May 23, 1967 J. H. HANSEN 3,321,203

AUTOMATICALLY CONTROLLED AMUSEMENT RIDE

Filed Nov. 12, 1963 4 Sheets-Sheet 1

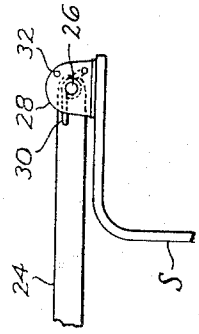

Fig. 2.

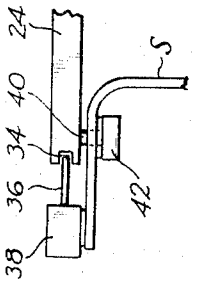

Fig. 3.

Fig. 1.

Fig. 4.

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AUTOMATICALLY CONTROLLED AMUSEMENT RIDE

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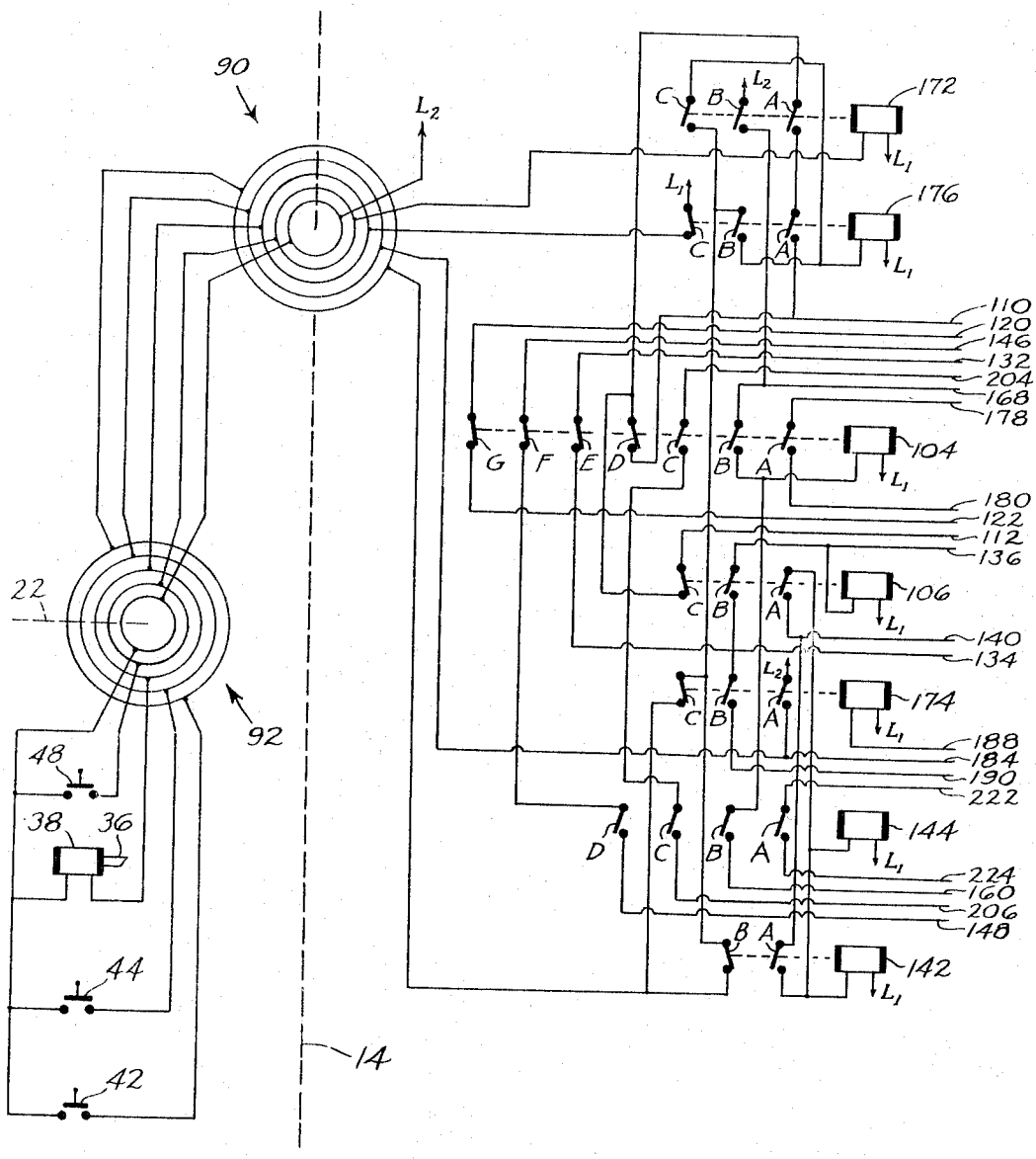

Fig. 5.

