March 11, 1969 A. E. GOLDFARB 3,432,166

CONTROL MEANS FOR TOY ELECTRIC RACING CARS

Filed Feb. 1, 1965 Sheet 1 of 4

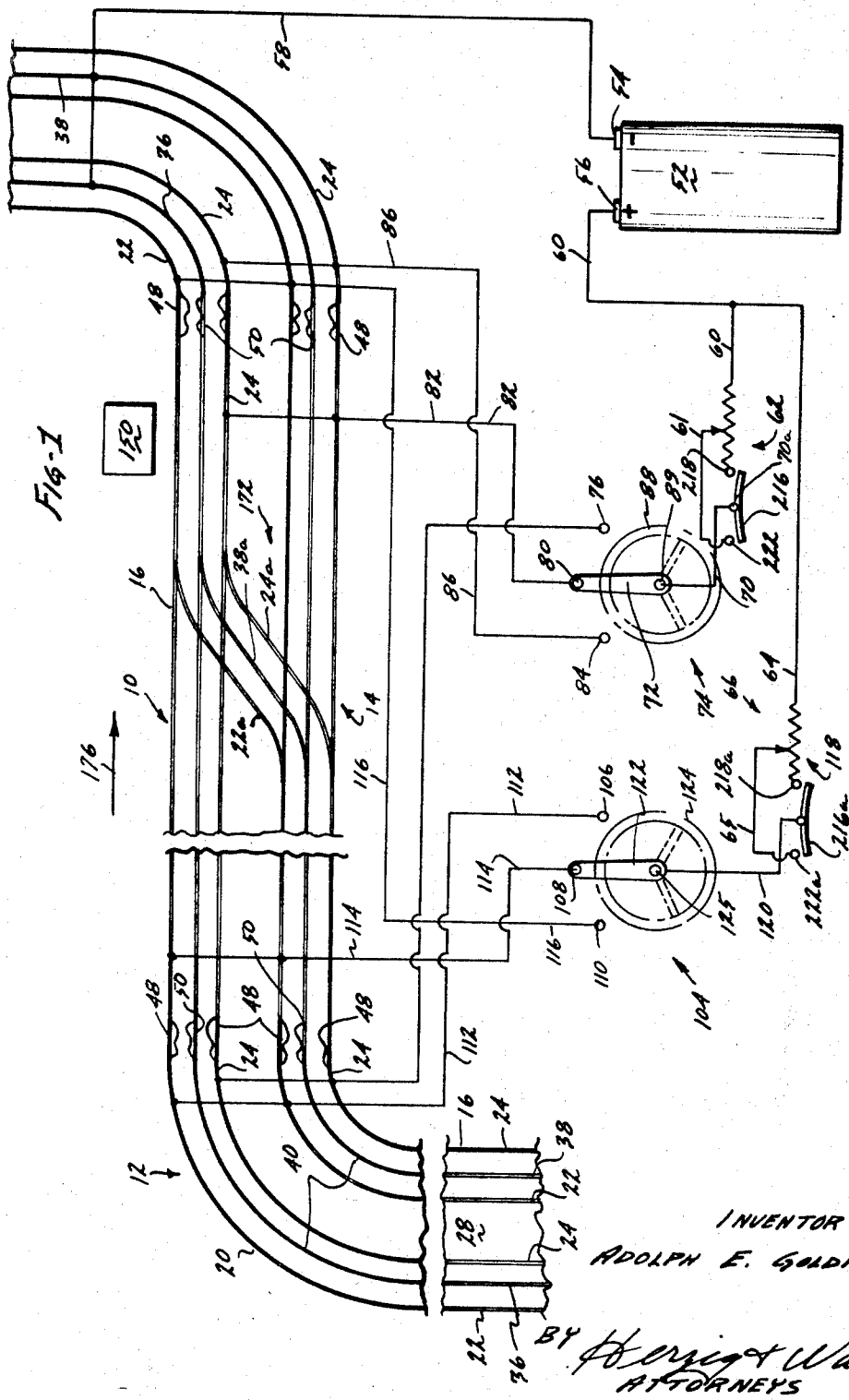


FIG-1

INVENTOR
ADOLPH E. GOLDFARB

BY Hoffman, Wright & Walsh
ATTORNEYS

March 11, 1969 A. E. GOLDFARB 3,432,166

CONTROL MEANS FOR TOY ELECTRIC RACING CARS

Filed Feb. 1, 1965 Sheet 2 of 4

FIG-2

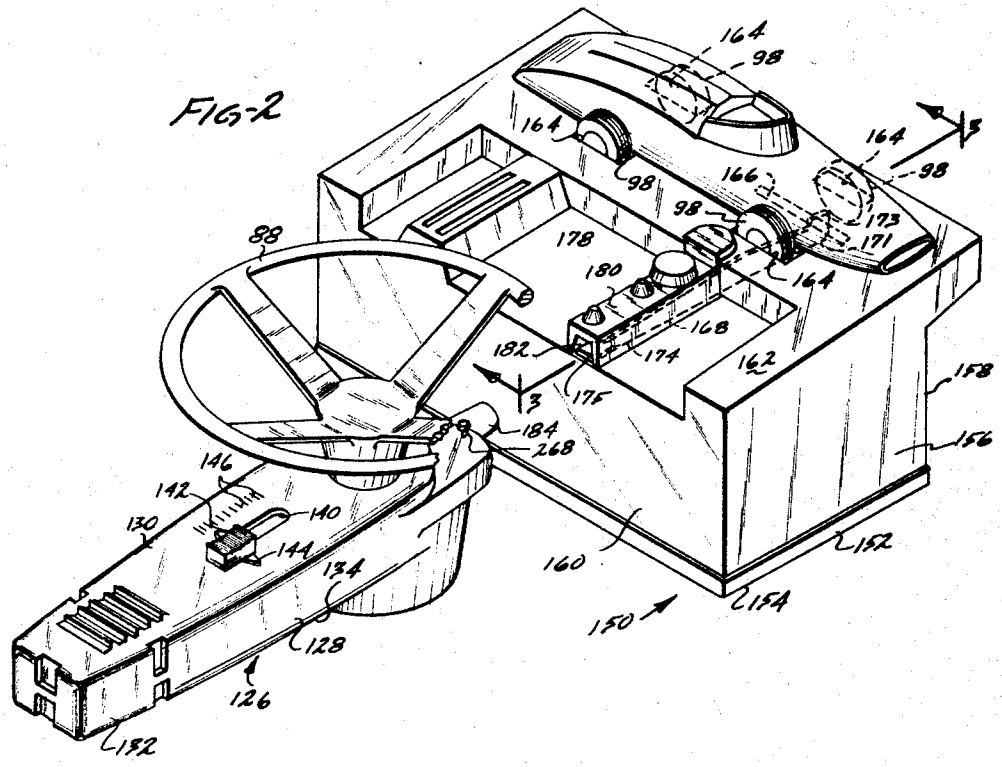
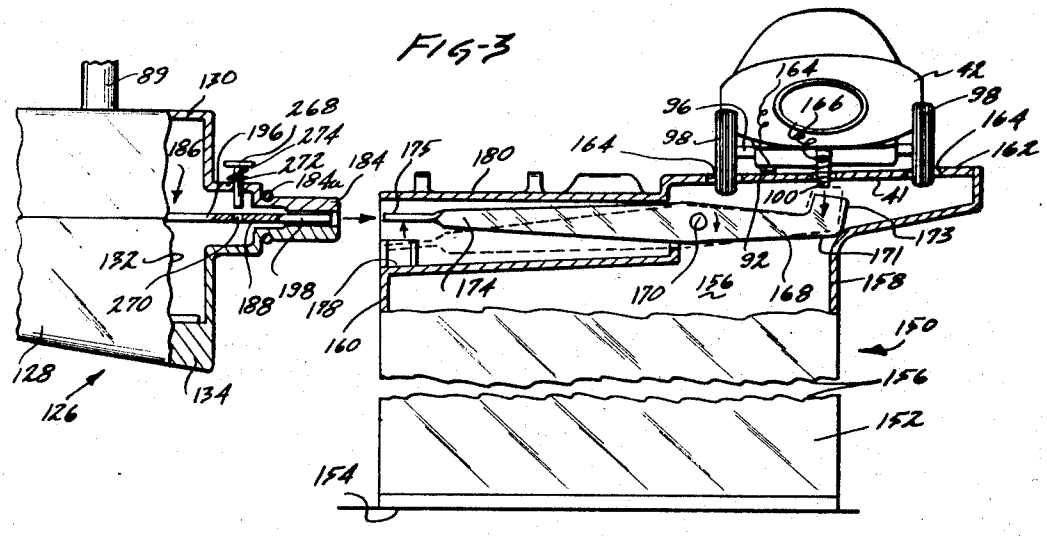


