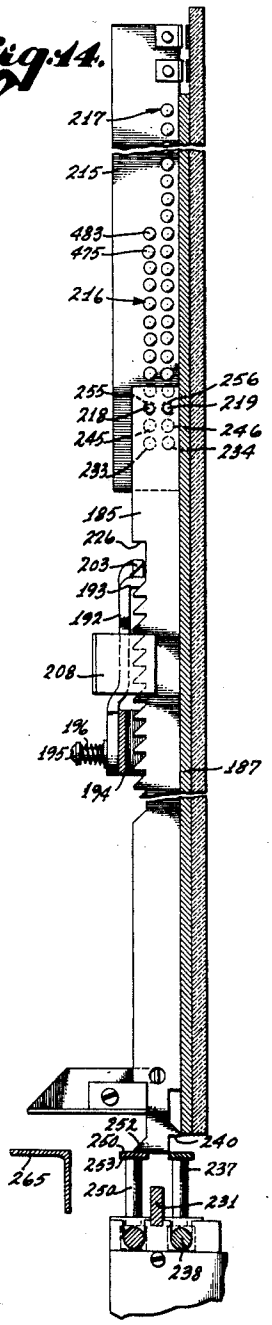


Fig. 14.



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BALL ACTUATED RACING GAME

Filed Sept. 18, 1947 10 Sheets-Sheet 6

Fig. 15.

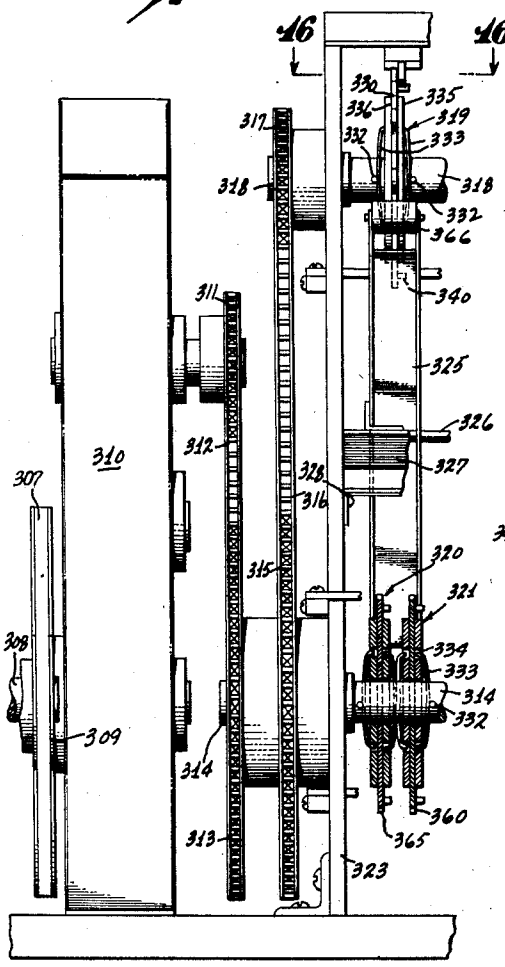
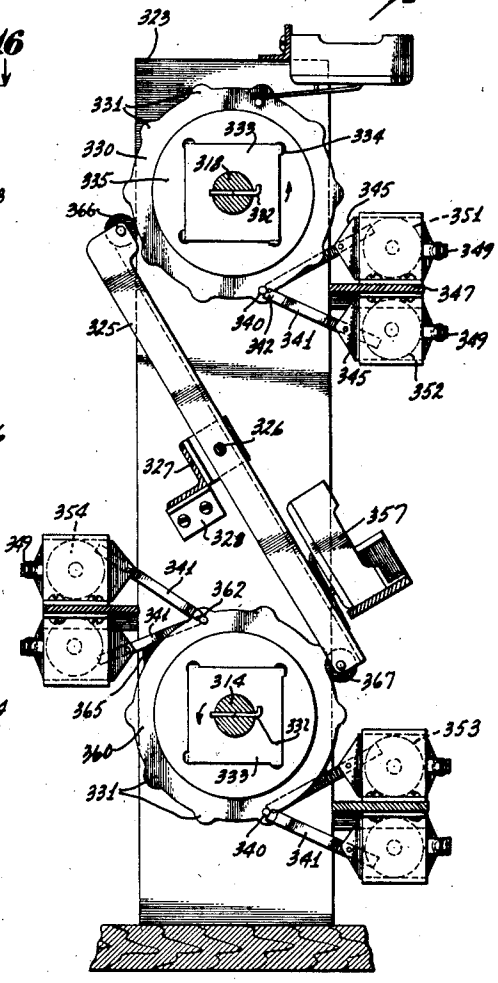


Fig. 17.



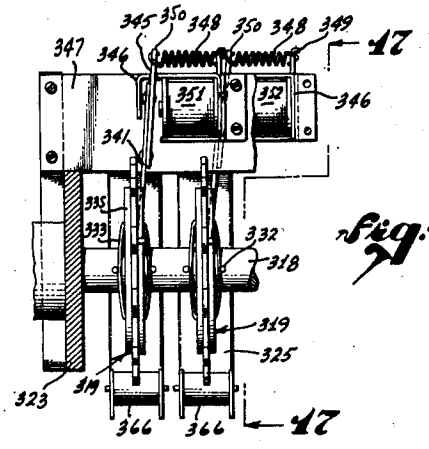


Fig. 16.

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BALL ACTUATED RACING GAME

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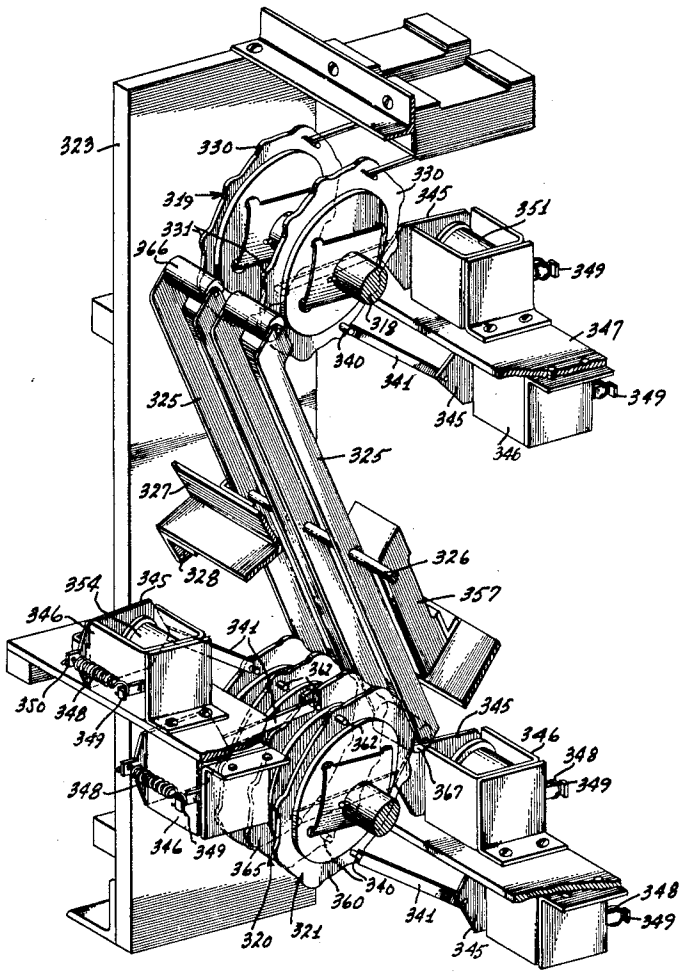


Fig. 18.

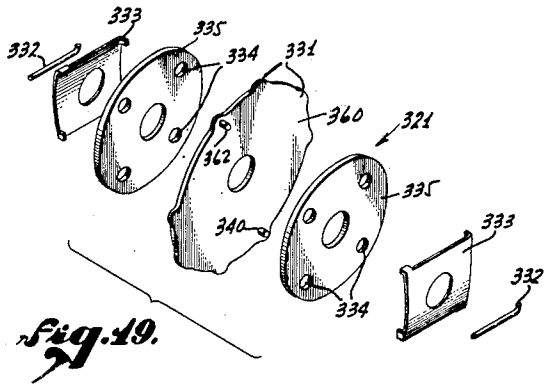


Fig. 19.

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BALL ACTUATED RACING GAME

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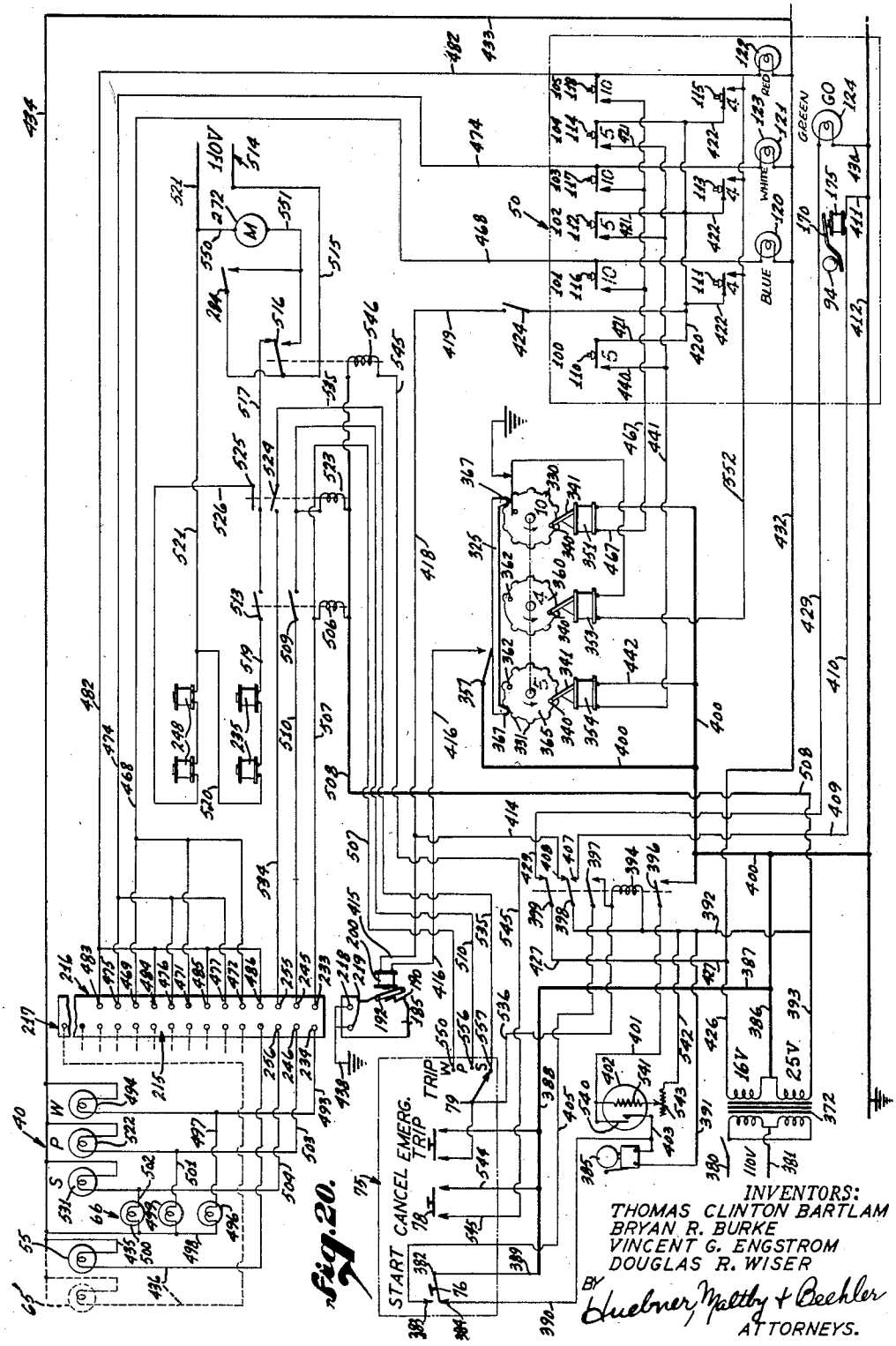


Fig. 20.