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AUTOMATICALLY CONTROLLED AMUSEMENT RIDE

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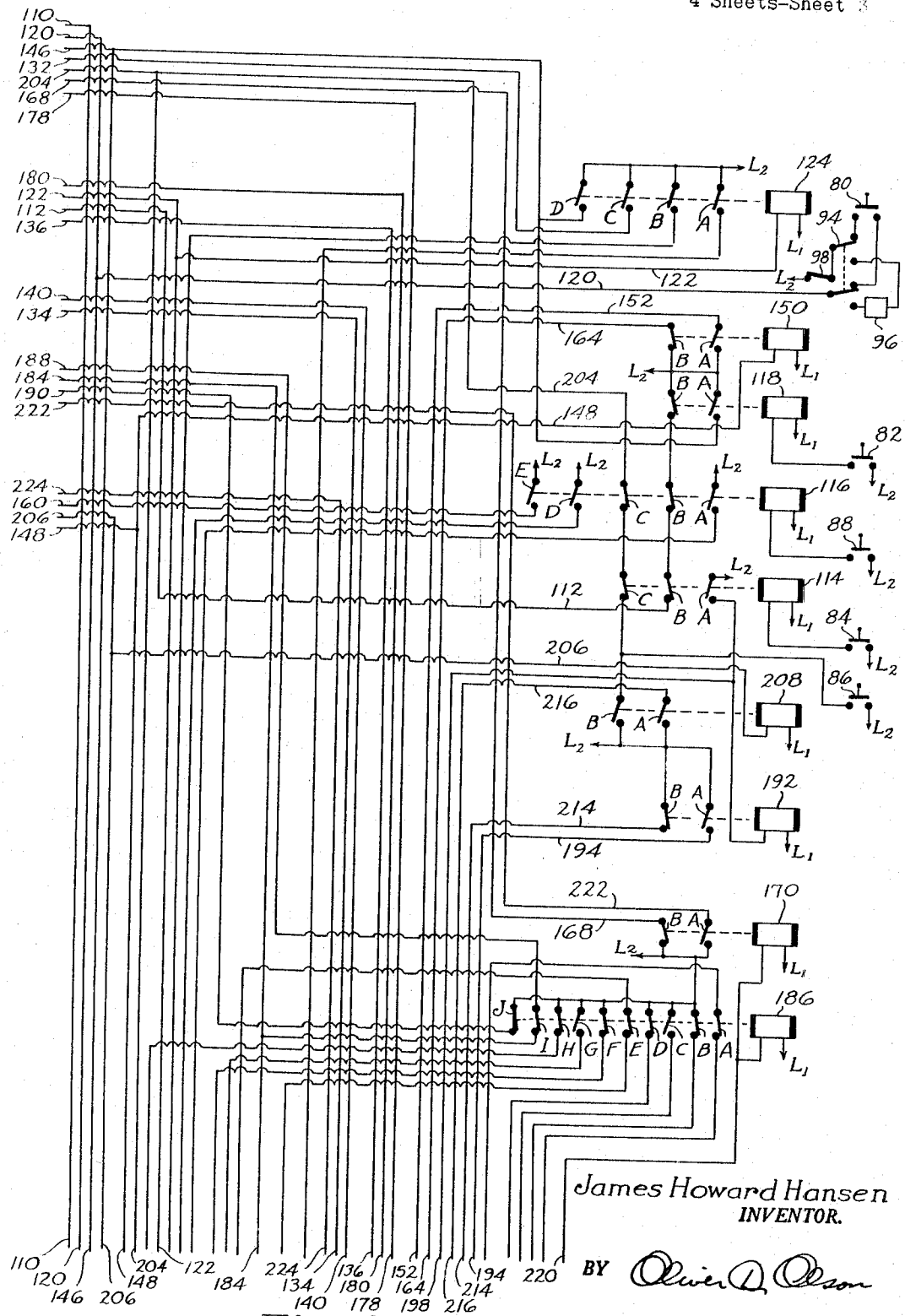

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Fig. 6.