FIG-3



INVENTOR.
ADOLPH E. GOLDFARB
BY
Darby & Walker
ATTORNEYS

March 11, 1969 A. E. GOLDFARB 3,432,166

CONTROL MEANS FOR TOY ELECTRIC RACING CARS

Filed Feb. 1, 1965 Sheet 3 of 4

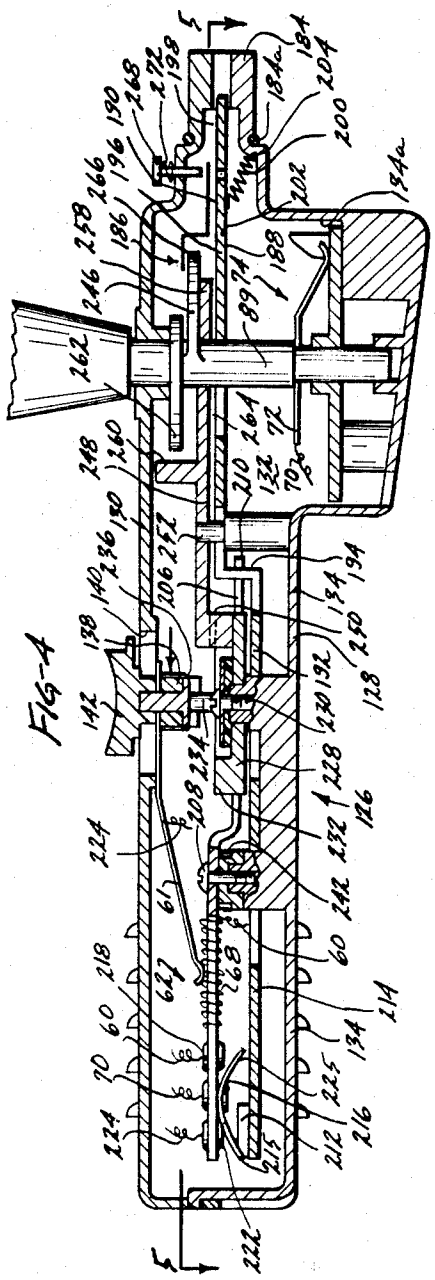


FIG-4

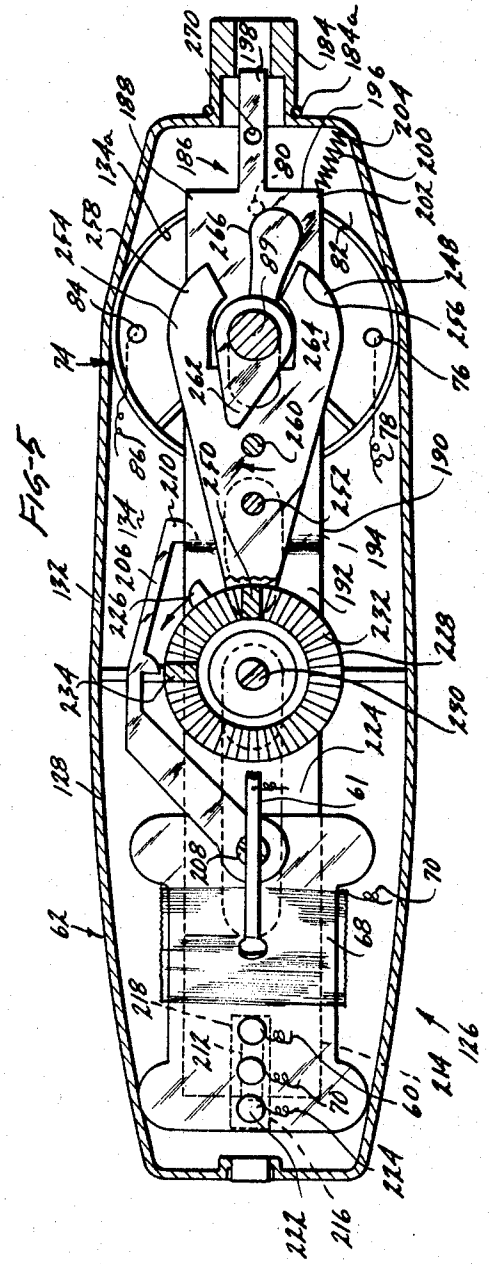


FIG-5

INVENTOR.
ADOLPH E. GOLDFARB
BY
Herzig & Walsh
ATTORNEYS

March 11, 1969 A. E. GOLDFARB 3,432,166

CONTROL MEANS FOR TOY ELECTRIC RACING CARS

Filed Feb. 1, 1965 Sheet 4 of 4

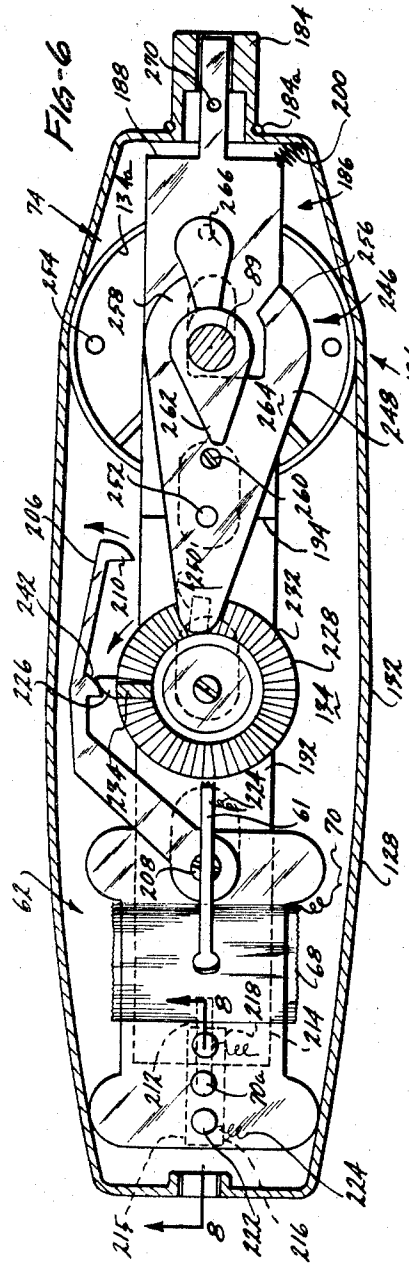


FIG-6

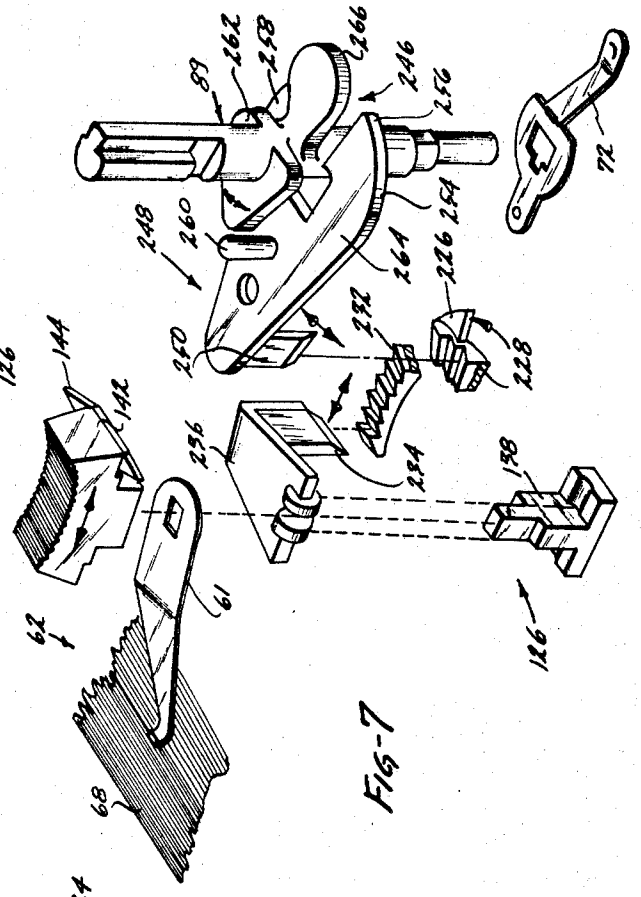


FIG-7

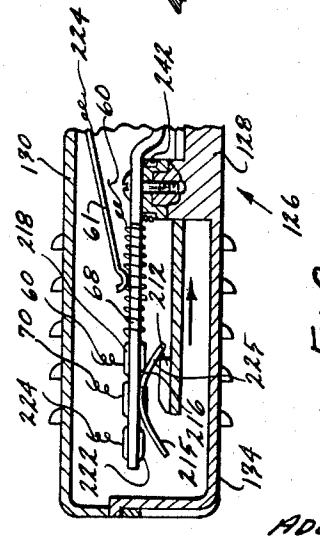


FIG-8

INVENTOR.
ADOLPH E. GOLDFARB
BY
Dewey & Walsh
ATTORNEYS

United States Patent Office 3,432,166
Patented Mar. 11, 1969

3,432,166

CONTROL MEANS FOR TOY ELECTRIC RACING CARS

Adolph E. Goldfarb, 7424 Varna St., North Hollywood, Calif. 91605

Filed Feb. 1, 1965, Ser. No. 429,301
U.S. Cl. 273—86 19 Claims
Int. Cl. A63f 9/14

ABSTRACT OF THE DISCLOSURE

The invention is a system and apparatus for controlling toy vehicles, particularly electrically controlled miniature racing cars. The cars travel on electrified tracks. The controls include steering wheels which by rotation, control circuitry controlling the electrification of the tracks in such manner that the control wheels must be manipulated to keep the cars energized and traveling on the tracks, thereby simulating actual steering.

The system further includes a simulated pit stop in which the cars can be placed. The controls include potentiometer-type speed controls for the cars. Further, mechanism is provided which is actuatable either by the speed controls or the steering wheels which after a variable number of actuations of either one of these, or both, will bring about a substantial reduction in speed in an individual car indicating that it needs attention in the pit stop. This is a mechanically actuated device actuated in response to the accumulation of incremental movements of the speed control or steering wheel. This device may be automatically reset when the miniature car is placed in the pit stop.