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BALL ACTUATED RACING GAME

Filed Sept. 18, 1947 10 Sheets-Sheet 9

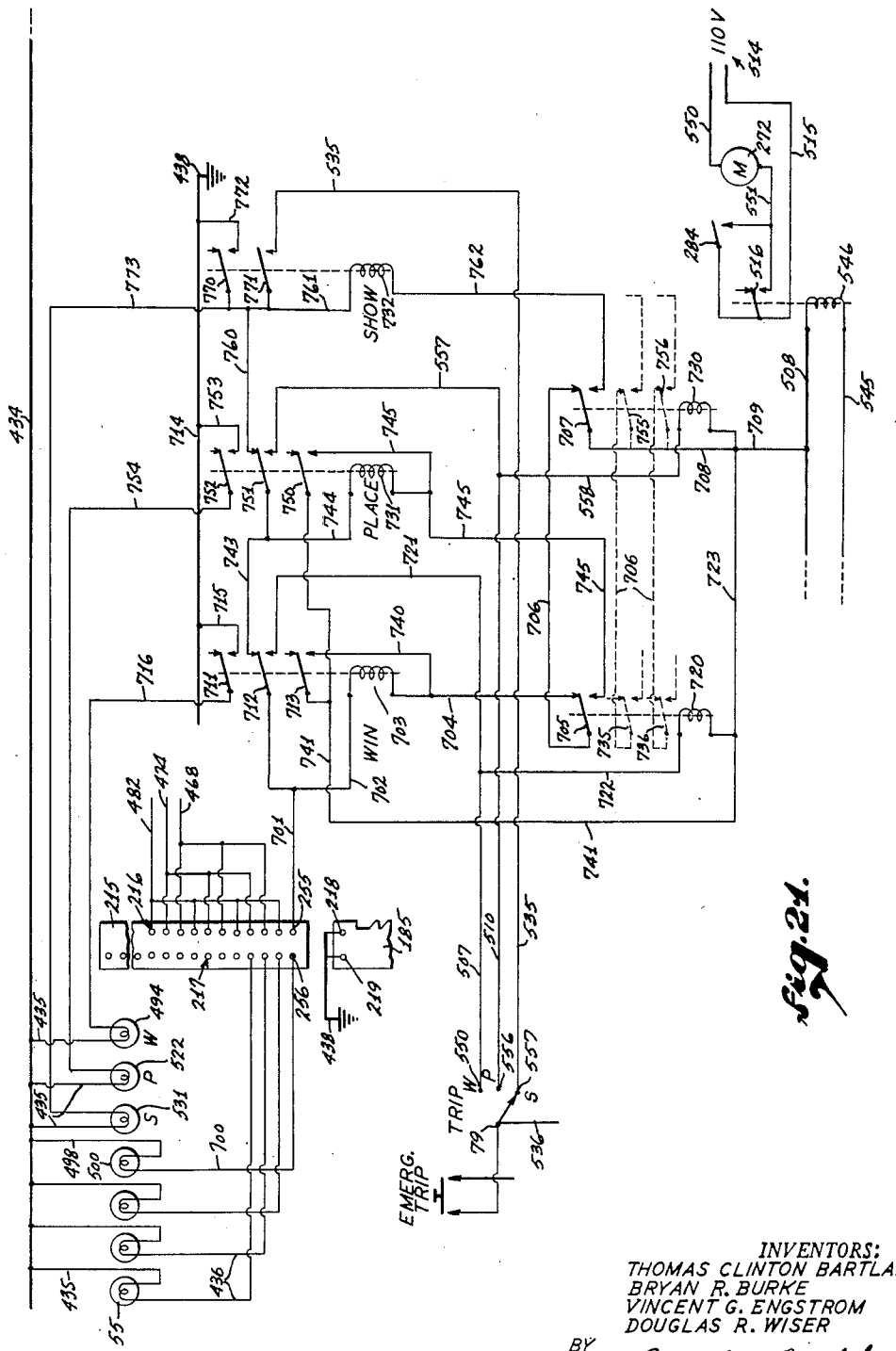


Fig. 24.

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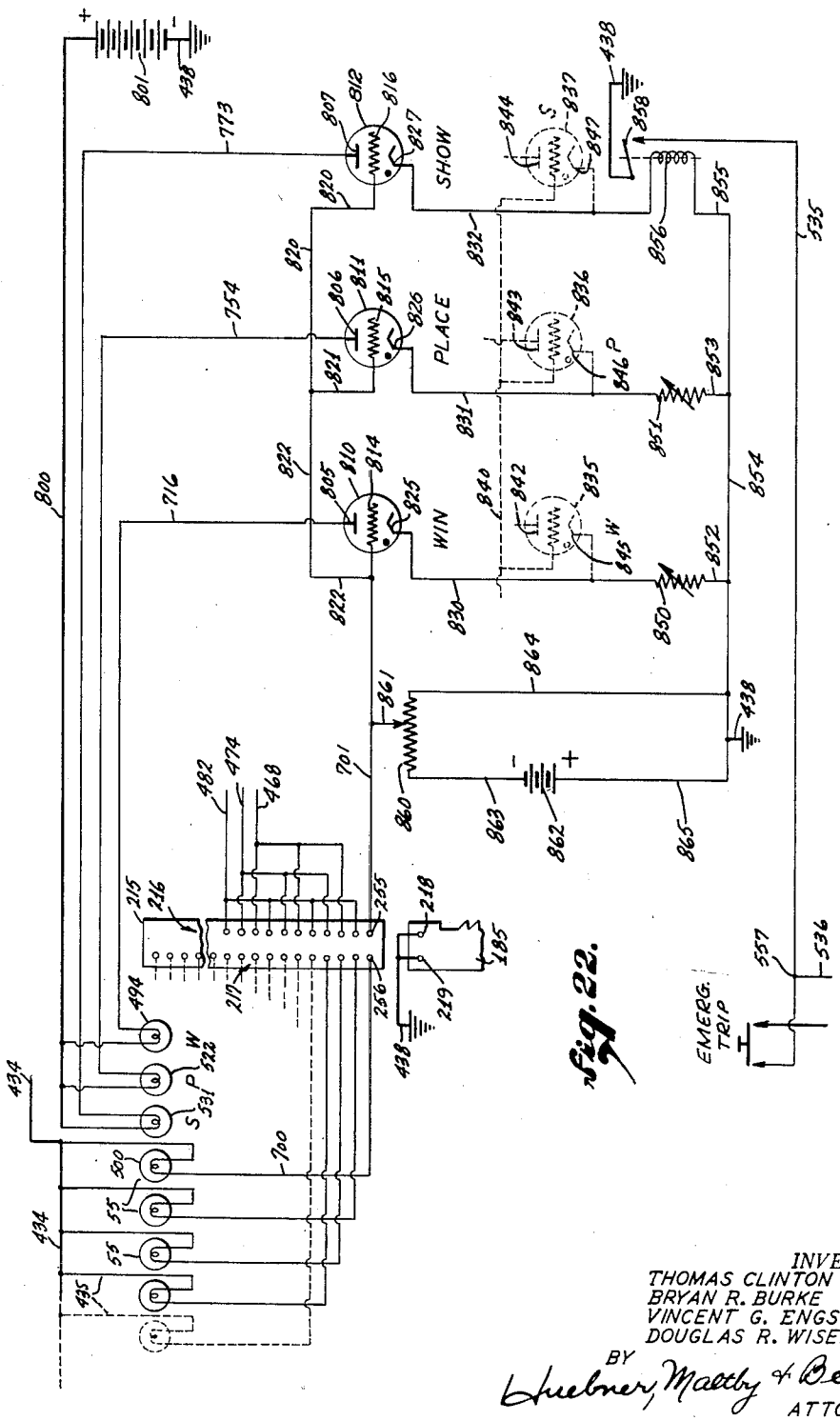


Fig. 22.

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Patented Feb. 3, 1953

2,627,411

UNITED STATES PATENT OFFICE

2,627,411

BALL ACTUATED RACING GAME

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Application September 18, 1947, Serial No. 774,742

18 Claims. (Cl. 273—86)

1

This invention relates to game apparatus and more particularly to a simulated racing game generally intended for competitive play by any number of players or individual playing units operatively connected to a collective annunciator panel or the like.

Various forms of racing games are known to the prior art including those intended to simulate, for example, horse racing, automobile racing and analogous progress sports. The mechanism associated with such games, however, has frequently tended to deteriorate and to cause considerable trouble in operation. Attempts to secure more desirable and trouble-free results have invariably led to exorbitant original and replacement costs. Moreover, in the course of play it is extremely irksome and costly to find that some remote portion of the equipment is faulty and must be tediously located and possibly removed for replacement or repair. In view of the fact that such games are generally intended for the amusement of paying participants whose available time for such recreation is limited, it is, of course, of utmost importance that the game apparatus be as simple and positive in operation and as free from operative break-down as possible.

It is also important in apparatus of this character to incorporate as many of the details characteristic of real races as is feasible. Such atmosphere of reality, however, must be carefully balanced against the necessity of substantially continuous and expeditious playing so as to insure maximum return to an owner utilizing the apparatus for profit.

The game which is the subject matter of this application dispenses with many unnecessary trivialities and details whose incorporation would involve excessive outlays of equipment, unnecessary intricacies in manufacture, and undue expenditure of time during operation. Notwithstanding this fact, the game incorporates for the first time certain desirable features intended to lend an atmosphere of reality including, for instance, the provision of multiple winners such as a first winner, a second winner or "place" and a third winner or "show," including also provision for ties or "dead heats" for such positions, depending upon a selected construction employed.

This game also features the provision of a "stretch" or the like at a short space before the finish line in which the provision is made for a "fast finish." But when relatively few players are competing it is often both unnecessary and

2

undesirable to have more than one winner and, accordingly, provision is made for selective modification of the game to provide for only a single winner, or for first and second places only. Obviously, any number of winners will be seen to be possible by duplication or modification of the disclosed pertinent structures.

In view of the above considerations and others which might obviously be mentioned, it is among the objects of this invention to provide a new and improved simulated racing game.

It is another object of this invention to provide, in a game of the character described, new and improved means for carrying out the purposes of the game.

Another object of the invention is to provide new and improved features particularly adapted to a simulated horse racing game, but which may optionally be used upon any type of racing or progress technique, such as automobile racing, airplane racing, ship racing and the like.

It is a further object of this invention to provide a new and improved game apparatus of the desired character described which is simple in construction, relatively economical in manufacture, and enduring and trouble-free after repeated usage.

It is among the more specific objects of this invention to provide a new and improved game apparatus of the character described incorporating an optional win, place and/or show feature with or without the great likelihood of a tie or dead heat, and in any such win, place, show, etc. position optionally also to provide selective means for the inclusion of as many or as few successive winners as may be desired.

Another or specific object of this invention is to provide a racing game incorporating a "fast finish" or the like.

Another further specific object of the invention is to provide a new and improved progressive race indicator mechanism and regulator.

Yet another object of the invention is the disclosure of preferred mechanical, conventional relay and electronic mechanisms as illustrative of suitable optional means for accomplishing the desired results.

Still another specific object of the invention is the provision of a new and improved well balanced individual playing unit.

It is also among the objects of this invention to provide improvements over prior art games and apparatus intended to accomplish generally similar results.

Other and further objects and advantages of

this invention will become apparent from the drawings and the following specifications relative thereto.

In the drawings:

Figure 1 is a front perspective view of a preferred form of game apparatus illustrative of the invention.

Figure 2 is a sectional view as on a line 2—2 of Figure 1.

Figure 3 is a top perspective view of a playing unit, parts being cut away to show details of construction of said unit and a playing board therein.

Figure 4 is a plan view of a playing unit.

Figure 5 is a sectional view as on a line 5—5 of Figure 4 showing a ball in the act of rolling over the board.

Figure 6 is a sectional view as on a line 6—6 of Figure 4.

Figure 7 is a fragmentary elevational view of the back portion of the annunciator.

Figure 8 is a vertical sectional view as on a line 8—8 of Figure 7.

Figure 9 is a detailed fragmental view of an operative portion of a stepping bar relay in part as seen from the left-hand side of Figure 8.

Figure 10 is a detail sectional view as on a line 10—10 of Figure 7.

Figure 11 is a detailed sectional view as on a line 11—11 of Figure 7.

Figure 12 is a sectional view of a stepping bar and associated parts similar to Figure 8 showing the parts in a win position.

Figure 13 is another view similar to Figures 8 and 12, but showing the parts in a "place" position.