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AUTOMATICALLY CONTROLLED AMUSEMENT RIDE

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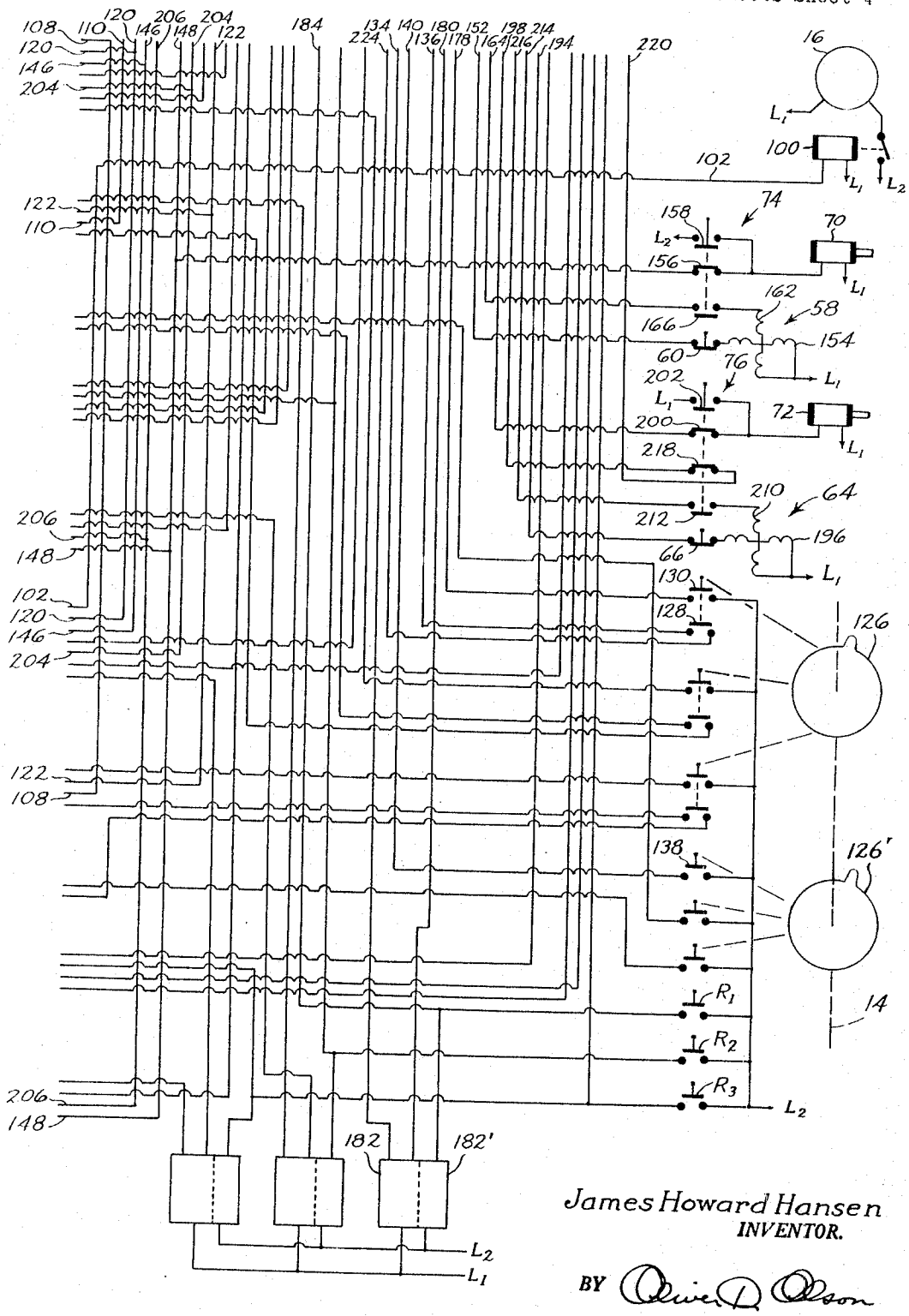

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Fig. 7.

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3,321,203
AUTOMATICALLY CONTROLLED AMUSEMENT RIDE

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Filed Nov. 12, 1963, Ser. No. 322,896
7 Claims. (Cl. 272—38)

This invention relates to amusement rides, and more particularly to a multiple carrier amusement ride which is capable of operation through cycles for each carriage without the presence of an operator.

In amusement rides of the type wherein a plurality of carriers are moved through a common circuitous path, it has been necessary heretofore that an operator be in attendance at all times to control the stopping of each carriage individually at a landing, to permit participants to enter or leave each carriage. Typical of such amusement rides are the well-known Ferris wheel and similar vertically rotatable multi-carriage devices, as well as many horizontally rotatable devices of the type, for example, wherein a plurality of radial arms each supports at each extremity a miniature car, airplane, or other carriage.

Although the cost of operation of such operator-attended devices is not excessive when the device is associated with many others in a large midway or other concentrated area, the cost of operation becomes prohibitive when the ride is not associated with others and is located in a relatively isolated area. Typical of such application is the provision of a ride in the location of a super market, service station, shopping center, city park, bowling alley, and various other sites.

It is the principal object of the present invention to provide an amusement ride of the class described in which operational control of each carriage is effected without the personal attendance of an operator.

Another important object of this invention is the provision of an amusement ride of the class described in which the operational control of each carriage is effected automatically by the proper sequential actions of the participants.

Still another important object of the present invention is the provision of an amusement ride of the class described which is characterized by fail-safe operation in that any improper action of any participant functions to stop the ride.

A further important object of this invention is the provision of an amusement ride of the class described in which the automatic control may be interrupted manually by a participant or by a person associated with the participant but not actively participating in the ride.

A still further important object of the present invention is the provision of an amusement ride of the class described which is of relatively simplified construction for economical manufacture and which is capable of extended operation with a minimum of maintenance.

The foregoing and other objects and advantages of this invention will appear from the following detailed description, taken in connection with the accompanying drawings in which:

FIG. 1 is a perspective view, partially broken away, of an amusement ride of the Ferris wheel type, embodying the features of the present invention;

FIG. 2 is a fragmentary front elevation showing a pivot mounting for the safety bar associated with each seat unit of the ride illustarted in FIG. 1;

FIG. 3 is a fragmentary front elevation illustrating locking mechanism associated with the safety bar of each seat unit of the ride illustrated in FIG. 1;

FIG. 4 is a sectional view taken along the line 4—4 in FIG. 1; and

FIGS. 5, 6 and 7 are schematic diagrams of an electrical system for the control of the ride illustrated in FIG. 1, the circuitry of each figure being in continuity with the others.

In the Ferris wheel type ride shown in FIG. 1, and which is illustrated primarily for the purpose of describing the fundamental concept of the present invention, there is provided a framework structure which includes the horizontal base members **10** and the laterally spaced vertical truss members **12**. The truss members support, at their upper ends in appropriate bearings, the main drive shaft **14** which is coupled in any convenient manner to the output shaft of an electric drive motor **16** located in any position desired.