The present invention relates to control means for toy or model electric racing cars and more particularly to simulated pit stop means for such cars.

A hobby which has gained popularity in recent years comprises racing model electric cars on a closed track which may be put together in sections in a manner similar to that used in model railroad building. The track may include two or three electrical conductors which supply electric current to the cars. Each car includes protuberance means which engages a slot in the track to maintain the car on its course. The speed of each car is controlled by a rheostat or potentiometer which is held in the hand of the operator of the car. The rheostat or potentiometer may be employed to slow the cars down on curves so that they will not jump the track. In a three-buss-bar system, two cars can be separately controlled by supplying current to one through one outside conductor plus a center conductor and to the other through the other outside conductor and the center conductor.

While this method of racing toy cars is generally satisfactory, it does have certain disadvantages. One disadvantage resides in the fact that the racing of toy electric cars lacks the authenticity of a real race because the only control the operator has over the car is to either slow it down or speed it up with the rheostat. Another disadvantage resides in the fact that there is no particular feeling that the operator is operating the car because he does not steer it.

Yet another disadvantage resides in the fact that the simulation of a real auto race is minimized because the cars do not have to make pit stops for refueling and the like.

In view of the foregoing factors and conditions characteristic of toy rocing cars and means for controlling same, it is the primary object of the present invention to provide a new and useful control means for toy electric racing cars not subject to the disadvantages enumerated above and which includes pit stop means for simulating conditions experienced by real auto racers.

Another object of the present invention is to provide a new and useful control means for electric racing cars which employs means for automatically slowing the cars down to a crawl simulating a need for servicing after the elapse of an unpredictable amount of time, thereby requiring the cars to make a pit stop.

Yet another object of the present invention is to provide a new and useful pit stop for toy electric racing cars.

The present invention will be described for purposes of illustration, but not of limitation, as being used in conjunction with a three-conductor track.

According to the present invention, the outside conductors of a three-conductor track for toy racing cars include insulated sections at each curve in the track. Each outside conductor on straight-away sections of the track is connected to a first or center electrical contact, each outside conductor on left-hand curves is connected to a second or left-hand electrical contact and each outside conductor on right-hand curves is connected to a third or right-hand electrical contact. The center conductor is connected to a switch blade which, in turn, is engageable with any one of the contacts to complete a circuit through a rheostat or potentiometer. The switch blade is connected to a steering control means in such a manner that it is positionable on any one of the three contacts. Current can only be supplied to the straight-away sections of the track by positioning the steering wheel so that the blade engages the center contact. Current can only be supplied to the right-hand curves by positioning the steering wheel so that the blade engages the right-hand contact and can only be supplied to the left-hand curves by positioning the steering wheel so that the blade engages the left-hand contact. Thus, the steering wheel must be positioned straight ahead while the car is on the straight-away, must be turned to the right to make the car negotiate a right-hand turn and must be turned to the left to make the car negotiate a left-hand turn, all as more particularly described and claimed in copending application Ser. No. 429,300, filed Feb. 1, 1965 by the applicant herein, now Patent No. 3,384,030.

The steering wheel and the potentiometer are mounted in a control unit which may be held by the operator of each toy racing car. The operator of each car can control the speed of his car by operating the potentiometer with one hand while simultaneously operating the steering wheel with his other hand to assure a flow of current to the outside conductors on all sections of the track.

Either the potentiometer slide or the steering wheel or both may be caused to actuate a timing-gear means of the present invention each time they are manipulated by the operator. The timing-gear means is connected to the potentiometer in such a manner that the timing-gear means causes the full resistance of the potentiometer to be placed in series with the electrical power supply to the toy racing car so that it will slow down to a crawl after a predetermined number of manipulations of the potentiometer slide or the steering wheel or both.

A pit stop is provided to which the crawling car may be required to progress under its own power. Once adjacent the pit stop area, the car may be lifted from the track and placed in the pit stop area. A protuberance, which normally engages the track to maintain the car in position thereon, engages a lever means provided in the pit stop to elevate a free end of the lever. The elevated end may then be caused to engage a reset mechanism provided in the control unit to reset the potentiometer slide means in such a manner that the potentiometer is again effective to control the speed of the car.

The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may be best understood by reference to the following description, taken in connection with the accompanying drawings in which like reference characters refer to like elements in the several views.

In the drawings:

FIGURE 1 is a diagrammatic view of a race course showing a pair of tracks and the electrical system supplying power thereto which may be used in conjunction with the pit stop and control means of the present invention;

FIGURE 2 is an exploded perspective view showing a pit stop and control means of the present invention;

FIGURE 3 is a cross-sectional view, on an enlarged scale, taken along line 3—3 of FIGURE 2;

FIGURE 4 is an enlarged, longitudinal cross-sectional view of the control means shown in FIGURE 1;

FIGURE 5 is a cross-sectional view taken along line 5—5 of FIGURE 4;

FIGURE 6 is a view similar to FIGURE 5 showing the internal mechanism of the control means in another operative position;

FIGURE 7 is an exploded, partial perspective view of the control unit of FIGURE 1; and

FIGURE 8 is an enlarged, partial cross-sectional view taken along line 8—8 of FIGURE 6.

Referring again to the drawings and particularly to FIGURE 1, a race course for toy electric racing cars, generally designated **10**, includes a pair of tracks **12** and **14**. The tracks **12** and **14** each include a straight-away section **16**, a left-hand curved section **18** and a right-hand curved section **20**. The sections **16**, **18** and **20** are preferably joined together in a continuous, closed loop. The tracks **12** and **14** are each provided with first and second, outside electrical conductors **22** and **24** and center conductors **36** and **38**, respectively. The conductors **36** and **38** are recessed into the surface **28** of the race course **10** to provide grooves **40** which are engageable by a protuberance means **41** provided on a toy racing car **42** (FIGURE 3) to maintain the car on the course **10**.