Figure 14 is yet another view similar to Figures 8, 12 and 13, but showing such parts in a "show" position.

Figure 15 is an end elevational view, with parts broken away, of a driving mechanism for operating certain control apparatus in the annunciator panel.

Figure 16 is a sectional plan view as on a line 16—16 of Figure 15.

Figure 17 is a vertical sectional view as on a line 17—17 of Figure 16.

Figure 18 is a perspective view of the driving mechanism of Figures 15, 16 and 17.

Figure 19 is an exploded view of a clutch mechanism.

Figure 20 is a diagrammatic plan view of an operative and the wiring mechanism of the preferred form of the game apparatus as illustrated in Figures 1 through 18, some parts being simplified and other parts omitted.

Figure 21 is a wiring diagram of a modified game apparatus.

Figure 22 is a wiring diagram of a still further modified game apparatus.

Referring first to the apparatus as illustrated generally in Figure 1 and also incidentally in Figure 2, there is shown an annunciator panel or backboard designated by the numeral 30, including a top 31, ends 32 and a bottom 34. The front face 35 of the annunciator may be divided into a plurality of parallel horizontally disposed lanes, such as 40, 41, 42 and 43, etc. preferably extending entirely thereacross. Each lane may be additionally divided into any number of segments or positions 45 upon which the progress of successive plays across the board for each corresponding player may be indicated as will appear.

Individual playing units 50, 51, 52, etc. are provided corresponding to the lanes 40, 41, 42, and 43 etc., and each playing unit is electrically interconnected to the annunciator 30 in a manner to be described in order to control the progress of the game thereon through and by means of said individual playing units.

The positions 45 may be finished off in front by translucent glass, cellophane, or plastic material 54, and may be provided with indicator lamps 55. These are preferably separated from one another by means of individual cells 56 bounded, for example, by the top of the annunciator panel 31, a panelboard 57 and any number of horizontal and transverse partitions 58 and 59 respectively.

By way of illustration, though not of limitation, the illustrated annunciator 30 is divided into racing lanes 40, 41, 42 etc., each of which may in turn be divided into a horizontal series of forty positions 45. As shown, these are divided as by a vertical tape 60. Thus, the ten positions in spaces on the right of the tape in each lane as illustrated collectively comprise the "stretch," while those thirty at the left collectively constitute the "straightaway."

Both in the straightaway and the stretch it is preferable, as heightening interest in the game, to illustrate distinguishing characters, such as horses 62, in various stages of gait so as to give the illusion of movement when the individual lamps 55 are progressively illuminated from left to right (Figure 1) during the play. Such characters also tend to differentiate the several lanes and so identify the players with their respective horses.

The vertical row of positions designated by the numeral 65 may constitute the post or starting line, and the last vertical row of spaces designated by the numeral 66 at the right hand side of each lane is ordinarily considered the finish line. To the right of the finish line in each lane, the name of the corresponding horse or the like in such lane may be set forth and optionally continuously illuminated during play, or the same may be illuminated simultaneously with the occurrence of a winner in such lane.

Any number of winners and corresponding win positions may be provided for, but it is preferable as corresponding with conventional racing practice to provide three catagories of winner separately designated in each row. Thus the first may be indicated as in a "win" position 64 in the last column 67 and may bear a designation "win." A "place" column 68 may also be provided and designated with "place" positions 63. A "show" column 69 may be made up of the "show" positions or spaces 70. Each of these spaces 64, 63 and 70 may be illuminated individually in a manner similar to the spaces 45, but each should preferably carry an inscription, as stated, appropriately designating it as a "win," "place," "show" or the like signal.

A master control box 75 may be provided under the control of an operator or general supervisor by whom the game may be selectively started, as by depressing a start button 76; cancelled during the course of a game as by an emergency trip 77; or, at the end of the game, as by a cancel button 78. Or a game may be selectively altered from one involving only one winner, to one involving two, three or any other number of successive winners. The latter result may be achieved as by means of a selective trip lever 79, all in a manner which will be more fully apparent as the description proceeds.

An electrical conductor cable 80 may connect

the control switch box 75 to the annunciator 30 and the playing unit 50, etc., while another cable 81 may also connect the conductors from the playing units to the annunciator.

The playing units 50, 51, 52, may be individually or collectively mounted as upon a table 82 in front of which the players may sit or stand in a position to actuate the individual plungers 83. The plungers and their associated mechanism are set forth in further detail in Figures 3 through 6 to which attention is now directed. Each playing unit 50, for example, includes a plunger 83 extending through a front end 84, also a far end 85 and right and left sides 86 and 87 respectively. A frame 89 may be removably secured to the unit in a conventional manner so as to enable the removal or replacement of a transparent cover 90 contained therein.

A playing board or field 95 is provided within the box-like outer portion. This preferably includes a lane 91 having a curved margin 92 terminating in a bumper 93. A preferably rubber ball 94 may thus be rolled by the plunger 83 along the lane 91 against the bumper 93. Upon rebound from the bumper, the ball may be guided by the inclination of the playing field 95 back across the field 95. In such return movement the ball is guided as by any suitable wire guides 98, 99 through paths such as 100, 101, 102, 103, 104 and 105.

While passing through the paths 100, etc., the ball may actuate buttons 110, 111, 112, 113, 114, 115, 116, 117 and 118 which are connected to and actuate circuits connected with the annunciator panel as will be discussed later. It will be noted that certain lanes, such as 101, 103 and 105 may be provided with two buttons, whereas, lanes 100, 102 and 104 are provided with only one button. This arrangement is intended to activate certain win circuits as will appear.

Corresponding to certain lanes, preferably those having two buttons, are colored windows 120, 121 and 122 most desirably set flush with the face of the playing field 95 (see Figure 5) and illuminated through a suitable circuit as by a lamp 123 secured to the lower face of the playing field 95 by a bracket 125.

After leaving the paths 100, etc., the ball collides with another wire guide 126 whence it is conducted back to a position in front of the plunger 83 for replay.

As may be seen most clearly from Figure 5, the buttons, for example, 113 and 117, have a shank portion 127 and a head 128. The shank projects upwardly through the playing field and is engageable and depressible by the ball 94 which, when it rolls thereover, closes a pair of spring contacts as 130 and 131, each of which may have an upper leaf 132 and a lower leaf 133 upon the first of which the head of the pin yieldably rests and is thereby normally urged upwardly to project above the face of the playing field. The closing of the spring contacts 130 and 131 and other similar contacts corresponding to the other pins projecting above the playing field actuate appropriate circuits to progressively illuminate the indicator lights 55 on the annunciator panel as will hereinafter be more fully explained.

Referring yet to Figures 3 through 6 in particular, the plunger mechanism 83 generally comprises a knob 140 secured to the end of a piston 141 axially slidable within a housing 142 secured to the playing unit by any desired means. The piston 141 is yieldably urged inwardly by a spring 143. The spring is secured to one end of an eye bolt 144 or the like which is adjustably anchored as within an eyelet 145 by means of a nut 146 threaded on the bolt. The spring 143 is also secured to an arm 148 loosely pivoted as within a staple 149 and may be notched to make a loose hinged connection with one leg thereof.

The arm 148 in turn accommodates the piston 141 by means of a yoke arrangement 151 thereby providing a simple mechanism which is at the same time readily and delicately adjusted to any degree of tension for fixing the thrusting power of the piston 141 at a desired optimum tension.

Also associated with the plunger for adjusting the ball 94 as to distance from the end 152 and for aligning said ball with respect thereto is a centering device 155 preferably comprising a wire whose base 156 may be formed in the shape of a U to straddle a bolt 158 intended to hold the centering device in any position of angular adjustment. The ends 160 of the wire are turned upwardly on either side of the piston 141 for engaging the ball at laterally spaced points to adjust the angle of incidence of the piston and the ball, whereby to achieve a desired effective direction and force for the ball.

It is to be understood that the operation of the game can be materially effected by an improper angle of impact between the piston and the ball. A sufficient maladjustment will render the plunger mechanism inoperative so that the ball cannot then be driven accurately or at all along the passageway 91 to arrive at the open portion of the playing field 95 beyond.

Inasmuch as this game is intended to be primarily competitive, it is desirable that all units are simultaneously freed for play. For this purpose it is necessary to have a locking mechanism or the like for the ball 94 so that upon the release thereof all of the balls are free to be played.

To this end a wire 170 may be formed with a vertical shank portion 171 journaled in a plate 172 and in a co-axial opening corresponding thereto in the playing field. A horizontal arm 173 may be formed at approximately 90 degrees from the vertical portion 171 and preferably having an end portion 174 slightly offset to engage the ball squarely and hold the same away from the plunger in one extreme of its rotation. Suitable means, such as a solenoid 175, may be positioned below the playing field adjacent to arm 170 so that when the solenoid 175 is energized, another offset portion 176 of the wire will be rotated and drawn thereagainst holding the ball 94 away from the end 152 of the plunger by said part 174.

When the solenoid 175 is de-energized by a means to be described, the upper arm 173 will swing around gravitationally into a position substantially perpendicular with the piston 141 by virtue of the normal relationship of the vertical portion 171 with the playing board 95 and due to the degree of tilt of the playing board itself. If desired, the horizontal arm 173 may be normally held in a non-locking position by means of a spring or the like, not shown. The locking position of the wire 170 is shown in phantom outline in Figure 4 where also, but independently, the arm 148 is shown in dotted outline conforming to a retracted position of the plunger. The ball 94 in said figure is shown in dotted outline in a non-locked position.

Preferably mounted upon the back 180 of the annunciator 30, as seen most clearly in Figure 7 and also Figures 8 through 14, are a plurality of stepping relays generally designated by the nu-

merals 181, 182, 183, etc. corresponding in number and operatively connected to the playing units and to the lanes 40, 41, 42, etc. on the front of the panel 30. The function of these stepping relays may, of course, be performed by any other appropriate regulatory means as electronically, or mechanically, by means of conventional relays, or by any combination of these, as will be illustrated and described by way of example in connection with Figures 21 and 22.

But as shown in the illustrations under discussion, the stepping relays generally comprise vertical bars 185 mounted for preferably vertical movement between pairs of spaced guides comprising upper bearings 178 and 179 and lower bearings 181 and 182. The bearings are each held in place as by suitable bolts 183 and preferably include washers 184 overlapping their companion bearings (178 and 182 respectively) to hold the bars against sidewise movement. Similar washers may be provided upon the opposite edge of the bars adjacent the annunciator panel if desired, but in the absence thereof, the bars are held from edgewise movement by the annunciator panel itself. Electrically conductive plates 187 ground the bars 185 by continuous sliding contact therewith.

Each bar 185 is provided with a row of teeth 190 along one edge 191, and each is supported at various positions of elevation correspondent to the distance between the teeth 190 as by means of an escapement latch 192 carrying detent 193 pivotally secured as to a transverse frame member 194 as by means of a bolt 195 optionally provided with a tension spring 196. The detent 193 of each escapement is normally held in mesh with one of the teeth 190 of the corresponding bar 185 as by means of a spring 197 secured at one of its ends, for example, to the bracket 186 located on the back 180 of the annunciator in first relay 181 and at the other of its ends in the latch element 192. The latch is thereby drawn against an abutment 198 anchored as by screws 199 in the transverse member 194.

Opposed to the spring 197 is a solenoid 200 likewise mounted in the transverse member 194 as by a bracket 201. Likewise pivoted to the latch as by means of a pin 202 is a dog 203 having one end 204 urged by a coil spring 205 downwardly and having an opposite end 206 normally bearing against an ear 207 projecting from the latch member to limit the upward pivotal movement of said end 206.

Upon actuation of the solenoid 200, as will be more fully explained hereinafter, the armature 208 of the latch will be drawn thereagainst, to disengage a tooth 190, thereby bringing the dog 203 under and into engagement with the tooth 190 next above the one into which the detent 193 had previously engaged, and the detent 193 will simultaneously be moved to the right (Figure 9) and thereby withdrawn from the tooth theretofore resting upon it.

When the solenoid 200 is then de-energized, as will later appear, the weight of the bar 185 will overcome the spring 205 so as to lower the bar by a distance corresponding to such tooth. The next upper tooth 190 having its upper flat face 210 substantially in alignment with the upper face 211 of the dog 203 will slide over such face, thereby camming the detent 193 into its operative position engaging such next upper tooth under the influence of the spring 197, as best illustrated in solid outline in Figure 9. Said camming position of the dog 203 is suggested in said figure in dotted outline.