Secured to the main shaft for rotation therewith is a wheel structure. In the embodiment illustrated, laterally spaced pairs of mounting discs **18** are secured to the shaft **14**, and each supports a plurality of radially projecting, elongated support arm structures **20**. These are arranged in laterally spaced pairs, with each pair pivotally supporting between them, as by means of the pivot shafts **22**, a seat unit adapted to support a participant of the ride. The embodiment illustrated provides three such seat units S_1, S_2, and S_3, although it will be understood that the number of units may be varied as desired.

Transparent side walls (not shown) may extend from the opposite sides of each seat unit, if desired, to insure against possible injury of a participant by contact with the arm structures **20**.

Each seat unit is provided with a safety bar **24** which is mounted pivotally at one end on the seat unit for swinging movement between an open position which exposes the seat unit for entry and exit by a participant, and a closed position projecting across the seat and the lap of the participant, for confining the participant in the seat. In the embodiment illustrated in FIG. 2, the safety bar is mounted at one end on the seat unit S by means of the pivot pin **26** which extends through the bar and is supported at its opposite ends in spaced brackets **28** secured to the outwardly projecting flange of the seat unit. Since, in the embodiment illustrated, it is desirable that the safety bar swing automatically to open position when unlocked, a coil spring **30** is looped about the pivot pin and is secured at one end to the bar and at the opposite end to one of the brackets. This connection is made in such manner that the spring is in tension when the bar is in closed position, thereby urging the bar to the open position. A stop pin **32** extends between the brackets to limit opening of the safety bar to a position substantially parallel to the side walls of the seat unit,

The opposite end of the safety bar is adapted to be locked releasably to the seat unit when in closed position. In the embodiment illustrated in FIG. 3, the end of the bar opposite the pivot support **26** is provided with a recess **34** adapted to receive a latch pin **36** which, as illustrated, is formed by the extending armature of an electric solenoid **38** mounted on the seat unit. In the closed position of the safety bar, the latter engages the actuating pin **40** of a microswitch **42** for locking the latch pin, as described in detail hereinafter.

Each seat unit also is provided with another electric switch **44**, herein referred to as a participant interrupt switch, the actuator button **46** of which is disposed for convenient access to the participant in the seat unit. As explained more fully hereinafter, this switch serves to permit the participant to stop the ride if he wishes to exit before the number of rotations allotted to him have been completed.

Each seat unit also is provided with a seat switch which is actuated when the participant has seated himself within the unit. Conveniently the seat switch is provided by

means of a seat pad switch 48 having an internal construction which includes switch contacts that are brought together when weight is placed upon the pad. Pad constructions of this type are widely used, for example, as entrance and exit mats in supermarkets and other commercial establishments to effect automatic opening of doors. The function of the seat switch on each unit is explained in detail hereinafter.

The ride structure described hereinbefore is enclosed by a peripheral wall 50 which is open only at one end for entrance and exit. This open end normally is closed by an entrance door 52 and an exit door 54, separated laterally from each other and each mounted for independently controlled swinging movement. Thus, the entrance door is mounted for swinging movement on the housing 56 secured to one end of the peripheral wall. This housing encloses an electric reversible motor 58 (FIG. 7) which functions to open and close the door. The housing also encloses an electric switch 60 (FIG. 7) which, as explained more fully hereinafter, functions to stop the motor 58 when the door 52 has been fully opened.

Similarly, the exit door 54 is mounted for swinging movement on the housing 62 secured to the opposite side of the peripheral wall 50. This housing also encloses an electric reversible drive motor 64 and direction control switch 66 (FIG. 7).

A hollow center post 68 between the doors houses the electric solenoids 70 and 72 associated with the entrance and exit doors 52 and 54, respectively. Each solenoid has a retractable latch armature associated with a catch on the door, for releasably locking the latter in closed position. The post also supports the latch solenoid switches 74 and 76 associated with the solenoid 70 and 72, respectively, for controlling operation of the latter, as explained in detail hereinafter.

A base platform covers an area under the entrance and exit doors, and laterally spaced guide rails 78 define entrance and exit passageways associated with the doors. An electric switch mat 80 is supported on the platform within the entrance passageway on the outer side of the entrance door. A similar electric switch mat 82 is supported on the platform within the entrance passageway on the inner side of the door. In similar manner, electric switch mats 84 and 86 are supported upon the platform within the exit passageway on the inner and outer sides respectively, of the exit door.

An additional electric switch mat 88 is supported upon a platform which extends inwardly from the pads 82, 84 to a position at which a participant may enter a seat unit when the latter is in proper position for entry, as explained more fully hereinafter.

It will become apparent hereafter that the electric switch mats serve to control the sequential operations of the amusement ride, in response to the weight of participants as they move from one mat to another.