The sections **18** and **20** of the track **12** and **14** may be connected to the straight-away section **16** by any suitable means, such as by conventional connecting male and female prongs, not shown, or by insulated pins **48** which connect the outside conductors together and electrical-conducting pins **50** which connect the center conductors together. Thus, as more particularly described in said copending application, the electrical fault exists between the portions of the conductors **22** and **24** mounted on the straight-away section **16** and those mounted on the curved sections **18** and **20** while, simultaneously, the center conductors **36** and **38** maintain electrical continuity throughout the sections **16**, **18** and **20**. The condctors **22** and **24** may be recessed from the connecting edges of one of the sections **16**, **18** and **20**, as shown at **226** and **246** in FIGURE 3 for the edge **18***a* of section **18**, so that the connecting ends of the conductors **22** and **24** on one section will not contact the associated connecting ends of the conductors of the other section when they are connected together. Of course, it is apparent that when the tracks **16** and **18** are connected together in conventional manner, flat insulating strips may be placed between the male and female prongs of the conductors **22** and **24**.

Electrical power may be supplied to the tracks **12** and **14** from any suitable power source, such as a dry-cell battery **52**, which has a negative post **54** and a positive post **56**. The negative post **54** is connected to the center electrical conductors **36** and **38** by a lead **58**. The positive post **56** is connected by a lead **60** to the coil or resistor **68** of a first potentiometer or rheostat **62** and by a lead **64** to the resistor **118** of a second potentiometer or rheostat **66**. The coil or resistor **68** of potentiometer **62** is connected to an electrical contact **218** which is engageable by a leaf spring **216**, in a manner to be hereinafter described, to complete a circuit to a lead **70** through a contact **70***a* for connecting the full resistance of the resistor **68** to the pole or blade **72** of a 3-position switch **74**. The spring **216** is also engageable with a contact **222** which is connected to the wiper **61** of potentiometer **62**. When so engaged, the spring completes a circuit to the lead **70** for connecting selected amounts of resistance of the resistor **68** to switch **74**. The switch **74** includes a right-hand contact **76** which is connected by a lead **78** to the outside electrical conductors **24** on the right-hand curved portion **20** of the tracks **12** and **14**. The switch **74** also includes a middle contact **80** which is connected by a lead **82** to the outside conductors **24** on the straight-away section **16** of the tracks **12** and **14**. In addition, the switch **74** includes a left-hand contact **84** which is connected by a lead **86** to the outside conductors **24** on the left-hand curved portion **18** of the tracks **12** and **14**. Thus, the switch **74** may be used to complete a circuit to the outside conductors **24** on the straight-away section **16**, the left-hand curved section **18** or the right-hand curved section **20** of the tracks **12** and **14**, depending on which of the contacts **80**, **84** or **76** the blade **72** engages. The blade **72** is attached to a steering wheel **88** through a steering shaft **89** which may be rotated to a mid-position so that the blade **72** engages contact **80** to complete a circuit to the straight-away section **16** of the tracks **12** and **14**. In addition, the steering wheel **88** may be turned to the right, as viewed in FIGURE 1, until the blade **72** engages the contact **76** to complete a circuit to the right-hand curve **20** of the tracks **12** and **14**. Also, the steering wheel **88** may be turned to the left until the blade **72** engages the contact **84** whereupon a circuit is completed to the left-hand curve **18** of the tracks **12** and **14**.

The conductors **36** and **24** on track **12** and the conductors **38** and **24** on track **14**, when energized, supply electrical power to an electric racing car **42** through a first electrical collector **92** affixed to the car's front axle-carrying yoke **96** adjacent its right front wheen **98** and through a second electrical collector **100** which is affixed to the car **42** at the approximate center of the yoke **96**. The collector **92** will engage the conductor **24** and the collector **100** will engage the conductor **38** when the car **42** is travelling on track **14** in the direction of arrow **176**. Alternatively, the collector **92** will engage conductor **24** and the collector **100** will engage the conductor **36** when car **42** is run on track **12**, as more fully described in said copending application. Thus, the car **42** can be run on the track **12** or the track **14** at the will of the operator who controls the operation of the car with the switch **74** and the rheostat **62**. A second car (not shown) can also be run on the tracks **12** and **14** without interference by the operator of the car **42**. This is accomplished by running the second car with power supplied through conductors **22** and **36** on track **12** and the conductors **22** and **38** on track **14**. Although the conductors **36** and **38** are common to both cars, the conductors **22** are controlled independently of the conductors **24** through the rheostat **66** and a second three-position switch **104** having contacts **106**, **108** and **110**. These contacts are connected through electrical leads **112**, **114** and **116** to the conductors **22** on the right-hand curve **20**, the straight-away section **16** and the left-hand curved section **18**, respectively. The coil or resistor **118** of the potentiometer or rheostat **66** is connected to a contact **218***a* which is engageable by a leaf spring **216***a* to complete a circuit to a blade **122** on switch **104** through lead **120**. The spring **216***a* is also engageable with a contact **222***a* which is connected to the wiper **65** of rheostat **66**. This also completes a circuit to blade **122** through lead **120**.

The cars may be switched from track **14** to the track **12** by a switch **172** having leads **22***a*, **38***a* and **42***a* connecting the conductors **22**, **38** and **24** on track **14** to the conductors **22**, **36** and **24**, respectively, on the track **12**.

The rheostats **62** and **66** and the steering wheels **88** and **124** together with the switches **74** and **104** may be mounted in a suitable control device, such as the control unit **126**

shown in FIGURES 2–8 for the rheostat **62** and the switch **74**.

The control unit **126** includes a housing **128** having a top wall **130**, a side wall **132** and a bottom wall **134**. The steering shaft **89** is rotatably mounted in the bottom wall **134** and the blade **72** is affixed to the shaft **89** and extends over the contacts **76**, **80** and **84** which are mounted in a cavity **134***a* provided in the bottom wall **134** (FIGURE 5). The coil **68** of the potentiometer **62** is mounted in the housing **128** and may be connected to the blade **72** by the lead **70** through spring **216** as shown diagrammatically in FIGURE 1. The wiper **61** of potentiometer **62** is affixed to a post **138** which extends upwardly in the housing **128** through an elongated slot **140** provided in the top wall **130**. A finger engaging sadle **142** is affixed to the upper end of the post **138** and carries a suitable pointer **144** which may be aligned with indicia **146** provided on the top wall **130** to indicate to the operator of the control device **126** the relative position of the wiper **61** on the coil **68** and thereby give an indication of the speed of the car **42** when spring **216** is engaging contact **222**.