Any number of intermittent energizations of any solenoid 200 will thus cause a corresponding bar 185 to move downwardly a distance equal to a similar number of teeth 190.

Non-conductive contact plates 215 corresponding to and adjacent each bar 185 may be provided with a double row of contact points, one such row being designated by the numeral 216 and the other by the numeral 217. The bar itself is fitted with a pair of preferably yieldable slide contact points 218 and 219 respectively engageable with the contacts in the rows 216 and 217 as the points are moved into a position of adjacency to said contacts. This will be accomplished, as will be apparent, each time the bar 185 is lowered by one tooth 190, a distance which is equal to that between adjacent tooth faces 210. The purpose for said contacts will appear as the description proceeds.

In order to render the delay arrangement more compact (see Figures 7 and 9), the first spring 197 corresponding to the stepping relay 185 may be secured to the frame bracket 186 as noted, but corresponding springs 220 on succeeding relays 182, 183, etc. may be secured to the corresponding latches 192 at one of their ends and to upstruck ears 222 comprising a portion of the housings 223 around the solenoids 200, said housings being secured in each case, if desired, to the brackets 201 as by screws 224.

Above the rows of teeth 190 the bars are each notched out as at 226 to provide a dwell within which, when a bar has dropped to a sufficient extent (as at the end of a game), further oscillatory step-inducing movement of the latch 192 as heretofore described no longer serves to operatively engage its corresponding bar for any purpose.

During the course of play and as the bars 185 drop step by step as above noted, and upon play causing the intermittent actuation of the solenoids 200, a point is reached at which the topmost tooth 228 is released by the latch 192 in one of the stepping relays. In the first instant that such a result is achieved in any bar (corresponding with a winner) a win shoulder 230 formed at the lower end of the bar is permitted to drop upon a win anvil 231 extending transversely across the annunciator panel in line and preferably in common with all of the bars 185 (see Figure 12).

This action is calculated to bring the contact points 218 and 219 at the top of such bar into a position of engagement with the lowermost contacts 233 and 234 respectively on the contact plate 215, thereby establishing a win circuit, signalizing a winner on the annunciator, and simultaneously energizing any number of "place" relays 235 (see Figure 11). Such action therefore establishes a first winner.

The relays 235 which are energized by the closing of a first win circuit attract an armature 236 rigidly secured to a "place" anvil 237 to pivot the same upon an axis 238 and bring the same into alignment with the "place" shoulders 240 of each bar, whereby said shoulder of a subsequent winner may come to rest upon the top 241 of the "place" anvil. Such operative position of the place anvil 237 is shown in solid outline in Figure 13. By this means therefore, when a second bar 185 is released from engagement with the detent 193 as by disengagement of its uppermost tooth 228, such bar 185 comes to rest by means of its place shoulder 240 upon the top 241 of the "place"

anvil. The contact points 218 and 219 carried by said bar are thereby brought into engagement with "place" contacts 245 and 246 respectively to establish a "place" circuit in the annunciator panel and designate a "place" or second winner.

Simultaneously with the scoring of a place, a preliminary third winner or "show" circuit is set up through any number of show solenoids as 248 (see Figure 11) which draw the armature 249 of a "show" anvil 250 into an operative position as shown in Figure 14. Thus, when a third winner or "show" is scored by any player due to the dis-engagement of a detent 193 from the uppermost tooth 228 of any third bar 185, a "place" portion 252 of the shoulder 230 corresponding to such bar can come to rest upon the top 253 of said "place" anvil 250. Such action is similarly calculated to bring the contacts 218 and 219 upon the bar 185 corresponding to the "show" winner into engagement with a pair of "show" contacts 255 and 256 respectively (see Figure 14) so as to set up a "show" circuit in a like manner to the "win" circuits and "place" circuits heretofore described, and also optionally to close down the game as will be seen.

Springs 258 and 259 may be secured to the frame 180 and the "place" and "show" anvils 237 and 250 respectively to return said anvils to their inoperative positions respectively (as shown for example in Figures 8, 9, 11 or 12) when the corresponding solenoids 235 and 248 have been respectively de-energized.

Shoulders 257 upon each bar 185 may be adjustable or removable by means of a suitable clamping device 260, provided with a set screw 261, and are intended to be engaged by an angle iron 265 or the like common to all of the shoulders 257. The angle iron 265 is movable vertically on a cable 266 to which it is held as by means of clamps 267 so as to return all of the bars 185 to their uppermost "start" position wherein all of the latches 192 engage the bottom-most tooth 270 on each of the bars 185. This restores the game to a condition for re-commencement of play.

Automatic return mechanism associated with the bar return angle iron 265 is illustrated most clearly in Figure 7 wherein a motor 272 may drive a belt 273 operatively connected to a pulley wheel 274 having a pinion gear 275 operatively connected thereto for driving any gear train, as a first large gear 276, drivingly connected to a second large gear 277 through a second pinion 278.

A cam 280 and an arm 281 may be keyed to a shaft 282 of the gear 277. A tip 283 of the cam normally engages a normally closed micro-switch 284 or the like mounted upon a frame member 285. Upon rotation of the gear 277, and thereby cam 280, the micro-switch 284 is freed permitting the same to open until one complete revolution of the cam has been made at which time the tip 283 thereof again engages and closes the micro-switch, stopping the motor, as will be explained hereinafter in connection with the explanation of the wiring diagram of Figure 20.

The cable 266 is secured as by an eyelet 285' and clasps 290 and 291 to the arm 281 after passing around a pair of opposite sheaves 292 and 293 secured to frame members 294 and 295 respectively and also around another pair of sheaves 296 and 297 spaced above said first pair.

Tracing the cable from its end 290, it is passed around the sheave 292 then secured by a bracket 267 to the horizontally disposed bar return 265 from which it is passed over sheave 297 by an additional groove formed therein for such purpose, whence it is returned around another double-grooved sheave 293 back to its other point of connection 291 on the arm 281.

By this construction, it will be apparent that as the arm 281 makes a single revolution as in a clockwise direction from its position shown in Figure 7, the bar return angle iron 265 will be drawn initially upwardly to a desired extent before being returned to its lowered position as indicated in said figure. The extent of upward movement of the angle iron 265 is adjusted such that all of the shoulders 257 of the bars 185 will be simultaneously engaged and collectively raised to their uppermost positions as at the start of a game, the latches 192 then engaging the bottom teeth 270 of the respective bars 185.

Referring now more particularly to Figures 15, 16, 17 and 18 it may be seen that a main motor shaft 308 connected to a motor (not shown) is in turn preferably drivingly connected to a pulley wheel, such as 309, which drives a belt 307 and thence, as by means of any appropriate gear train encased for example in a gear box 310, a sprocket wheel 311. A chain 312 and an enlarged sprocket wheel 313 act to drive a shaft 314 and thereby a sprocket wheel 315 which may be keyed to the shaft 314 so as to drive a sprocket chain 316, a gear 317, keyed to a shaft 318 and other mechanism as through a clutch 319 in order to activate a fast finish in a manner to be described. The clutch 319 may be said to be included in a higher speed intermittently operable device.

The shaft 314 is also operatively connected to other mechanism which activates the indicator lamp 55, etc., through and by means of other clutches 320 and 321 or the like. These may be said to be included in a primary speed device.

A cam actuated trip member 325 is mounted in any suitable manner as upon an upright frame member 323 and is tiltable upon an axle 326 secured to the frame 323, by any appropriate brackets 327 and 328.

The upper clutch mechanism 319 is associated with the upper end of the trip member and comprises a cam wheel 330 formed on its periphery with any predetermined number of cam elements 331. (The number of cam elements actually used upon any cam wheel, however, determines the number of moves of the players along the lane 40, 41, etc., on the face of the annunciator panel.) A pair of radial pins 332 or the like are secured to the shaft 318 where they may confine spring plates 333 which latter are normally held in a condition of compression against and engageable within suitable recesses 334 or the like formed in clutch disks 335 normally bearing against opposite faces 336 of the cam wheel 330.

The shaft 308 normally rotates continuously during play and thereby carries with it the shafts 314 and 318 so that but for any restraining movement preventing rotation of the disk wheels 330, for example, the same will rotate with the shaft 318. But said wheels 330 may be equipped as with pins 340, engageable with latches 341 whose ends 342 are movable into the path of the pin 340 to restrain the normal counter-clockwise rotation of the wheel, and whose other end may be rigidly secured to armatures 345. In this event continued rotation of the shaft 318 and its associated clutch plates 335 and springs 333 will merely cause the clutches to slip while the wheels 330 remain stationary.

To accomplish this purpose the arms 341 may each be rigidly secured to corresponding armatures 345 which may in turn be pivotally secured within suitable brackets 346 mounted upon a portion of the frame 347. Thus, the latches 341 are normally held in a position of engagement with the pins 340 as by means of coil springs 348 secured at one of their ends as to ears 349 formed in the brackets 346 and at their other ends to the armatures 345 as aforesaid. In this position of the parts, the cam wheels may be held stationary until the actuation of a corresponding coil as 351 or 352 which, when energized, will draw the corresponding latches 341 away from the pins 340, thereby freeing the wheels 330 for rotation with the shaft 318. Energization of the coils 351 etc., is accomplished only momentarily, as will hereinafter appear, but sufficiently to release the corresponding pin 340 thereafter permitting the latch members 341 to return to their former positions. The wheels 330, however, upon rotation in a counterclockwise direction following release by their respective latches will make a complete revolution before they will again engage the latches.

It should be noted that each cam wheel 330 contains 10 cam elements 331 which, upon rotation for one complete revolution, cause the arm 325 to oscillate ten times. This oscillatory motion actuates corresponding micro-switches 357 which are individually connected in electrical series with their corresponding coils 200 associated with each bar 185, thereby causing said bars to drop a distance corresponding to ten teeth 190 in a manner heretofore noted. Moreover, the wheel 330 is connected to the shaft 318 which, by virtue of the relatively small sprocket wheel 317 is rotated relatively rapidly as compared with the shaft 314 driven by the larger sprocket wheel 315. The result is a relatively rapid movement of the corresponding bar 185 to bring about what will hereinafter be described as a "fast finish."

Similar release of any cam wheel 360 (held as by a pin 340) having eight cam elements 331 thereon by the analogous actuation of its corresponding coil 353, for example, will permit said wheel to rotate only half a turn because of further engagement of its latch with a diametrically opposite pin 362 provided thereon to cause the corresponding trip member to operate its micro-switch 357, for each release of said wheel, four times.

A cam wheel 365 mounted in a similar manner to the cam wheel 360 may be provided, for example, with ten cam elements thereon so that upon each corresponding release by actuation of its coil 354 the member 325 will be oscillated five times. The clutches 320 and 321 and the accompanying cam wheels may be said to be of varied actuating capacity because of progress advance of four or five spaces in the lane.

Rollers 366 and 367 may be provided on the members 325 to facilitate the movement of the arms over the cam elements. Since for each lane there is provided a playing board, a bar 185, and a set of cam wheels, these may be treated and comprehended within a playing unit for each lane.

Operation of first embodiment of game

The operation of the apparatus chosen to illustrate this invention will proceed concurrently with a description of Figure 20 and having reference to a considerable extent to Figure 1 as well as to the diagrammatic representation of the first form of the invention illustrated in Figure 20.

We assume initially a power source connected to the apparatus from main power leads 380 and 381 connected to a 110-volt transformer which may be stepped down to 25 volts and 16 volts respectively as indicated. We also assume that the selective switch 79 is set for three winners, i. e., a "win," a "place" and a "show," corresponding to "first," "second" and "third."

At the commencement of the game, an operator in custody of the control box 75 (Figure 1) depresses the start button 76 (Figures 1 and 20) thereby moving the blade 382 (Figure 20) thereof from a contact point 383 to a contact point 384 to energize and ring a bell 385 for a period dependent upon the length of time the start button 76 is held down by the operator.

The bell-energizing circuit may begin in the transformer 372 and thence to conductors 386, 387, 388 and 389, the switch blade 382, contact 384, wire 390, bell 385, wires 391, 392 and thence, for example, to a 25 volt source through a wire 393. By this means the bell 385—so long as the start button 76 is depressed by an operator—signalizes the commencement of the game to the players.