In the preferred embodiment illustrated, there is also provided a plurality of electric switches mounted on the peripheral wall 50 adjacent the exit door 54 and at an elevation above the ground sufficient to prevent actuation by small children. These switches R_1, R_2, R_3, hereinafter referred to as remote interrupt switches, are associated one with each of the chair units S_1, S_2 and S_3, respectively, and, as explained in detail hereinafter, are intended for use by a child's mother or other adult companion who awaits outside the wall 50, when it is desired to stop the ride to have the child leave the ride before the allotted time has been completed.

The association between each of the remote interrupt switches and its corresponding seat unit may be identified by various means. For example, each switch may carry a numeral corresponding to a numeral located on the corresponding seat unit at a clearly visible location. Alternatively, or in addition, each switch and corresponding seat unit may be provided in matching color with each set differing in color from the others.

Electrical connections between the relatively rotatable components of the ride assembly may be provided in any desired manner. For example, a multiple collector ring assembly 90 (FIG. 5) may be mounted for rotation with the main shaft 14, with each ring having an associated brush contact, indicated by the arrow heads, supported in fixed position on the adjacent vertical truss member. Each collector ring of the assembly is, in turn, connected electrically to an associated ring of an assembly 92 secured to each support arm 20 concentric with the associated pivot shaft 22. Each of these latter rings has an associated brush contact mounted on the associated seat unit concentric with its pivot shaft. These last named brushes are connected electrically to the several switches associated with each seat unit, namely the safety bar latch solenoid 38, the safety bar lock sensing microswitch 42, the participant interrupt switch 44 and the seat pad switch 48.

In FIG. 5 the collector ring assembly 90 is shown to include five rings, each associated with one of the five rings of the assembly 92 on one of the seat units. Since there are three seat units illustrated in FIG. 1, it will be understood that three assemblies 90 will be provided or one assembly 90 will be provided with a sufficient number of rings to accommodate all three ring assemblies 92.

Referring now to FIGS. 5–7 of the drawings, the electrical circuitry illustrated therein is best described in connection with the operation of the ride, as follows:

First, it is to be understood that the electrical circuitry illustrated in FIG. 5 is associated with one of the seat units, for example seat unit S_1, and that identical circuitry is provided for each of the other seat units S_2 and S_3. Thus, whereas the circuitry of FIG. 5 is associated with the remaining circuitry by the interconnection of common conductors extending between FIGS. 5, 6 and 7, the circuits associated with seat units S_2 and S_3 are associated with the remaining circuitry by connection to the common conductors terminating at the left hand side of FIG. 7. Thus, duplication of the circuitry in FIG. 5 for seat units S_2 and S_3 is not made herein, but rather the components illustrated in FIG. 5 are identified hereinatfer in relation to the various seat units.

Second, in FIG. 6 there is shown a ganged switch 94 which, in the position illustrated, connects the entrance mat switch 80 into the operating circuit. This switch may be moved to the alternate position to connect into the operating circuit a token or coin operated switch 96 which would replace the function of the mat switch 80, as will be apparent.

Since the following description relates to automatic operation of the system, the manual-automatic switch 98 (FIG. 6) is shown in automatic position. In manual position, with switch 98 open, the seat assembly rotates continuously, as for display, since mat switch 80 is disconnected from the control circuit.

Assuming that the supply lines L_1 and L_2 have been connected to an appropriate source of electrical supply, the Ferris wheel structure thus is activated to continuous rotation by virtue of the driving of the main shaft 14 by the drive motor 16. This motor is activated by completion of its electric circuit through closure of the contact associated with the motor control relay 100 (FIG. 7). Closure of this contact is effected by activation of the relay by completion of its electric circuit from supply line L_1, through said relay and conductor 102, through the normally closed contact D of the inactive relay 104 associated with seat unit S_3, (not shown, but identical to FIG. 5), by connection of conductor 102 in FIG. 7 to conductor 110 in FIG. 5, thence through normally closed contact C of relay 106 also associated with seat unit S_3, thence through conductor 112 in FIG. 5 and its connected conductor 108 in FIG. 7 to the normally closed contact D of inactive relay 104 associated with seat unit S_2 (not shown, but identical to FIG. 5), by connection of conductor 108 in FIG. 7 to conductor 110 in FIG. 5, through

normally closed contact C of relay **106** associated with seat unit S_2, thence through conductor **112** in FIG. 5 and its connected conductor **110** in FIG. 7, through the same conductor **110** in FIG. 6 to said conductor **110** in FIG. 5 to normally closed contact D of relay **104** associated with seat unit S_1 (FIG. 5), through normally closed contact C of inactive relay **106** associated with seat unit S_1, thence through conductor **112** and normally closed contact B of inactive relay **114** (FIG. 6), through normally closed contact B of inactive relay **116** and normally closed contact B of inactive relay **118**, to the other supply line L_2.

Let it be further assumed that seat unit S_1 is unoccupied when a child approaches the ride and steps upon the entrance mat switch **80** outside the entrance door **52**. Consequent closure of this switch completes an electric circuit from supply line L_2 through the closed manual-automatic switch **98** and said mat switch **80** and conductor **120**, through normally closed contact G of inactive relay **104** associated with seat unit S_1 (and any other unoccupied seat unit), through conductor **122** and relay **124** to the other supply line L_1. Consequently activation of relay **124** effects closure of its associated contacts from the open positions illustrated in FIG. 6.