The collectors **92** and **100** on the car **42** supply power to an electric motor, not shown, through leads **164** and **166**, respectively. The yoke **96** is pivotally connected to the car **42** by a suitable pivot pin (not shown). The car **42** may be controlled on track **12** or track **14** with the control unit **126** by manipulating the wiper **61** and the steering wheel **88**. As will be apparent to those skilled in the art, maximum speed can be attained by sliding the wiper **61** to a position where a minimum amount of resistance is included in the circuit from the battery **52** to the conductors **24**. As the car **42** approaches a left-hand turn **18**, assuming that the car is travelling in the direction of arrow **176** shown in FIGURE 1, the operator of the car **42** must turn the steering wheel **88** to the left causing the blade **72** to engage the contact **84** to complete a circuit to the left-hand curve **18** in order to energize the conductor **24** on the down stream side of the fault produced by pin **48**. The operator of the car **42** can simultaneously control its speed by manipulating the slider **61** on the control unit **126** so that the car **42** will take the curve **18** at an optimum speed.

Racing the car **42** may be given authenticity by simulating conditions of a real race. This is accomplished in part by providing a steering control means in the manner more fully described and claimed in said copending application and by providing a simulated pit stop means of the present invention.

The simulated pit stop, indicated generally at **150** may be located adjacent the tracks **12** and **14**, as indicated diagrammatically in FIGURE 1. The pit stop **150** includes a housing assembly **152** having a bottom wall **154**, end walls **156**, a front wall **158**, a rear wall **160**, and a top wall **162**. Thet top wall **162** is provided with four suitable spaced elongated slots or openings **164** adapted to receive the wheels **98** of the car **42**, as shown in FIGURES 2 and 3, when the car is to be serviced. The top wall **162** also includes an elongated slot **166** adapted to receive the protuberance **41** provided on the yoke **96** of the car **42**. A lever **168** is pivotally mounted in the housing **152** on a pin **170** and includes a first end **171** having an upstanding projection **173** which is positioned subjacent the elongated slot **166** in such a position that the upstanding projection **173** is engaged by the protuberance **41** on the car **42** when it is in position on the top wall **162**. The lever **168** also includes an end **174** having a flat extension **175** which is elevated to the position shown in solid lines in FIGURE 3 when the protuberance **41** engages the end **171** of the lever **168**.

The top wall **162** is also provided with a suitable recess, indicated generally at **178** which simulates the electronic analysis control panel found in a real pit stop. A channel shaped member **180** is mounted in the recess **178** to provide a housing for the end **174** of the lever **168**. The channel shaped member **180** includes an open end **182** which is engageable by an open-ended projection **184** provided on the control unit **126**. When the car **42** is in position on the pit stop shown in FIGURES 2 and 3, so that the lever is elevated as aforesaid, the end **184** of the control unit **126** may be inserted into the open end **182** whereupon the extension **175** on the lever **168** will engage a reset mechanism **186** which is mounted in the control unit **126**. The reset mechanism **186** includes a plate **188** having a first section **190** slidably mounted in the unit **126** at a first elevation and a second section **192** slidably mounted in the unit **126** at a lower elevation. The two sections **190** and **192** are joined together by a vertical transition section **194**. The first or upper section **190** includes an end **196** having a rectangular projection **198** extending into the open-ended projection **184**. This projection **198** is engageable by the extension **175** on the lever **168** to move the plate **188** to the left, as viewed in FIGURE 4, against the tension of a spring **200** having one end **202** connected to plate **188** and another end **204** connected to the housing **128**.

The reset mechanism **186** also includes a trigger or latch member **206** which is pivotally mounted on a screw **208** in the housing **128** and which includes a first lug **210** engageable with the vertical section **194** to retain the plate **188** in its retracted position. In this position, a protuberance or cam **212** (FIGURE 8) provided on the end **214** of the second or lower section **192** engages the end **215** of the leaf spring **216** forcing the end **215** into engagement with the contact **222** to complete a circuit to switch **74** through contact **70***a*, lead **70** and the wiper or slide **61**, which is connected to the contact **222** by a lead **224**. The potentiometer **62** is then effective in controlling the speed of car **42**.

When the latch mechanism **186** is released, the spring **200** draws the plate **188** to the right, as viewed in FIGURE 6, to the position shown therein where cam **212** engages the end **225** of the leaf spring **216** forcing it into engagement with the contact **218** to complete a circuit from coil **68** directly to lead **70** through spring **216**. This places the full amount of resistance of the coil **68** in a series circuit to the car **42** causing it to slow down to a very slow speed and signalling the operator of the car to pull it into the pit stop **150** for repairs or servicing. The potentiometer **62** can only become effective again in permitting the car to speed up by repositioning the plate **188** so that the leaf spring **216** again engages the contact **222** thereby placing the wiper **61** back in the circuit to car **42**. The circuit to the car can be completely interrupted by moving the wiper **61** to an insulated portion **68***a* of the coil **68**.

The plate **188** moves to the right only after the latch mechanism **206** is released from engagement with the section **194**. The latch mechanism **206** is released to the position shown in FIGURE 6 by a cam **226** provided on a ratchet wheel **228**. The ratchet wheel **228** is rotatably mounted in the housing **128** by a screw **230** and includes teeth **232** which are engageable by a first dog **234** which is connected to the slider **61** by a bracket **236** carried by the post **138**. Thus, each time the operator of the car **42** actuates his rheostat **62** by moving the finger engaging saddle or knob **142** to the left, as viewed in FIGURE 7, the dog **234** engages one of the teeth **232** on the ratchet wheel **228** causing it to rotate one increment in a counter clockwise direction, as viewed in FIGURE 6.

When the knob **142** is next slid to the right, as viewed in FIGURE 4, the dog **234** will slide over the next trailing tooth **232** so that the dog will be in a position to again rotate the wheel **228** counter clockwise when the knob **142** is again moved to the left to slow the car **42** down. Upon the completion of one rotation of wheel **288**, the cam **226** engages a lug or cam **242** provided on the latch mechanism **206** causing the latch mechanism **206** to swing about its pivot **208** in such a manner that the lug **210** becomes disengaged from the vertical section **194** of

the plate **188**, thereby releasing it so that will slide to the right, as viewed in FIGURE 6, under the influence of the spring **200** to thereby release the leaf spring **216** opening the circuit at the contact **222**. This places the full resistance of coil **68** into the circuit causing the car **42** to slow down to a crawl. The operator of the car must then wait until it proceeds at a slow pace, due to the full resistance, to the pit stop **150**. The operator may then lift the car from the track and place it in position on the pit stop **150** to actuate the lever **168** after which the end **184** of unit **126** is inserted into the opening **182** sufficiently that an O-ring **184***a* on end **184** engages the member **180** so that the extension **175** on the lever **168** engages the plate **188** causing it to slide to the left, as viewed in FIGURE 3. If the latch mechanism **206** is still in its FIGURE 6 position at the time the plate **188** is slid to the left, the lug **210** will not re-engage the vertical section **194** to retain the plate **188** in its reset position. However, the natural impulse for the operator of the car **42** is to actuate the knob **142** after the car slows down in an effort to cause it to speed up. This actuation will cause the wheel **228** to advance one more notch taking the cam **226** out of engagement with the lug **242** to release the latch mechanism **206** so that it will be swung to re-engage section **194** by a spring **224** which encompasses screw **208**, as shown in FIGURE 4.

