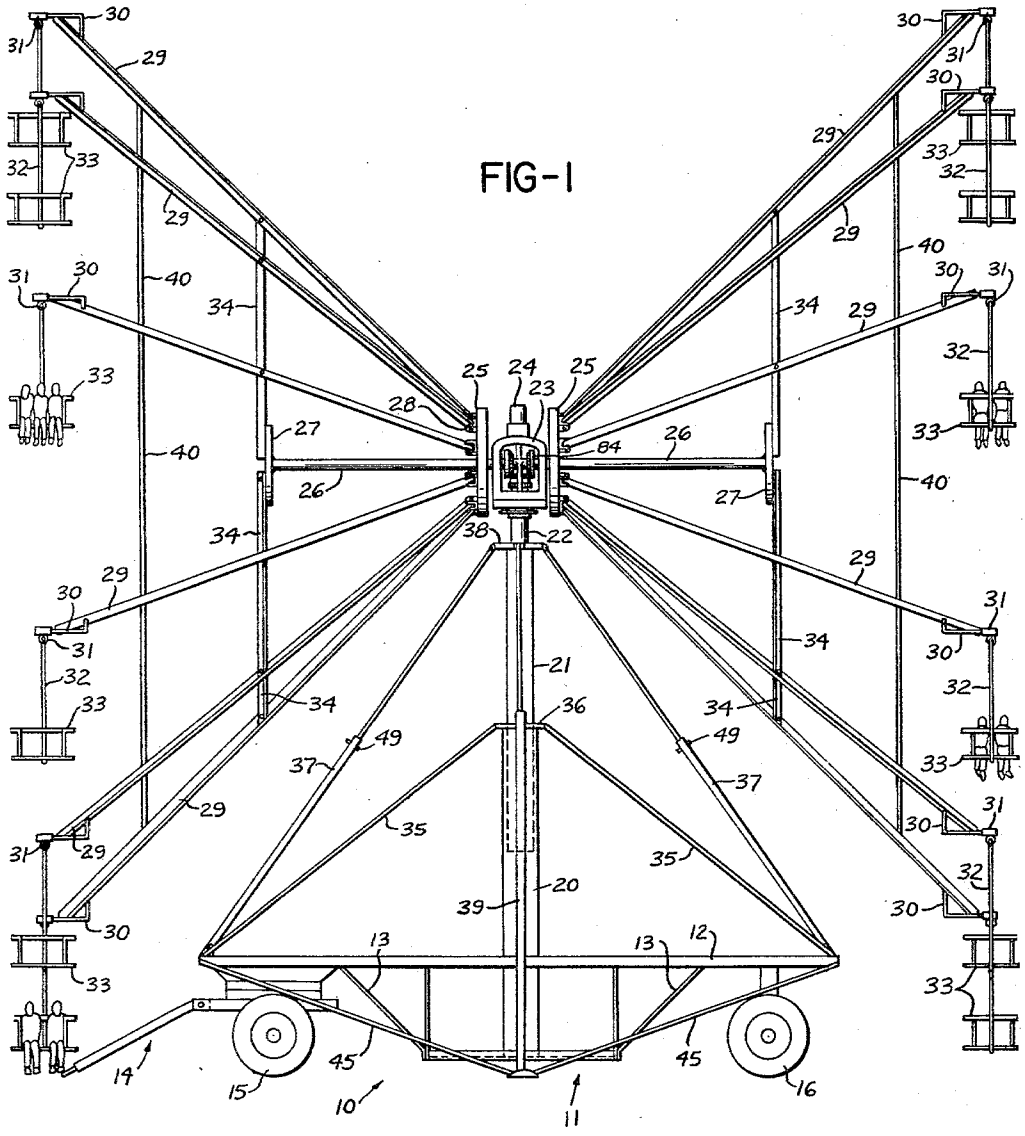
April 6, 1965 G. L. BARBER 3,176,983

AMUSEMENT RIDE

Filed Jan. 18, 1963 6 Sheets-Sheet 1

FIG-1



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AMUSEMENT RIDE