A cam member **126** (FIG. 7) is secured to the main shaft **14** for rotation therewith, to effect sequential operation of a plurality of electric switches. When the cam member rotates to the position at which it engages and closes the mechanically coupled switches **128** and **130**, and electric circuit is completed from supply line L_2 through the now closed contact C of activated relay **124** (FIG. 6) through conductor **132** and the normally closed contact E of inactive relay **104** (FIG. 5), through conductor **134** (FIGS. 6–7) and the closed switch **128**, through conductor **136** (FIGS. 7–6) and relay **106** (FIG. 5) to the other supply line L_1. Activation of the relay **106** effects closure of its associated contacts A and B and opening of contact C, and the closure of its associated contact B forms a holding circuit for the relay through the normally closed contact E of inactive relay **104** and the closed contact C of activated relay **124**.

Activation of relay **106** effects opening of its associated contact C, thereby breaking the electric circuit of the drive motor relay **100** and consequent stopping of the drive motor **16**.

However, because of the inertia of the rotating wheel structure, the main shaft **14** continues to rotate for a short distance, sufficient to rotate the second cam member **126'** into closing engagement with switch **138**. Closure of this switch results in completion of an electric circuit from supply line L_2, through said closed switch **138** and conductor **140** (FIG. 7–6), through the now closed contact A of activated relay **106**, through relay **142** to the other supply line L_1. This relay **142**, which is of the delayed break type, is maintained activated by a holding circuit which is completed by closure of its associated contact A.

Closure of switch **138** also effects activation of relay **144** which is arranged in parallel with delay relay **142**. Relay **144** is maintained activated by the same holding circuit for relay **142**.

Activation of relay **144** effects closure of its associated contacts from the open positions illustrated, and closure of contact D completes an electric circuit from supply line L_2 through closed contact D of activated relay **124**, through conductor **146** and the normally closed contact F of inactive relay **104**, through the closed contact D of active relay **144** and conductor **148**, through relay **150** to the other supply line L_1. The contacts A and B associated with this relay **150** thus close and open, respectively, and closure of said contact A completes an electric circuit from supply line L_2 through said contact and conductor **152**, through entrance door switch **60** and the winding **154** of the entrance door drive motor **58** to the other supply line L_1.

Simultaneously with the activation of the entrance door drive motor, the electric circuit of the entrance door latch solenoid **70** is completed from supply line L_1 through the solenoid and the normally closed contact **156** of the multiple entrance door switch **74**, through conductor **148** (FIGS. 7–6–5) and the closed contact D of activated relay **144**, thence through the normally closed contact F of inactive relay **104**, through conductor **146** and closed contact D of activated relay **124**, to the other supply line L_2. The latch is thus retracted, unlocking the entrance door for movement to its open position, by the drive motor **58**. A holding circuit for the latch solenoid is provided by closure of the contact **158** of entrance door switch **74**, upon the start of opening movement of the door.

When the entrance door reaches its fully open position, permitting the child to pass through the opening, the door engages and opens the door switch **60**, thereby breaking the electric circuit of the drive motor **58** and maintaining the door in open position.

The child then steps through the entrance door opening and onto the interior entrance mat switch **82**, thereby completing the circuit of relay **118**. The contacts A and B associated with this relay thus close and open, respectively, closure of contact A thus by-passing contact D of relay **124**, whereby to maintain the entrance door drive motor deactivated and the door open.

The child then steps from the interior entrance mat switch **82** onto the landing mat switch **88**, to progress toward the rotary seat assembly. Closure of the landing mat switch **88** completes the electric circuit of relay **116**, effecting closure of its associated contacts A, D and E and opening of its contacts B and C. Closure of contact E of activated relay **116** completes the electric circuit of relay **104** from supply line L_1, through said relay and the closed contact B of activated relay **144**, thence through conductor **160** and the now closed contact E of activated relay **116**, to the other supply line L_2.

Activation of relay **104** results in the closing of its associated contacts A, B and C and opening of its contacts D, E, F and G, the opening of contact G thus breaking the electric circuit of relay **124**. Upon opening of contact D of relay **124** the electric circuit of the entrance gate motor **58** is broken, thereby maintaining the gate closed. This prevents a succeeding child from initiating a new cycle at this time.

Activation of relay **104** also effects opening of the associated contact F, thereby breaking the electric circuit of relay **150**. In this regard it is to be recalled that relay **150** had been maintained activated by the closed contact A associated with relay **118**, when the child was standing on the interior entrance mat switch **82**, but that this circuit was broken when the child stepped from said mat switch onto the landing approach mat switch **88**.

Deactivation of relay **150** results in return of its associated contacts to the positions illustrated, wherein closure of contact B completes the electric circuit of the reverse winding **162** of the entrance door drive motor **58**, from line L_2 through said closed contact B and conductor **164**, thence through the now closed contact **166** of the door switch **74**, through the reverse winding **162** to the other supply line L_1. Accordingly, the entrance door **52** is driven to its closed position, whereupon the contacts of the door switch **74** are returned to the positions illustrated, the latch solenoid **70** is deenergized and the latch moved to locking position.