It is recognized that the operator of car **42** may try to eliminate a pit stop by permitting his car to continue at a medium, uniform speed making it necessary to move knob **142**. Thus, it will be apparent to those skilled in the art that the wheel **228** preferably should be actuated by means, such as the steering wheel **88**, which the operator of car **42** is forced to manipulate to keep the car running. However, it is recognized that some racing systems may not employ steering control means. It is in these systems that the means hereinbefore described for actuating the wheel **228** through knob **142** finds special application. This means either may be eliminated when the wheel **228** is controlled through the steering mechanism or it may be used in conjunction therewith. The steering wheel **88** can be caused to actuate the wheel **228** each time the steering wheel is turned to negotiate a curve. This is accomplished through a linkage mechanism indicated generally at **246** in FIGURE 7. The linkage mechanism **246** includes a plate **248** having a depending dog **250** adapted to engage the teeth **232** on the gear **228**. The plate **248** is pivotally mounted on a pin **252** in the housing **128** and includes a bifurcated end **254** having arms **256** and **258** which straddle the steering post **89**. The plate **248** also includes an upstanding pin **260** which engages the top wall **130** to maintain the plate **248** seated within the housing **128**. A triangular plate **262** is affixed to the steering post **89** for rotation therewith and engages the upper surface **264** of plate **248** to maintain its bifurcated end **254** in engagement with a lug **266** which is also affixed to steering post **89**. When the steering wheel **88** is rotated counter-clockwise, as viewed in FIGURE 7, the lug **266** engages arm **258** to swing plate **248** about the pivot **260** in such a manner that the dog **250** will slide over a tooth **232** on the ratchet wheel **228** to a position where the ratchet wheel will be rotated one increment when the steering wheel **88** is next turned in a clockwise direction causing lug **266** to engage arm **256**. Thus, the ratchet wheel advances cam **226** one increment toward lug **242** on latch mechanism **206** each time the wheel **88** is turned away from its middle position and then returned thereto. When the cam **226** engages the lug **242**, the lug **210** releases plate **188** causing the full resistance of coil **68** to be placed in the circuit to car **42** in the manner hereinbefore described in connection with the actuation of wheel **228** by dog **234**. The operator of car **42** must then let it proceed at a crawl to pit stop **150** where the plate **188** may be reset, as hereinbefore described.

The operators of a plurality of cars can be given the same starting point for the cam **226** with respect to lug **242** before a race by requiring them to manipulate wheel **228** through knob **142** or steering wheel **88** sufficiently to trip plate **188** and the move cam **226** one increment past lug **242**. The plate **188** may then be reset in pit stop **150** and the race begun.

Also, the plate **188** can be maintained in its FIGURE 4 position regardless of the tripping thereof by a pin **268** which is reciprocally mounted in control unit **126** above an aperture **270** provided in plate **188**. The pin **268** is normally biased out of engagement with the aperture **270** by a spring **272** which bears against the head **274** of pin **268** and the control unit **126**. A stop member **276** prevents the pin **268** from becoming disengaged from the control unit **126** under the influence of spring **272**. The pin **268** may be depressed to engage aperture **270** and prevent the plate **188** from moving to its FIGURE 6 position even though it may be tripped. Frictional engagement will maintain pin **268** in aperture **270**.

While the particular control means for toy or model electrical racing cars herein shown and described in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiment of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims. The blade **122** may be rotated into engagement with the contacts **106**, **108** or **110** by a steering wheel **124** through a steering shaft **125**.

I claim:

1. Control means for controlling the operation of a racing car on a track supplied with power through power supply means connected to said track, comprising: manually operable power control means connected to a power supply means for controlling the power supplied to said track; and accumulator means connected to said power control means for accumulating random manipulations of said power control means as discrete events, and means for actuating a portion of the power control means to supply a minimum amount of power to said track responsive to a predetermined accumulation of said discrete events by said accumulator means.

2. Control means for controlling the operation of an electric racing car on a track supplied with electrical power through electrical conductors connected to said track, comprising: a manually manipulable potentiometer means connected to a power supply means for controlling the amount of power supplied to said track; and accumulator means connected to said potentiometer means for accumulating random manipulations of said potentiometer as discrete events, and means for actuating said potentiometer means to minimize the amount of electrical power supplied to said track after the accumulation of a predetermined number of said discrete events.

3. A control means as defined in claim **2** wherein said accumulator means is connected to said potentiometer means in such a manner that one increment in said predetermined number of events is caused to occur each time said potentiometer means is actuated by an operator of said control means.

4. A control means as defined in claim **2** wherein said means in such a manner that one increment in said predetermined number of events is caused to occur each time said steering control means is manipulated.

5. In a control unit for a toy electric racing car including potentiometer means for controlling the speed of said car, the said potentiometer means including a resistance coil and a slider engageable with said coil to vary the power supplied to said car, the combination, comprising:

actuatable means connected to said coil for placing a predetermined amount of resistance in a series circuit to said car when actuated; and

linkage means connecting said actuatable means to said slider for actuating said actuatable means after said

slider has been manipulated a predetermined number of times to vary the power supplied to said car.

6. In a control means for a toy electric racing car, a potentiometer means having a resistance coil and a steering control means, in combination:

actuatable means connected to said coil for placing a predetermined amount of resistance in a series circuit to said car when actuated; and

linkage means connecting said steering control means to said actuatable means for actuating said actuatable means after said steering control means has been manipulated a predetermined number of times.