It may here be noted that upon the conclusion of a game a relay 394 normally remains energized through a circuit including the switch blade 392 in a manner which will later appear, but simultaneously with the depression of the start button 76, said circuit is broken thereby de-energizing the relay 394 and operating switches 396, 397, 398 and 399 controlled thereby causing them to assume their normal positions for play as illustrated in Figure 20. Simultaneously, therefore, with the actuation of the start button 76 by the operator, the switch 396 is permitted to open as shown thereby opening the bell circuit wires 386 and 400, switch 396, wire 401, thermo-switch 402, wire 403, bell 385 and wires 391, 392 and 393.

The opening of the switch 397 opens the holding circuit for the relay 394 which circuit, when closed, is as follows: Through wires 386, 387, 388, 389, switch 382, contact point 383 wire 405, switch 397, coil 394 and conductors 392 and 393.

The movement of the switch 398 from the point 407 to the point 408 frees the individual balls 94 to each of the players in the playing unit by de-energization of the coils 175 in each of the playing units and thereby releases the ball locks 170 through the breaking of their circuits 393, 392, switch 398, wires 409 and 410, coil 175 and wires 411, 412, 400 and 386.

Said movement of the switch 398 also energizes all of the coils 200 associated with the bars 185 for each of the playing units and energizes the wires and switches associated with the buttons 110 through 118 respectively on each of the playing boards. That is to say, the closing of the switch 398 against the point 408 energizes wires 414, 415, coils 200 and wires 416 for each of the playing units, which, however, do not actuate any of the associated mechanism until the occurrence of later events to be described.

Such closure of the switch 398 against the point 408 likewise energizes wires 414, 418, 419 (normally closed trouble switch 424) 420 and wires 421 leading to switches associated with "five-jump" buttons 110, 112 and 114 as well as wires 422 leading to switches associated with "four-jump" buttons 111, 113 and 115 respectively. In said latter lines also no current flows until the

occurrence of other subsequent events to be described.

It will be noted that the individual switch 424, susceptible of manual operation, is interconnected in line 419 of each of the playing units respectively so that any individual unit may be deenergized to prevent play therein or for repair without interfering with the operation of the other units. During use of the corresponding playing unit such switch is closed. As also noted, the lines 421 are connected with switches whose actuation will cause the progressive illumination of a similar number of indicator lamps 55 in the annunciator panel (to wit: 5 lamps, therefore corresponding to the cam wheel 365) while the wires 422 are similarly connected to switches (and cam wheels 360) whose actuation will cause the illumination of four successive lamps in a row on the annunciator panel. This feature will also be more fully discussed as the description proceeds.

Simultaneously, with the actuation of the switches 396, 397 and 398, the closure of switch 399 will cause the illumination through a preferably green window 124' of a "go" lamp 124 in each of the playing units, this last being most clearly observed in Figure 6, thereby further signaling the start of a game to the players. The illumination of the go lamp 124 is established as through wires 426, 427, switch 399, wire 429, lamp 124 and wires 430 and 412.

It may thus be seen that the pressing of the starting button 76 effectively sets up the game for operation. The next moves required for the progress of the game are under the control of the individual players although it may be noted that so long as the power through leads 380 and 381 is supplied to the system, regardless of the actuation of the starting button, the indicator lamps 55 in each lane 40, 41, etc., of the annunciator panel corresponding to each playing unit are illuminated, depending upon the position of the contact point 219 on the respective bars 185. Thus, at the commencement of any game, the bars having normally been raised to their uppermost position, the contacts 219 on each bar will engage the uppermost contact point in the row of contacts 217 thereby illuminating the indicator lamp in the start row 65 of the annunciator panel. This illumination is occasioned as through wires 426, 432, 433 and 434 which commonly connect with all of the annunciator lamps 55 including those in the "start" row 65 as through wires 435 and 436, respectively, and thence through "start" lamps 65'. Individual wires 436 leading from all said lamps interconnect with the corresponding contact points in each of the rows 217 on the contact panels 215 (Figures 7 and 8) through the contact members 219 upon the bars 185 and lead thence as to a ground wire 438.

Immediately following said depression of the start button by an operator as heretofore described, each player directs his ball 94 over the playing board 95 and thence through any of the paths 100 through 105 thereon.

It will be noted by reference to Figures 3, 4 and 5 in particular that some of the lanes may be provided with a single button as 110, 112 or 114, the depression of which is good for the progressive illumination along the player's lane 41, 42, etc., of his indicator lamps 55 for instance corresponding with five space positions 45, whereas other lanes as 101, 103 and 105 are marked for the progressive illumination of their lamps 55 for a distance equal to four positions 45 on the annunciator panel, or, in the alternative, when certain conditions have been established, ten positions.

Considering these alternative possibilities seriatum, it will first be assumed that the ball passes along the path 100 thereby depressing the button 110 which has been marked for convenience of understanding with a dotted numeral "5" in Figure 20 and which in Figures 3 and 4 is adjacent a similar dotted numeral "5." The depression of the button 110 is only momentary as the ball passes over it but nonetheless an electrical impulse may pass from the wire 421 (Figure 20) along the path heretofore described, thence across a switch associated with button 110 to wires 440 and 441 to a coil 354 associated with the cam wheel 365, instantaneously withdrawing its latch 341 from the pin 340 thereon. Thereupon said wheel 365 is rotated in the manner heretofore described in connection with Figures 15 through 18. The circuit through the coil 354 is completed by a wire 442 connecting with conductors 400 and 386.

As the wheel 365 rotates the cam members 331 thereon move the oscillating member 325 so as to close its micro-switch 357 intermittently in a manner to transmit impulses to a corresponding coil 200 as through wire 400, micro-switch 357, wire 416, coil 200, wires 415, 414, switch 398 and wires 392 and 393.

Each momentary closure of the micro-switch 357 actuates said corresponding coil 200 which in turn causes the retraction from the teeth 190, of the corresponding bar 185, of its associated latch member 192. Accordingly in the present illustration the result will be recorded upon the annunciator panel, as in row 40, for example (assuming such lane corresponds with the playing board in question), by the successive illumination of indicator lamps 55 as in spaces 445, 446, 447, 448 and 449. At the completion of this particular play, i. e., through path 100), therefore, the lamp 55 in position 449 will remain illuminated and indicate the progress of a horse or the like along the lane 40 while the balance of said lane will be preferably dark.

Assuming that on the next play the ball 94 of the same playing unit as 50 traverses the path 101 (Figures 3 and 4) on said playing board, the button 116 (cf. Figure 20) will be depressed temporarily in a similar manner and a current will then flow from a wire 422 through the switch corresponding with the button 111, thence through wire 552 through the coil 353 corresponding with the cam wheel 360, thereby releasing the same to actuate the micro-switch 357 four times in succession in accordance with the heretofore described construction of said cam wheel, permitting the bar 185 to fall a distance corresponding to four of its teeth 190 and causing the progressive illumination of the indicator lamps 55 through spaces 450, 461, 462 and 463. The last named space will then remain illuminated while the next spaces 464, etc., in that lane 40, will be dark.

It should be noted that the temporary passage of the ball 94 over the other button 111 in path 101 will have no effect in the annunciator panel so long as the contact point 218 on the bar 185 does not engage one of the contacts in the row 216 of the contact plate. For until such eventuality the circuit in wire 400, coil 351 corresponding to cam wheel 330, wire 467, switch corresponding to said button 111, and wire 468, will re-

main broken at contacts 469, 471 and 472 notwithstanding the closure of the switch at 111.

The (blue) lamp 120 connected between wires 468 and 432 will therefore remain extinguished until the bar contact 218 engages one of said contacts 469, 471 or 472, drawing current therethrough and closing said last named circuit.

During the course of play, however, and after the illumination in any lane has traversed the "straightway" portion of the course (i. e., the portion to the left of the tape 60 as indicated in Figure 1) the bar contacts 218 may come to rest upon one or more of the contacts in row 216 corresponding with the spaces to the right of the tape heretofore designated as the "stretch." Thus, in our example if the bar contact 218 should come to rest upon the contacts 469 (a position corresponding to space 470 on the annunciator panel (cf. Figure 1) the lamp 120 would thereby be illuminated upon the corresponding playing unit.

If, therefore, in the next succeeding play in said unit the ball should traverse a path whose position is marked by illumination as at a window 120—the bar contact point 218 then being at contact 469, 471 or 472—the current will flow as from ground 438 through said contacts and wire 468 and thence through the momentarily enclosed switch corresponding with button 116, wire 467, coil 351 corresponding to disk wheel 330 and wires 400 and 386. The coil 351 will thus be energized to release the latch 341 thereof. The consequent rotation of said disk wheel 330 will carry the corresponding bar 185 downwardly over ten successive teeth or such lesser number as is necessary to achieve a winner.

As heretofore noted the rotation of the wheel 330 is preferably more rapid than the rotation of the corresponding wheels 360 and 365, the consequence of which is that the progress in the corresponding lane by the rotation of the wheel 330 establishes what is referred to as a "fast finish." It is understood, of course, that in the event another player succeeds in reaching the finish line with or without having achieved a fast finish or any portion thereof, the finish line 66 may be reached and a win scored in the interval between the onset and completion of the "fast finish" move. If both players or more reach the finish line at approximately the same instant of time a "photo" finish or tie may be the result.

Thus, due to the interconnection of the wire 468 to contact points 469, 471 and 472 the coming of the bar contact 218 to rest on either of these contact points will cause the (blue) lamp 120 to be illuminated on the corresponding playing unit with the result that if the succeeding play results in the ball's being passed over the corresponding path 101 (i. e., when an annunciator lane as 40, is illuminated in one of the spaces 470, 470*a* or 470*b* in the stretch at the right hand side of the tape 60), a fast finish will result in that lane.

In a similar manner (white) lamp 121 is connected into the circuit 432 and 474 which terminates in contacts 475, 476 and 477 corresponding on the annunciator panel with spaces 480, 480*a* and 480*b*. Therefore, the stoppage of a bar contact point 218 upon either of these contacts will result in the illumination of the lamp 121 on the corresponding playing board and similarly the passage of the ball through the same path 103 on the next succeeding play will result in a fast finish for said unit.

The (red) lamp 122 may also be interconnected with wires 432 and 482, whereby similar "fast finish" circuits may be set up as through contact points 483, 484, 485 and 486 comprising the terminations of the latter wire on the contact panel 215 corresponding on the annunciator panel with spaces 490*a*, 490*b*, 490*c* and 490*d*. As in the other two instances, the passage of the playing ball through the path 105 on the playing board will, if the lamp 122 of the corresponding path is illuminated, bring about a "fast finish." The circuits in which the red, white and blue lights are located may be said to constitute activating means, potential in nature since they must previously be conditioned to activate the fast finish or high speed intermittently operable device. Actuators for the activating means are switches on the playing board designed to be tripped by the ball 94.

A winner, as stated, is designated upon the annunciator panel by the illumination of a corresponding space in the finish line 66. Thus, if a winner be designated in lane 40, for example, position 490*d* would be illuminated as through a win lamp contact 234, wire 493, win lamp 494, wires 434, 433, 432 and 426. Such illumination would be evidenced on the back on the annunciator panel in space 64.

Simultaneously continued illumination of the space 490*d* may be achieved as by a finish line lamp 496 through wires 493, 494 and 497 and a common wire 498. A finish line "place" lamp 499 and a finish line "show" lamp 500 may also be connected as by similar wires 501 and 502 respectively, to wires 503 and 504.

Upon the making of a first winner the corresponding bar 185 thereof comes to rest upon the win anvil 231 (cf. Figure 12), the latch 192 thereof having passed the uppermost bar tooth 228. Thereby contact point 219 engages the win contact 234 as just described to illuminate the finish line lamp 496 and the win lamp 494. Simultaneously, however, the contact point 218 engages a corresponding win contact 233 which actuates a solenoid 506 through wire 507 and also wires 508 and 393, thereby closing a normally open switch 509 connected by wire 510 to a place contact 245 and simultaneously also closes a normally open switch 513 causing a current to flow from a 110-volt source 514 as through wire 515, switch blade 516, wire 517, switch 513, wire 519, any number of coils 235 and wires 520 and 521 back to said source 514, thereby actuating said coils 235 to attract the armatures 236 (cf. Figure 11) verticalizing the place anvil 237 for engagement with the place shoulder 240 conditioned upon the achievement of a "place" by a succeeding player. But, if desired, the selective "trip" switch 79, if pre-set at point 550, may act to close down the game at the making of only a single winner. Such a closing down will be discussed hereinafter.