The child now steps from the landing area of the mat switch **88** at which heat unit S_1 has been stopped in proper position for entry, and sits upon the seat pad switch **48** (FIG. 4). In stepping from the landing mat switch **88** the latter opens and deenergizes relay **116**, thus returning the associated contacts to the positions illustrated. Although the associated contact A has opened, relay **104** is maintained energized by the by-pass circuit extending from supply line L_1 through said relay and its closed contact B, thence through conductor **168**

and the normally closed contact B of inactive relay **170**, to the other supply line L_2.

Closure of the seat pad switch **48** completes an electric circuit from supply line L_2 through the associated collector rings and said seat pad switch, through relay **172** to the other supply line L_1, whereupon its associated contacts close.

The child now reaches up and swings the safety bar **24** downward across his lap, whereupon the bar engages and closes the safety bar switch **42**. This switch thus completes an electric circuit which extends from supply line L_2, through the associated collector rings and the safety bar switch, through the normally closed contact C of inactive relay **174**, thence through the closed contact C of active relay **172**, through delay relay **176** to the other supply line L_1. Upon activation of relay **176**, the electric circuit of the drive motor control relay **100** is again completed, this time through the contacts D and C of the respective relays **104** and **106** associated with seat units S_3 and S_2, thence through conductor **110** and the closed contact A of activated relay **176**, through the closed contact A of activated relay **172** and the closed contact C of inactive relay **106** associated with seat unit S_1, thence through conductor **112** and the closed contacts B of inactive relays **114**, **116** and **118**, to the other supply line L_2.

Further, when the safety bar **24** closes the switch **42** to activate relay **176**, the associated contact C opens the electric circuit of the safety bar latch solenoid **38** which thereupon extends its armature **36** into locking engagement with the safety bar.

The main drive motor **16** then rotates the seat unit assembly. During each revolution of the assembly the cam member **126** engages and closes the shaft switch **130** momentarily to complete an electric circuit from supply L_2 through said switch and conductor **178** (FIGS. 7–6–5), through closed contact A of relay **104** and conductor **180** (FIGS. 5–6–7) to an electric pulse counter device **182** of any well-known type, to the other supply line L_1. After a preset number of counted pulses, an associated counter switch **182'** closes to complete an electric circuit from supply line L_2 through said switch and conductor **184**, thence through normally closed contact I of deenergized relay **186** (FIG. 6), through conductor **188** and relay **174** to the other supply line L_1. The contacts A and B associated with this relay **174** thus close and contact C opens, the associated contact A forming a holding circuit which bypasses the counter switch **182'**.

Upon closure of contact B of relay **174** an electric circuit is completed from supply line L_1 through relay **106** and conductor **136**, through switch **128** (which is closed momentarily by the cam member **126**), thence through conductor **134** and the closed contact B of active relay **174**, thence through conductor **190** and the normally closed contact J of inactive relay **186**, to supply line L_2. Activation of relay **106** results in the opening of contact C breaking the electric circuit of the motor control relay **100** and stopping the drive motor **16**. The closing of contact A associated with activated relay **106** completes the electric circuit of relays **142** and **144**, when the cam member **126'** rotates to a position closing switch **138**. Activation of relay **142** effects opening of its associated contact B which, in turn, opens the electric circuit of relay **176**, closing its associated contact C and activating the safety bar latch solenoid **38** to retraction. The safety bar **24** thus swings outward away from the seat unit S_1, under the influence of the spring **30**, giving evidence to the child that his ride has been completed and he is required to leave.

The child then steps from the seat unit S_1, onto the landing mat switch **88**, and walks onto the interior exit mat switch **84**. Closure of this switch completes the electric circuit of relay **114** to close the associated contact A and complete the electric circuit of relay **192**.

Activation of relay **192** effects closure of its associated contact A, completing an electric circuit from supply line L_2 through said closed contact and conductor **194** (FIGS. 6–7), thence through the closed exit door switch **66** and the exit door drive motor winding **196** to supply line L_1. Simultaneously, closure of contact A of activated relay **114** completes the electric circuit from supply line L_2 through said closed contact and conductor **198** and the closed contact **200** of the exit door switch **76**, through the exit door latch solenoid **72** to the supply line L_1. Activation of this solenoid causes retraction of its latch armature to unlock the exit door **54**. The latch solenoid is maintained activated upon closure of contact **202** of switch **76** when the exit door starts to open.

When the drive motor **64** has opened the exit door to its fully open position, the door engages and opens the door switch **66** to stop the motor **64**. The child then steps through the exit door opening onto the exterior exit mat switch **86**, thereby completing the electric circuit from supply line L_2, through said mat switch and the closed contact C of deenerziged relays **114** and **116**, thence through conductor **204** and the closed contact C of activated relay **104**, through closed contact C of activated relay **144**, through conductor **206** (FIGS. 5–6) and relay **208**, to the other supply line L_1. Activation of relay **208** effects closure of its associated contacts.

When the child moved from the interior exit mat switch **84**, deactivating relay **114**, opening of the associated contact A caused deactivation of relay **192** and consequent closing of its associated contact B, thereby completing the electric circuit of the reverse winding **210** of the exit door drive motor **64** from L_1 through said winding, thence through the now closed contact **212** of door switch **76** and conductor **214**, through closed contact B of relay **192** to L_2. The exit door **54** thus returns to closed position behind the child who since has left the outer exit mat switch.