7. In combination with steering control means for controlling the operation of a toy racing car, a track supplied with power through power supply means mounted on said track, said track having a plurality of sections, control means including first track energizing means connected to one of said sections for energizing the power supply means to said one section, second track energizing means connected to another of said sections for energizing the power supply means to said other section, and actuation means connected to said first and second means for manipulation to selectively actuate said track energizing means, means for minimizing the amount of power supplied to said track after said actuation means has been manipulated a predetermined number of times, comprising: linkage means connecting said power supply minimizing means to said actuation means.

8. Simulated pit stop means for a toy electric racing car, comprising tracks supplied with electric power through rheostat control means,

a simulated pit stop adjacent said tracks, said pit stop including lever means engageable by a car placed on said pit stop;

actuatable means connected to said rheostat control means for changing the power supplied to said tracks in such a manner that said car will not operate satisfactorily after said actuatable means has been actuated, said actuatable means including a reset mechanism engageable by said lever only when said car is in position on said pit stop to reset said actuatable means after it has been actuated, whereby said car can be again operated satisfactorily; and

means connected to said actuatable means for actuating it after the occurrence of a predetermined number of actuations of said actuable means.

9. A simulated pit stop means as defined in claim 8 wherein said means for actuating said actuatable means is controlled by a slider on said rheostat control means.

10. A simulated pit stop means as defined in claim 8 wherein sad means for actuating said actuatable means is controlled by a steering control means.

11. A race course for a toy electric racing car, comprising:

a race track having electrical conductors mounted thereon for supplying power to said car;

a simulated pit stop adjacent said track, said pit stop including positionable means having a first predetermined position, said positionable means being moved to a second predetermined position when said car is placed on said pit stop;

a control unit connecting said conductors in a circuit with a power source, said control unit including power control means for controlling the amount of power supplied to said car;

actuatable means connected to said control unit for actuating it in such a manner that an unsatisfactory amount of power is supplied to said car;

means connected to said actuatable means for normally maintaining it in an inactive condition and for actuating it after the elapse of an unpredictable period of time; and

reset means connected to said actuatable means for resetting it to its inactive condition, said reset means being resettable by said positionable means only when it is in said second predetermined position.

12. In a race course for racing a toy electric car, said race course including a track carrying electrical conductors for supplying power to a car placed on said track and rheostat means connecting said conductors to a source of power, said rheostat means including a resistor engageable by a slider for varying the amount of power supplied to said car, the combination comprising:

simulated pit stop means mounted on said race course adjacent said track, said pit stop means including positionable means normally positioned in a first predetermined position, said positionable means being moved to a second predetermined position when said car is placed on said pit stop means;

actuatable means connected to said rheostat means for placing the full resistance thereof in series with said car when actuated;

control means connected to said actuatable means for actuating it when released;

latch means connected to said control means for normally maintaining it in an unreleased condition;

means connected to said latch means for releasing said control means upon the occurrence of a predetermined event; and

reset means connected to said control means for engagement with said positionable means to reset said control means after it has been released, said reset means being engageable with said positionable means only when it is in said second predetermined position.

13. Control means for controlling the operation of a toy electric car upon a race track having electrical conductors mounted thereon for supplying electrical power to said car and circuit means connecting said conductors to a source of power, said control means comprising:

a simulated pit stop mounted adjacent said track, said pit stop having a lever pivotally mounted therein, said lever being normally maintained in a first predetermined position and being moved to a second predetermined position only when said car is in position on said pit stop;

a control unit connected to said circuit for controlling the operation of said car, said control unit including a housing;

a resistor mounted in said housing;

electrical leads connecting said resistor in series with said circuit;

a slider mounted in said housing in engagement with said resistor, said slider being connected in said circuit in such a manner that the amount of resistance placed in said circuit by said resistor can be varied;

switch means connected to said slider for taking it out of said circuit when actuated;

a plate slidably mounted in said housing, said plate including a cam engageable with said switch means to close it when said plate is slid to a first position and to open it when said plate is slid to a second position;

spring means connecting said plate to said housing for biasing said plate to said second position;

latch means mounted in said housing in engagement with said plate for normally maintaining it in said first position against the bias of said spring;

a ratchet wheel rotatably mounted in said housing adjacent said latch means for releasing said latch means from said plate each time said ratchet wheel completes a revolution; and

dog means connected to said slider, said dog means being engageable with said ratchet wheel to cause it to complete one revolution after said slider has been manipulated a predetermined number of times, whereby said plate is released and drawn to said second position said plate being engageable by said lever only when it is in said second position to move said plate to its first position against the bias of said

spring into engagement with said latch means for closing said switch so that said slider is again placed in said circuit.

14. A device as defined in claim **13** wherein said dog means is connected to steering control means mounted in said housing.

15. A device as defined in claim **13** including steering wheel means rotatably mounted in said housing and linkage means connecting said steering wheel means to a second dog which is engageable with said ratchet wheel to rotate said ratchet wheel when said steering wheel means is manipulated.

16. Control means for controlling the operation of a vehicle supplied with power through power supply means operatively connected to a track means, comprising: manually operable power control means connected to power supply means for controlling the power supplied to said track means; and means connected to said power control means for actuating the power control means to supply a minimum amount of power to said track means after a predetermined number of operations of said manually operable means.

17. Control means for controlling the operation of an electric vehicle supplied with electric power through electrical conductors connected to a track means, comprising:

potentiometer means connected to power supply means for controlling the amount of power supplied to said track means; and

actuator means connected to said potentiometer means for actuating said potentiometer means to minmiize the amount of electrical power supplied to said track means after an unpredictable, series of actuations of said potentiometer means.

18. A control means as stated in claim **17** wherein said actuator means is connected to said potentiometer means in such a manner that an incremental actuation is caused each time said potentiometer means is actuated by an operator of said control means, the power being reduced as a result of accumulation of said incremental actuations.

19. A control means as stated in claim **17** wherein said actuator means is connected to a steering control means in such a manner that an incremental actuation is caused each time said steering control means is manipulated, the power being reduced as a result of the accumulation of said incremental actuations.

References Cited

UNITED STATES PATENTS

2,358,604	9/1944	Stewart.
2,698,180	12/1954	Hersh.
2,750,191	6/1956	Denman.
3,115,724	12/1963	Clarke.
3,297,323	1/1967	Gibson.

FOREIGN PATENTS

1,139,234	1957	France.

ANTON O. OECHSLE, *Primary Examiner.*

M. R. PAGE, *Assistant Examiner.*

U.S. Cl. X.R.

104—60, 149