The movement as aforesaid of the place anvil 237 which is preferably in common to all bars 185 causes the bar contact points 218 and 219 of a "place" winning bar to engage place contacts 245 and 246 thereby lighting the corresponding finish lamp 499 and place lamp 522 and simultaneously closes a circuit through wire 510, switch 509, coil 523 and wires 508 and 393, thereby energizing the solenoid 523 and closing the normally open switches 524 and 525. Optionally, also, the game may be shut down at the making of the second winner by pre-setting the switch 79 at "place" point 556.

The closing of switch 525 establishes a circuit

from the 110-volt source 514 through wire 515, switch 516, wire 517, switch 525, wire 526, twin "show" coils 248 and wire 521 back to the 110-volt source 514. This latter circuit energizes the show coils 248 and attracts the armatures 249 (cf. Figure 11) associated with the show anvil 250, moving the same into a position for engagement with the bar "show" shoulder 252 upon the scoring of a third place or "show" by another player or players. The game is then ordinarily over but the actual shutting down of the game is accomplished as follows:

When the bar 185 corresponding to the show winner has fallen into a position of rest upon the show anvil 250, the bar contact 219 engages the show light contact 256 to light the show lamp 531 through wire 504, etc., as noted, and also illuminates the finish line show lamp 500. Like engagement of the point contact 218 with the opposite show contact 255 closes a circuit through wire 534, switch 524 (previously closed by solenoid 523), wire 535, switch 79, wire 536, solenoid 394 and wires 392 and 393, thereby energizing the solenoid 394.

The solenoid 394 operates to open the switch 399 thereby breaking the circuit to the "go" lamp 123 in each game. It also separates the switch 398 from the contact 408, de-energizing the stepping coils 200 in all units and the associated game mechanism including the button switches 110 through 118 on the respective playing boards.

Movement of the switch blade 398 to contact point 407, moreover, actuates the coils 175 in each unit to lock the balls 94 against further play.

Simultaneously, the closing of the switch 397 establishes a holding circuit for the coil 394.

The switch 396, also closed by the energization of the coil 394, closes a circuit through wire 409, switch 396, wire 401, point 540 of the thermo-switch 402, wire 403, bell 385 and wires 391, 392 and 393, ringing the bell 385 and further signalizing the end of the game. A secondary current also flows through the tube 402 via heating element 541 and also, a wire 542, thereby shutting off the bell after a predetermined period of time as established by the adjustment of a variable resistance 543.

Manual actuation of the cancel button 78 causes the rotation of the arm 281 (Figure 7) by means heretofore described. The transverse cancel member 265 is thus raised, returning all the bars 185 to their initial elevated position ready for the commencement of another game. This is accomplished as follows:

Depression of the cancel button 78 starts a current flowing from wires 386, 387, 388 and 544, cancel switch 78, wire 545, coil 546 and wires 508 and 393. This actuates the coil 546 associated wth the switch 516 in a manner to open the circuit in wire 517, etc., de-energizing the "place" and "show" coils 235 and 248, respectively, and causing the motor 272 to operate on a current drawn as through wires 521 and 550, motor 272, wire 551, switch 516 and wires 515 and 514.

Even if actuation of the cancel button 78 be only momentary, the initial rotation of the arm 281 by the motor 272 permits the opening of the normally closed micro-switch 284 thereby continuing the operation of the motor for one full revolution of the arm 281 even after the de-energization of the coil 546. Such temporary movement of the switch 516 is sufficient to de-energize the coils 235 and 248 and to permit the place and show anvils 237 and 250 to return to their inoperative positions under the influence of their coil springs 258 and 259.

In the event, as heretofore noted, that it is desired to make only a single winner, the switch 79 may be set upon the "win" point 550 whereupon the game is automatically closed down as aforesaid by the establishment of but a single winner. Or, in the event that a "win" and a "place" is desired, but not a "show," the switch blade may be set upon the "place" point 556. If, however, a "win," a "place" and a "show" position are alike desired, the selective trip switch may be placed upon the show point 557 as illustrated. The game will be automatically shut down accordingly.

It will thus be seen that a game has been produced simulating many of the essential characteristics of a real horse race or similar competition. Although a preferred form of the game apparatus is similar to that which has been illustrated and above described, the horses 62 or other figures may comprise physical three-dimensional characters conducted along courses similar to that illustrated in connection with the instant apparatus by any well-known means.

More than one win, place or show winner may result in one or more "ties" or "dead heats."

The particular number of winners or players and the combination of operative parts herein set forth by way of illustration can be altered in any desired manner. Well-known innovations or alterations of the sequence or number of events or the number of steps may be used for the achievement of the desired result without departing from the intention herein contemplated. Such modifications within the intent and general spirit of the invention of various of the devices employed in the instant game will readily occur to anyone skilled in the art of mechanics, electricity and game manufacture. And as will now be shown, the stepping relays may be replaced as heretofore stated by conventional relays or electronic devices also intended to achieve a generally similar result.

Modified form

In the modified form of game illustrated diagrammatically in Figure 21, certain correspondingly numbered parts are substantially the same as in the preceding embodiment.

Thus, for example, indicator lamps 55 are connected to the common conductor 434 through wires 435 and to corresponding contact points in row 217 as by wires 436. The lowermost contact in the rows 216 and 217 are respectively 255 and 256. (Contacts 233, 234, 245, and 246 of the preceding embodiment are omitted.) The wires 482, 474 and 468 associated with the (blue, white and red) lamps 120, 121 and 122 in each unit may remain the same as those in the first form of the apparatus. Lamps such as 496 and 499 in the finish line 66 of each lane may be omitted and the one lamp as 500 retained in such position may be connected to the conductor 434 and contact point 256 respectively as by wires 498 and 700.

The bottom contact 255 in row 216 is electrically connected as by wires 701 and 702 to a win relay 703 which may in turn be connected as through wire 704, switch 705, wire 706, switch 707 and wires 708 and 709 to the line 508, heretofore described, interconnected with the 25 volt source and the motor switch relay 546.

Switches 711, 712 and 713 are operatively as-

sociated with and controlled by the win relay 703. The switch 711 may control a circuit from a ground 438 as through wires 714, 715, 716 and win lamp 494.

The switch 712 shifts the current from the place and show relays 731 and 732, as will be noted, to the shifting relay 720 through wires 721 and 722, shifting relay 729, and wires 723, 709 and 508 leading back to the 25-volt source heretofore described.

The energization of the relay 720 operates the switch 705 upon the winning unit and also corresponding switches 735, 736, etc., installed in corresponding control circuits of each of the other playing units respectively. The actuation of the shifting relay 720 moreover breaks the win circuit 701, 702, relay 703, wire 704, switch 705, wire 706, switch 707 and wires 708, 709 and 508, etc., on each unit my moving the corresponding switch blades 705, 735, 736, etc., from their upper to their lowermost contact points.

The actuation of the win relay 703 in moving the switch 713 to its lowermost contact point thereby closes a holding circuit for the win relay of the winning unit as through wires 740, 741, 723, 709 and 508, etc.

The place relays 731 of each unit are interconnected to the ground 438 as by way of the bars 185 and contact points 218 which, when in engagement with the corresponding contacts 255, close a circuit in the corresponding unit, as through wire 701, switch 712, wires 743 and 744, place relay 731, wire 745, a blade 735 or 736 corresponding to blade 705 in the unit in question, a wire 706, a blade as 707, 755 or 756, etc., controlled by the shifting relay 730 and wires 709 and 508, etc., to the source as previously noted.

The switch 752 controls a circuit to the place lamp 522 as through wires 714, 753, 754, place lamp 522, wire 435 and main conductor 434.

The switch 751 breaks the circuit through its uppermost contact point to the show relay 732 and makes contact with its lowermost point as through wires 557 and 558 leading to the shifting relay 730.

The switch 750 holds the place relay 731 as through the wire 745, one of the switch blades 705, 735 or 736, wire 706, blade 707, 755 or 756 and wires 708, 709 and 508, etc.

The show relay 732 is connected to a finish lamp 500 through the wire 700, contact points 256 and 255 (when the win bar contact points 219 and 218 are at said position), wire 701, switch 712, wire 743, switch 751, wires 760 and 761, relay 732, wire 762, switch 707 or the like and wires 708, 709 and 508, etc., connecting with the 25-volt source.

The show relay 732, when actuated, closes switches 770 and 771. The switch 770 is connected to the show lamp 531 as by means of ground conductors 438 and 714, wire 772, switch 770, wire 773, show lamp 531 and wires 435 and 434.

The switch 771 controls the circuit 535 connected with contact point 557 on the selective switch 79 which in turn controls the shut down relay 394 (Figure 20) as through a wire 536.

The actuation of the shut-down relay 394 operates a series of switches 396, 397, 398 and 399 which control the operative mechanism of the game as heretofore set forth.

Operation of modified game apparatus

In the operation of the modified form of game apparatus, last above described, play may be conducted in the identical manner hereinabove described in connection with the discussion of the first embodiment. Accordingly, at the outset of the game the several operative parts of the modified mechanism disclosed in Figures 20 and 21 may be in the condition shown in said figures.

Upon the achievement of a "win" the bar 185 corresponding with the winnning playing unit will drop to its lowest position, as heretofore described. Note, however, that in the instant embodiment the lowest contact points 256 and 255 may be utilized to score either a "win," a "place" or a "show" depending upon whether a previous win or win and place have theretofore been made.

When a win is scored, the indicator lamps 55 will be operated in a similar manner to that set forth in connection with the first embodiment of the invention, and the (blue, white and red) lamps 120, 121 and 122 and their associated mechanism interconnected with the lines 468, 474 and 482 respectively are also actuated as heretofore described.

The lamp 500 will therefore be illuminated when the bar 185 has dropped to said lowermost position as against any suitable abutment (cf. win anvil as 231 of previous embodiment) which will bring the contact points 219 and 218 into respective engagement with contacts 256 and 255. A current will then be established as through lines 434, 498, 700, contacts 256 and 255, wires 701 and 702, win relay 703, wire 704, switch 705, wire 706, switch 707 and wires 708, 709 and 508 back to the 25 volt source (cf. Figure 20).

The coil 703 will then be energized and will actuate switches 711, 712 and 713. Switch 711 will close thereby lighting the win lamp 494 of the corresponding winning unit by means of wires 434 and 435, win lamp 494, wire 716, switch 711, wire 715 and ground wires 714 and 438.

The actuation of switch 712 will open the contact between that switch and the wire 743, thereby breaking the circuit in wires 743 and 744 leading to the place relay 731 and also the circuit in wire 743, switch 751, wire 760 and wire 761 leading to the show relay 732.

In such winning unit, therefore, the place and show relays 731 and 732 will be inoperative. These latter relays will, however, remain connected to the win contact 255 by means of the switch 712 in each of the remaining non-winning units.

The movement of the switch 712 will also close a circuit through the wire 721 which, in turn, is connected to a wire 722 leading to the win shifting relay 720 whence the current may pass through wires 723, 709 and 508 to said 25 volt source.

The energization of the shifting relay 720 actuates the switch 705 corresponding to the winning unit under discussion, and also similar switches 735, 736, etc., connected to the remaining non-winning units in a manner to break the circuit in wires 706, 708 and 709 heretofore established by way of switches 705 and 707 and to de-energize the win relay 703 but for the simultaneous establishment of a relay holding circuit by means of switch 713 through wires 498 and 700, contact points 256 and 255, wires 701 and 702, win relay 703, wire 740, switch 713 and wires 741, 723, 709 and 508 as aforesaid.

When a second winner is made, i. e., a "place," another lamp 500 in a line corresponding to such second place winner is illuminated in the finish position, thereby energizing the place coil 731

through wires 434 and 498, corresponding lamp 500, wire 700, contact points 256 and 255, wire 701, switch 712, wires 743 and 744, place coil 731, wire 745, switch 735 or the like, wire 706, switch 755, for example, and wires 708, 709 and 508. Said circuit in energizing the place coil 731 thereby actuates the switches 750, 751 and 752 respectively.

The closing of switch 752 occasions the illumination of the place lamp 522 by means of conductor 434, wire 435, place lamp 522, wire 754, switch 752 and wires 753, 714 to the ground 438.