Upon activation of relay **208** when the child closed exit mat switch **86**, closure of associated contact A effects completion of the electric circuit from supply line L_2 through said contact and conductor **216**, through the now closed contact **218** of door switch **76**, thence through conductor **220** and parallel relays **170** and **186** to supply line L_1.

Upon activation of relay **170**, its associated contact B opens to break the electric circuit of relay **104**, returning its associated contacts to the positions illustrated wherein the closure of contact G indicates that seat unit S_1 is no longer occupied. Additionally, closure of contact A associated with activated relay **170**, completes an electric circuit from supply line L_2 through said closed contact and conductor **222**, through the closed contact A of activated relay **144**, thence through conductor **224** and the pulse counter **182** to the other supply line L_1, returning the counter to zero for the next cycle.

It will be understood that the foregoing sequence will repeat for each subsequent child in turn, at any point in the cycle of operation of the seat unit S_1, for any seat unit that is or becomes unoccupied before the cycle for seat unit S_1 has been completed.

However, subsequent children must wait for the completion of one cycle of operation for each seat unit, determined by the associated counter mechanism, before a subsequent cycle can be started. This is evident since the closure of the exterior entrance mat switch **80** has no effect until relay **104** becomes deenergized to effect closure of its associated contact G.

Moreover, activation of the drive motor **16** cannot be effected if, for any reason, someone is standing upon any of the interior mat switches **82**, **88** or **84**. Thus, if an adult leads a child through the entrance door and seats him in the seat unit that has stopped at the proper landing position, the companion must leave through the exit door before the ride may commence. Similarly, if a child leaves a seat unit upon completion of his ride, he must leave through the exit door before the ride can again be activated. This insures against a child taking

more than one ride at a time. In this regard, interior walls may be provided to confine the participants to the switch mats, i.e. to prevent them from stepping off the interior mats and remaining inside the wall **50**.

In the event a child desires to leave the ride before the allotted revolutions have been completed, he may depress the participant interrupt switch **44** on his seat unit, to complete the electric circuit of relay **174** and thereby effect stopping of the ride when his seat unit comes to proper position at the landing mat switch, as determined by the activation of the switch **128** by cam member **126**.

In similar manner a companion to the child may stop the ride before normal completion, by pushing the remote interrupt switch corresponding to the seat unit.

In the event a child attempts to climb out of a seat unit, and thus lifts his weight from the seat pad switch **48**, relay **172** will become deenergized thus opening its associated contact A to break the electric circuit of the motor control relay **100** and shutting down the ride.

It will be apparent that if, for example, two of the three seat units are occupied when another child steps upon the outer entrance mat switch **80**, the rotary unit will continue to rotate the occupied seat units past the landing position, because of the fact that contact G of relay **104** associated with those occupied seat units will be open, and only the unoccupied seat unit will have its associated relay **104** deenergized and its contact G closed, ready to effect activation of relay **124**.

It will be apparent from the foregoing that the arrangement described is readily adaptable for use with amusement rides of various types in which a plurality of seat units or other forms of participant carriers are rotated or otherwise moved through a circuitous path.

It will be further apparent, to those skilled in the art, that various changes may be made in the structural and electrical arrangements described hereinbefore, without departing from the spirit of this invention and the scope of the appended claims.

Having now described my invention and the manner in which it may be used, what I claim as new and desire to secure by Letters Patent is:

1. An amusement ride comprising:

(a) a plurality of carriers,

(b) driven means interconnecting the carriers for moving the latter through a circuitous path past a landing station,

(c) electrically actuated motor means having an electric circuit and operatively connected to the driven means for moving the latter,

(d) stop switch means associated with each carrier and operatively associated with said electric circuit and operable by an entering participant normally to stop an approaching carrier at the landing station,

(e) occupancy sensing switch means on each carrier operatively associated with the stop switch means and operable by the occupancy of a carrier to prevent stopping of that carrier at the landing station by an entering participant, and

(f) cycle switch means for each carrier operatively associated with said electric circuit and operable upon completion of a predetermined movement in said circuitous path of the associated occupied carrier to stop the said carrier at the landing station.

2. The amusement ride of claim **1** including participant safety switch means on each carrier associated with said electric circuit and operable by an improperly positioned participant in the carrier to stop the movement of the carrier assembly.

3. The amusement ride of claim **1** including interrupt switch means for each carrier associated with said electric circuit and operable manually to stop the associated carrier at the landing station prior to completion of the cycle of movement of the carrier.

4. The amusement ride of claim **1** wherein the occupancy sensing switch means includes a landing station switch operable by the weight of an entering participant.

5. The amusement ride of claim **1** including a confining wall about the carrier assembly having entrance and exit openings, and wherein the stop switch means includes an entrance switch located at the entrance opening and operable by the weight of an entering participant.

6. The amusement ride of claim **1** including exit switch means operatively associated with the occupancy sensing switch means and operable by an exiting participant to inactivate the sensing switch means and permit subsequent stopping of the carrier by an entering participant.

7. The amusement ride of claim **6** including a confining wall about the carrier assembly having entrance and exit openings, and wherein the exit switch means includes an exit switch located at the exit opening and operable by the weight of an exiting participant.

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