The simultaneous actuation of the switch 751 breaks the circuit beginning with said switch through wires 760 and 761 leading to the show relay 732, thereby preventing actuation of said relay in the "place" winner. The closing of switch 751 against its lowermost contact establishes a circuit through the corresponding finish lamp 500 by way of wire 498, lamp 500, wire 700, contact points 256, and 255, wire 701, switch 712, wire 743, switch 751, wires 757 and 558, shifting relay 730 and thence by way of wires 709 and 508 to the 25-volt source.

The energization of the shifting relay 730 moves the switches 707, 755, 756, etc., to their lowermost contact point in engagement with the wire 762 leading to the show coil 732 in each unit, thereby setting up the non-winning units for a "show" winner, as will be described.

Actuation of the switch 750 establishes a holding circuit for the relay 731 in the corresponding place winner as through wire 701, switch 712, wires 743 and 744, place relay 731, wire 745, switch 750 and wires 741, 723, 709 and 508. It will be noted that the corresponding win relay 703 is not operated on the "place" winner because the relay 720 corresponding to the first winner broke the circuit therethrough in the switches 705, 735, 736, etc., of all non-winning units.

Upon the achievement of a "show" as by the dropping of a third bar 185 into such lowermost position, wherein contacts 219 and 218 engage corresponding contacts 256 and 255, as heretofore described, the corresponding lamp 500 is illuminated as through wires 498, 700, contacts 256 and 255, wire 701, switch 712, wire 743, switch 751, wires 760 and 761, show relay 732, wire 762, switch as 756 (which was closed against the bottom contact by the energization of shifting coil 730 made by the previous winner) and wires 708, 709 and 508.

Thus the energization of coil 732 closes switches 770 and 771. Closure of switch 770 causes the illumination of the show lamp 531 as by wire 435, show lamp 531, wire 773, switch 770 and wires 772 and 714.

The closure of switch 771 establishes a circuit as heretofore described from the contact point 255 along wires 701, switch 712, wire 743, switch 751, wire 760, switch 771, wire 535 and the selective switch 79 which, as illustrated, is set at the "show" position 557.

Thence the current flows along a conductor 536, illustrated fragmentally in Figure 21 and in greater detail in Figure 20, so as to actuate the relay 394 (Figure 20) and its associated switches 396, 397, 398 and 399 which operate in previously described diverse manners to close the game as by ringing the bell 385, actuating the ball locking solenoids 175 in each game, extinguishing the "go" lights 124 and disconnecting the solenoids 200 associated with the operative mechanism.

The selective switch 79 may, as stated, also be set against the contact 550, so as to close the game down at the scoring of the first winner, or against the contact 556 to close the game down on the scoring of a place winner even as described in connection with the first embodiment.

The modified form just described may be considered as illustrative of a simple relay form of construction and by virtue thereof the contacts 233, 234, 245 and 246 utilized upon the first embodiment described may be dispensed with, as may also the place and show anvils associated with the corresponding solenoids 235 and 248 respectively.

Further modified form of appartaus

As illustrative of a further modified form of the game apparatus there is illustrated schematically in Figure 22 a gas-filled relay tube system intended for the most part to replace and supplant the relay mechanism, illustrated by way of example in Figure 21, or the essentially mechanical system schematically designated for example in Figure 20.

In Figure 22 indicator lamps 55 are utilized in each lane in the annunciator panel and are connected as by wires 435 to a common conductor 434, preferably leading to an alternating (optionally direct) source of current, such as the 16-volt source illustrated in Figure 20.

One side of the win, place and show lamps 494, 522 and 531 in each unit may be connected in common as through a conductor 800 to one terminal of a storage battery 801 and the other terminal of said battery may be connected to the ground circuit 438. The opposite terminals of said lamps may be connected as through the wires 716, 754 and 773 to the plates 805, 806 and 807, respectively, of gas-filled relay tubes 810, 811 and 812.

The grids 814, 815 and 816 of the tubes corresponding to any individual playing unit may be connected in parallel as through wires 820, 821 and 822 to the conductor 701 which is connected to the lowermost contact point 255 in the row of contacts 216.

The cathodes 825, 826 and 827 may be connected to conductors 830, 831 and 832.

Similar groups of three tubes are provided for each unit and each such group has its grids connected in parallel by a common conductor 840 in a similar manner to the grids 814, 815 and 816, the conductor 840 or the like in each case being connected to a corresponding contact 255.

The plates as 842, 843 and 844 of each additional group, as well as the cathodes 845, 846 and 847 thereof, may be similarly associated with the respective win, place and show lamps and the vertical conduits 830, 831 and 832, respectively.

The vertical conductor 830 being in the common "win" cathode circuit for all units and the 831 being in the common cathode "place" circuit for all units are each provided with variable resistances 850 and 851 connected as by wires 852 and 853 to a common horizontal conductor 854. The vertical conductor 832, being the common cathode circuit for all "show" tubes may be connected as by a wire 855 to the conductor 854 through the coil of a relay 856. Said coil is operatively associated with a switch 858 connected to the ground 438. Said switch is adjusted to a predetermined value to shut down the game as will be later set forth.

A potentiometer 860 is associated with the wire 701 as by a manually movable element 861. It is also connected at one of its ends to one pole of a battery 862 as by a wire 863 and at its other

end to a wire 864 which connects with the horizontal conductor 854 to which the other pole of the battery 862 may also be connected as by a wire 865.

Mode of operation of the further modified form of apparatus

It will be noted that all tubes are held inoperative by a pre-selected negative bias potential upon their grids 814, 815 and 816 by means of the potentiometer 860.

Upon the scoring of "win," the negative potential impressed upon the grids 814, 815 and 816 of the winning unit is removed by the coincidence of the contact 218 with the lowermost contact 255 upon the corresponding win bar 185 as by means of the ground circuit 438, contacts 256 and 255, conductor 701 and wires 822, 821 and 820. This allows the tubes as 810, 811 and 812 corresponding to the winning unit to fire, lighting the win lamp 494 and also the place lamp 522 and the show lamp 531 in the corresponding win lane.

Thus the win lights 494 are illuminated through the conductor 854, wire 852, variable resistor 850, conductor 830, cathode 825, anode 805, wire 716, win lamp 494, and conductor 800. Similarly the place lamps 522 will be illuminated through conductor 854, variable resistance 851, conductor 831, cathode 826, anode 806, wire 754 and conductor 800. The show lamps 502 will be illuminated through the conductor 854, wire 855, coil 856, wire 832, cathode 827, anode 807, wire 773, show lamp 531 and conductor 800.

However, the switch 858 will have been set at such a value that only a current sufficiently large to illuminate a desired number, as three show lamps (corresponding to three winners) will operate the same to shut down the game through actuation of the shut down relay 394 as heretofore described by wires 535 and 536 leading thereto.

It will therefore be seen that it is possible to cause the illumination of the win, place and show lamps 494, 522 and 531 respectively when the first winner is made, indicating thereby that each winner covers both the place and show positions.

If a second winner is not desired the resistance 850 is adjusted to permit only one tube as 805 in the "win" group to fire.

The resistance 851 may be similarly adjusted in the "place" conductor 831 to permit only two place tubes, as, 811 or 836, to fire, while the relay of the switch 858 may be adjusted to close only after three show tubes 807, etc., have fired.

Thus when a second win is made in any remaining lane corresponding tubes, as for example 836 and 837, connected to "place" and "show" conductors 831 and 832 fire in an analogous manner to that heretofore described in connection with the description of the making of a first winner. As stated, however, the corresponding win tube, as, 835 of such second winning unit will not fire because of the potential drop through the pre-adjusted variable resistance 850. Therefore, a second winner will be signalized by the corresponding "place" and "show" lamps 522 and 531, but the win lamp 494 of such second winner will not be illuminated.

If, then, a third winner is made in a remaining lane a corresponding show tube as 807, 837 or the like, will fire. Thereupon the show lamp 531 will alone be illuminated in the corresponding lane. The corresponding win lamp 494 and place lamp 522 in said lane will not be illuminated due to the failure of the corresponding win tube as 810 or place tube as 811 to fire. Such non-firing condition will result as heretofore stated by the pre-adjustment of the variable resistance 850 in the win circuit 830 to permit only one tube to fire (on the making of a winner) and the corresponding pre-adjustment of the variable "place" resistance 851 to permit only two of said tubes to fire.

Inasmuch as the adjustable relay switch 858 will be actuated by a sufficiently great predetermined current flowing through its coil 856 to fire or maintain a flow in three tubes in the show conductor 832, said switch 858 will be closed upon the making of the third winner. As a consequence a current may flow from the ground circuit 438 through the switch 858, and thence along conductor 535, conductor 536, and so on, to energize shut-down coil 394 (Figure 20) and close the game.

It may be noted with respect to this further modified embodiment (Figure 22) that the selective switch 79 is preferably omitted inasmuch as in this case it is ordinarily desirable to allow three winners in the event that there are as many as three players. Thus, in a horse racing game of the character described, the first winner will achieve illumination of the win, place and show positions, the second winner will achieve an illumination of the place and show positions and the third winner will achieve an illumination of only the show position, in his corresponding lane.

As also noted in connection with the description of the first embodiment of Figures 1 through 19, a photo-finish resulting from a simultaneous win by either the first, second or third winners was possible. In the game, as illustrated in Figures 21 and 22, similar "photo-finishes" are possible, although in view of the slower movement of their operative parts, the embodiment of Figure 20 is more apt than in the embodiment of Figure 21 to result in a tie. In the embodiment of Figure 22, however, the possibility of a photo-finish is reduced to a minimum because of the relatively instantaneous operation of the relay tubes to signalize a win and the fact that the moving switches as 858 operate only at the close of a game.

As hereinabove stated, it is possible to modify the game within the knowledge of one skilled in the art of mechanics, electricity and gaming apparatus. In order, therefore, to better illustrate and set forth the essence of this invention, as well as to point out an easy range of possible deviation from any of the preferred forms herein illustrated and described, the selected modifications are to be taken by way of suggestive and not by way of limitation.

Notwithstanding the possible modification of inessential details, this invention features the provision of a new and improved game selectively employing one or more of the described innovations, such as the designation of a home stretch and/or the provision of means for setting up a condition in the game in which a fast finish is achieved without setting up any selected preconditions as heretofore described. Another innovation featured by this invention is the allowance of one or more successive winners hereinabove designated as "win," "place" and "show" positions, together with means for shutting out subsequent non-tying winners after the first or any other desired number thereof.

The number of indicator positions along the

annunciator panel or the like is, of course, a mere matter of design but it has been found desirable to construct a game having approximately thirty positions in the "straight-a-way" and ten positions in the "stretch" and lasting approximately 40 seconds.

In the instant apparatus, therefore, the change of position of the indicators along the "straight-a-way" lanes is, on the average, preferably approximately three per second during actuation, whereas, in the "stretch" it has been found desirable to achieve a fast finish by changing positions at the rate of approximately ten per second after actuation of the indicators for such purpose. By this means, a continuous enthusiasm may be engendered and maintained in the game while at the same time permitting a "win," a "place" or a "show" to be obtained by players who manage to achieve a fast finish notwithstanding that they may theretofore have lagged relative to other players. Or, a win may be scored by a player near the finish line in spite of the fast finish of another.

Having now shown and described the invention in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein, but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices.

The invention having been herein described, what is claimed and sought to be secured by Letters Patent is:

1. A racing game comprising an annunciator having a plurality of parallel lanes, corresponding progress position indicating means in each lane, an individual playing unit for each lane, each said unit including a primary progress rate device cooperable with the progress position indicating means, alternatively operable individual actuators for said device and a secondary progress rate device, an activating means for the secondary progress rate device operatively so connected to the primary progress rate devices as to be set in potentially operative condition thereby, an actuator for said activating means and a trip means for the actuators, said actuators being subject to control by said trip means.

2. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of progress position indicators in each lane terminating at one end in a win position indicator, an individual playing unit for each lane, each said unit including a series of primary speed devices having elements of varied actuating capacity cooperable with the progress position indicators, alternatively operable individual actuators for said devices, each said unit including a secondary higher speed device, an activating means for said secondary higher speed device operatively so connected to the primary speed devices as to be set in potentially operative condition thereby, an actuator for said activating means, and a trip means for the actuators, said actuators being subject to control by said trip means.

3. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of progress position indicators in each lane terminating at one end in a win position indicator, an individual playing unit for each lane, each said unit including a series of primary speed devices having a plurality of step by step advancers incorporating different numbers of steps, alternatively operable individual actuators cooperable respectively with the advancers, each said unit including a secondary higher speed device, including a step by step advancer having a greater number of steps than said first identified advancers, an activating means for said secondary higher speed device operatively so connected to the primary speed devices as to be set in potentially operative condition thereby, an actuator for said activating means and a trip means for all the actuators, said actuators being subject to control by said trip means.

4. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of progress position indicators in each lane terminating at one end in a win position indicator, an individual playing unit for each lane, each said unit including a series of primary speed devices having elements of varied actuating capacity cooperable with the progress position indicators, alternatively operable individual actuators for said devices, each said unit including a secondary higher speed device, a plurality of activating means for said secondary higher speed device operatively so connected to the primary speed devices alternatively as to be set in potentially operative condition thereby, an actuator for each said activating means, and a trip means for all the actuators in each unit, said actuators being subject to control by said trip means.

5. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of progress position indicators in each lane terminating at one end in win, place and show position indicators, an individual playing unit for each lane, each said unit including a series of primary speed devices having elements of varied actuating capacity cooperable with the progress position indicators, alternatively operable individual actuators for said devices, each said unit including a secondary higher speed device, a plurality of activating means for said secondary higher speed device operatively so connected to the primary speed devices alternatively as to be set in potentially operative condition thereby, an actuator for each said activating means and a single trip means for all actuators in each unit operating in response to manual actuation thereof, and means actuating said win, place and show position indicators in response to operation by both the primary speed devices and the secondary higher speed devices.

6. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of progress position indicators in each lane terminating at one end in win, place and show position indicators, a tape position indicator traversing all said lanes in a transverse direction at corresponding points at a location spaced from the show position indicator, an individual playing unit for each lane having a potential connection with all the other lanes, each said unit including a series of primary speed devices having elements of varied actuating capacity cooperable with the progress position indicators, alternatively operable individual actuators for said devices, each said unit including a secondary higher speed device, a plurality of activating means for said secondary higher speed device responsive alternatively to said primary speed devices at a point subsequent to progress past said tape position indicator and adapted to be set in potentially operative condition thereby, an actuator for each said activat-

ing means and a trip means for all the actuators in each unit, said actuators being subject to control by said trip means.

7. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of progress position indicators in each lane terminating at one end in win, place and show position indicators, a tape position indicator traversing all said lanes in a transverse direction at corresponding points at a location spaced from the show position indicator, an individual playing unit for each lane having a potential connection with all the other lanes, each said unit including a series of primary speed devices having elements of varied actuating capacity cooperable with the progress position indicators, alternatively operable individual actuators for said devices, each said unit including a secondary higher speed device, a plurality of activating means for said secondary higher speed device responsive alternatively to said primary speed devices at a point subsequent to progress past said tape position indicator and adapted to be set in potentially operative condition thereby, an actuator for each said activating means, a trip means for all the actuators in each unit, said actuators being subject to control by the trip means, and means for indicating a win, a place and a show, respectively, in the first three lanes to finish.

8. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of electric actuated progress position indicators in each lane terminating in a win position indicator, a tape position indicator traversing all said lanes in a transverse direction at corresponding points at a location spaced from the win position, an individual playing unit for each lane, each said unit including a series of primary speed electric controlled devices having elements of varied actuating capacity each cooperable with the progress position indicators, a common playing board, alternatively operable individual switches on the common playing board, each said unit including a secondary higher speed electric controlled device and a plurality of switches therefor on said playing board, circuits for said last switches adapted to be closed alternatively in response to operation of said primary speed devices at a point subsequent to progress past said tape position indicator and a trip means for all said switches in each unit, fortuitously operating in response to manual actuation thereof.

9. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of electric actuated progress position indicators in each lane terminating in a win position indicator, a tape position indicator traversing all said lanes in a transverse direction at corresponding points at a location spaced from the win position, an individual playing unit for each lane, each said unit including a series of primary speed electric controlled devices having releasable solenoid operated detents, said devices having moving elements having a varied number of spaced portions thereon and switches responsive to said spaced portions in circuit with the progress position indicators, a common playing board, alternatively operable switches on said board in circuit with said solenoids, each said unit including a secondary higher speed device and a plurality of switches therefor on the playing board in circuits adapted to be closed alternatively in response to operation of said primary speed devices at a point subsequent to progress past said tape position indicator and a trip means for all said switches, said secondary higher speed device having a number of spaced portions thereon exceeding the number of spaced portions on the moving elements of the primary speed devices and switches in circuit with the progress position indicators between the tape position indicator and a win position responsive to said last identified spaced portions.

10. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of electric actuated progress position indicators in each lane terminating in a win position indicator, a tape position indicator traversing all said lanes in a transverse directions at corresponding points at a location spaced from the win position, an individual playing unit for each lane having a potential electric connection with the other lanes, each said unit including a series of primary speed electric controlled devices having elements of varied actuating capacity, each element being cooperable with the progress position indicators, a common playing board, alternatively operable individual switches on said common playing board, a secondary higher speed electric controlled device and a plurality of switches therefor on said playing board, circuits for said last identified switches adapted to be closed alternatively in response to operation of said primary speed devices at a point subsequent to progress past said tape position indicator, and a trip means for all said switches in each unit, said switches being subject to control by the trip means, and a means acting in response to a win in one lane to cut out all the win indicators in the other lanes.

11. A racing game comprising an annunciator having a plurality of parallel lanes, a corresponding series of electric actuated progress position indicators in each lane terminating in win, place and show indicators, a tape position indicator traversing all of said lanes in a transverse direction at corresponding points at a location spaced from the win position, an individual playing unit for each lane having a potential electric connection with the other lanes, each said unit including a series of primary speed electric controlled devices having elements of varied actuating capacity, each element being cooperable with the progress position indicators, a common playing board, alternatively operable individual switches on said common playing board, a secondary higher speed electric controlled device and a plurality of switches therefor on said playing board, circuits for said last identified switches adapted to be closed alternatively in response to operation of said primary speed devices at a point subsequent to progress past said tape position indicator, and a trip means for all said switches in each unit, said switches being subject to control by said trip means, and means acting, respectively, in response to a win, a place, and a show, in the first three lanes to finish, to respectively cut out all the win, place and show indicators in the other lanes.

12. In a game comprising an annunciator having any number of parallel lanes thereon collectively defining a race track, a source of electrical energy, indicator means along each lane, individual game means electrically connected with said indicator means, and regulatory means operating said indicator means, the improvement comprising: means comprising a frame, a number of bars, each equipped with at least

two electrical contacts, a contact plate corresponding to each of said bars, each having a row of serially arranged contacts corresponding to successive positions on the corresponding lanes and mounted upon the frame for movement relative thereto, said regulatory means including individual stop means for each row corresponding to each contact, means for intermittently actuating said stop means and for achieving relative movement of the stops and contacts for any selected number of stops, and electrical conductors interconnecting said source of electrical energy and said indicator means serially through said contacts for progressively illuminating said indicator means across corresponding lanes, said regulatory means comprising any number of electrical circuits, including said electrical conductors, corresponding to said lanes and having cut-offs for all uncompleted win, place and show circuits in remaining lanes when a win, place or show respectively has been scored in any of said lanes, said cut-offs comprising means common to all game means for rendering the win, place, and show designators inoperative seriatim in all remaining lanes as a win, place or show is scored in any lane.

13. In a game as described in claim 12, said win, place, and show designators comprising lamps for each lane, and win, place and show contacts respectively positioned in said rows of contacts making electrical engagement with said bar contacts when said bars have moved to a predetermined extent, means for moving said bars from contact to contact in said rows as play progresses on said game means, and means to arrest the movement of the first bar whose contact reaches a win contact and to stop succeeding bars at their place and show contacts, respectively.

14. In a game as described in claim 13, said bars having teeth and a stepping detent arranged for releasable holding engagement in said teeth and a solenoid arranged to withdraw said detent from successive teeth for moving said bar from contact to contact in said rows as play progresses on said game means, and means to arrest the movement of the first bar whose contact reaches a win, place or show contact and to stop succeeding bars at their place and show contacts, respectively.

15. In a game as described in claim 14, and cam actuated means releasable by selected plays on said game means to intermittently actuate said solenoid a predetermined number of times to move said detent along a corresponding predetermined number of teeth.

16. In a game as described in claim 15, and pivoted abutments mounted for engagement with corresponding place and show shoulders on said bars and means actuated by a win, place, or show to move respective pivoted abutments into the path of said shoulders to stop succeeding bars at their place and show contacts, respectively.

17. In a game comprising an annunciator having any number of parallel lanes thereon collectively defining a race track, a source of electrical energy, indicator means along each lane, individual game means electrically connected with said indicator means, and regulatory means operating said indicator means, the improvement comprising: means comprising a frame, a number of bars, each equipped with at least two electrical contacts, a contact plate corresponding to each of said bars, each having a row of serially arranged contacts corresponding to successive positions on the corresponding lanes and mounted upon the frame for movement relative thereto, said regulatory means including individual stop means for each row corresponding to each contact, means for intermittently actuating said stop means and for achieving relative movement of the stops and contacts for any selected number of stops, and electrical conductors interconnecting said source of electrical energy and said indicator means serially through said contacts for progressively illuminating said indicator means across corresponding lanes, said regulatory means comprising any number of electrical circuits, including said electrical conductors, corresponding to said lanes and having cut-offs for all uncompleted win, place and show circuits in remaining lanes when a win, place or show respectively has been scored in any of said lanes, said cut-offs comprising means common to all game means for rendering the win, place, and show designators inoperative seriatim in all remaining lanes as a win, place or show is scored in any lane, said win, place, and show designators comprising lamps for each lane, and win, place and show contacts respectively positioned in said rows of contacts making electrical engagement with said bar contacts when said bars have moved to a predetermined extent, means for moving said bar from contact to contact in said rows as play progresses on said game means, and means to arrest the movement of the first bar whose contact reaches a win and to stop succeeding bars at their place and show contacts, respectively, said bars having teeth and a stepping detent arranged for releasable holding engagement in said teeth and a solenoid arranged to withdraw said detent from successive teeth for moving said bar from contact to contact in said series as play progresses on said game means, and means to arrest the movement of the first bar whose contact reaches a win, place or show contact and to stop succeeding bars at their place and show contacts, respectively, and cam actuated means releasable by selected plays on said game means to intermittently actuate said solenoid a predetermined number of times to move said detent along a corresponding predetermined number of teeth, said cam actuated means comprising rotatable cam members normally under rotative tension and formed with any number of cam surfaces, solenoid actuated dogs for releasing same cam members for rotation and detents for limiting the amount of said rotation.

18. In a game comprising an annunciator having any number of parallel lanes thereon collectively defining a race track, a source of electrical energy, indicator means along each lane, individual game means electrically connected with said indicator means, and regulatory means operating said indicator means, the improvement comprising: means comprising a frame, a number of bars, each equipped with at least two electrical contacts, a contact plate corresponding to each of said bars, each having a row of serially arranged contacts corresponding to successive positions on the corresponding lanes and mounted upon the frame for movement relative thereto, said regulatory means including individual stop means for each row corresponding to each contact, means for intermittently actuating said stop means and for achieving relative movement of the stops and contacts for any selected number of stops, and electrical conductors interconnecting said source of electrical energy and said indicator means serially through said contacts

for progressively illuminating said indicator means across corresponding lanes, said regulatory means comprising any number of electrical circuits, including said electrical conductors, corresponding to said lanes and having cut-offs for all uncompleted win, place and show circuits in remaining lanes when a win, place or show respectively has been scored in any of said lanes, said cut-offs comprising means common to all game means for rendering the win, place, and show designators inoperative seriatim in all remaining lanes as a win, place or show is scored in any lane, said win, place and show designators comprising lamps for each lane, and win, place and show contacts respectively positioned in said rows of contacts making electrical engagement with said bar contacts when said bars have moved to a predetermined extent, means for moving said bar from contact to contact in said rows as play progresses on said game means, and means to arrest the movement of the first bar whose contact reaches a win and to stop succeeding bars at their place and show contacts, respectively, said bars being gravitationally movable, a motor actuated bar return, and a cam actuated control for said return to restore the bars to their initial positions between games.

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