Filed Jan. 18, 1963 6 Sheets-Sheet 2

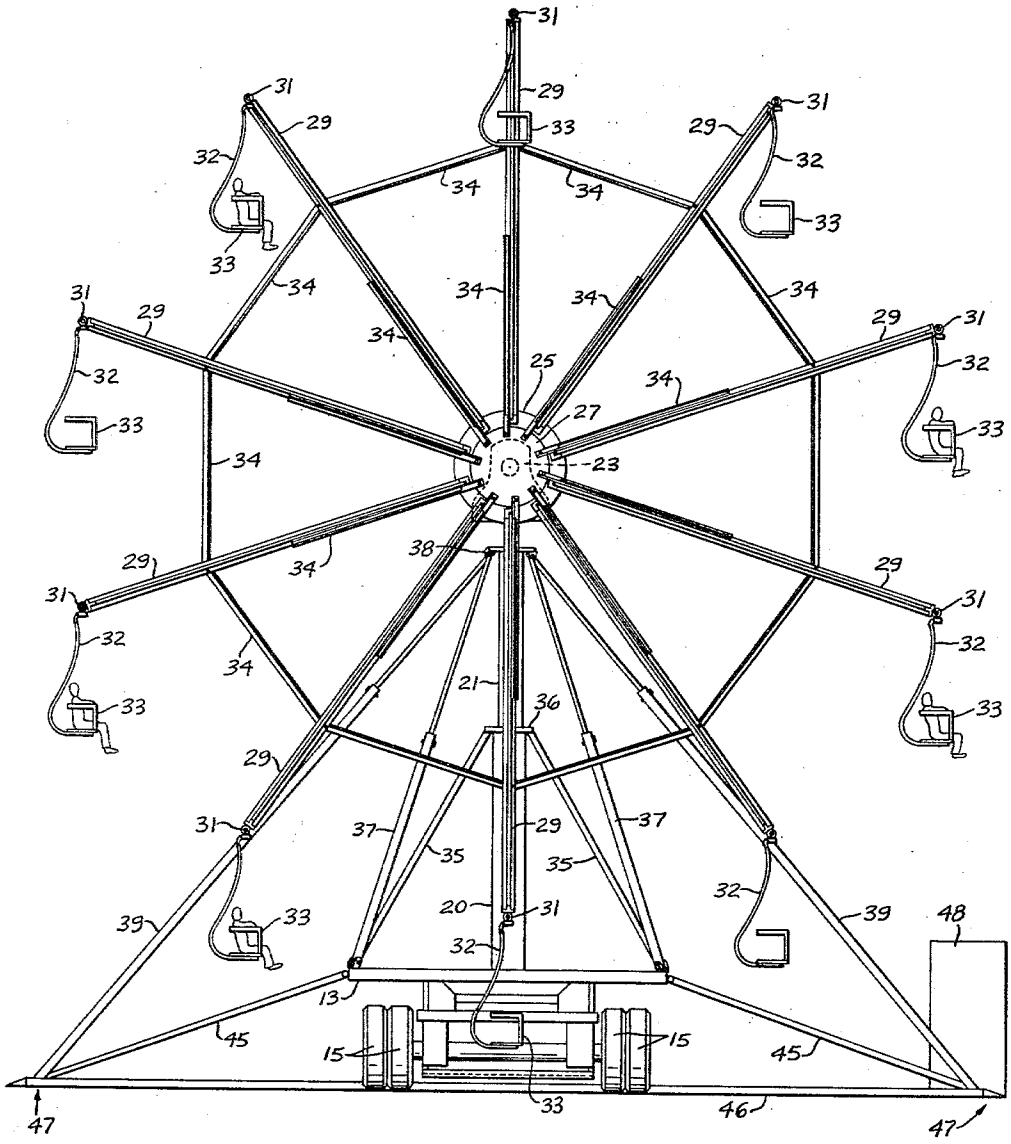

FIG-2

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AMUSEMENT RIDE

Filed Jan. 18, 1963 6 Sheets-Sheet 3

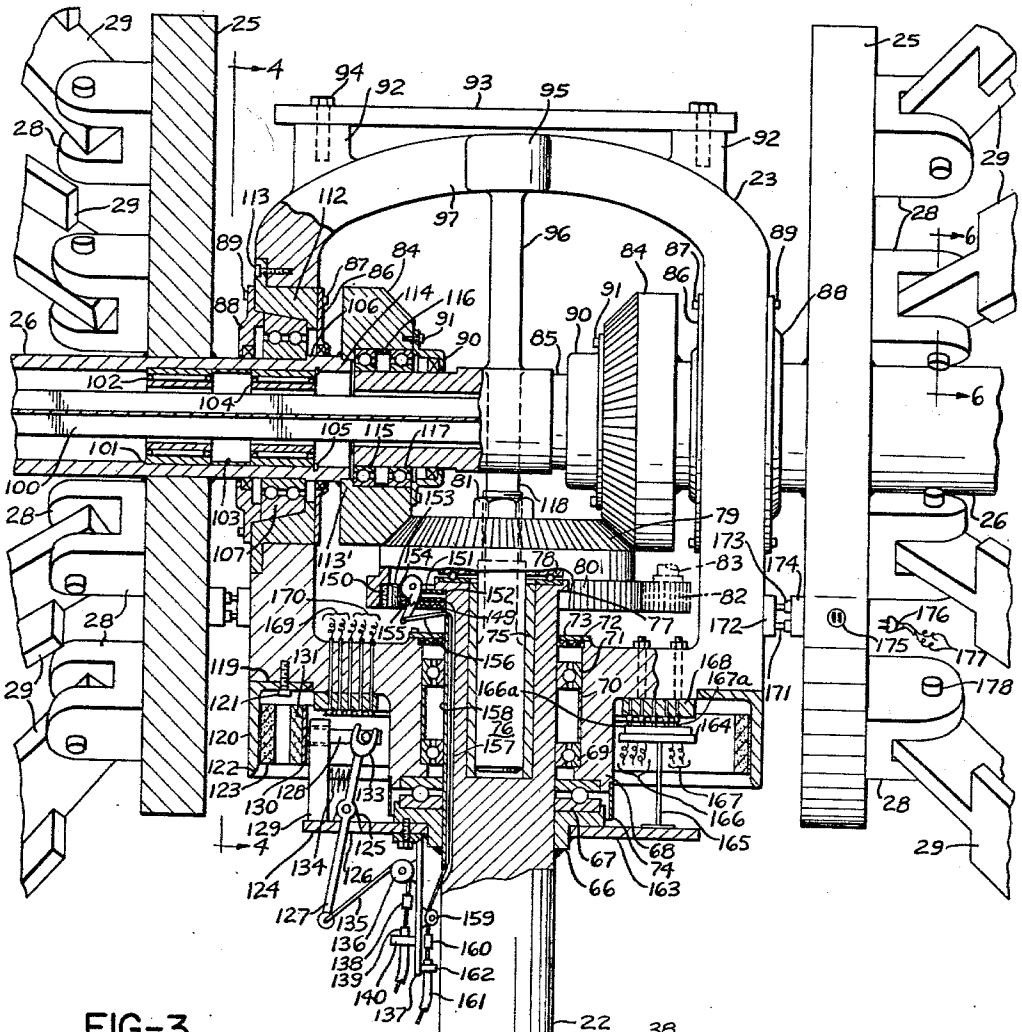
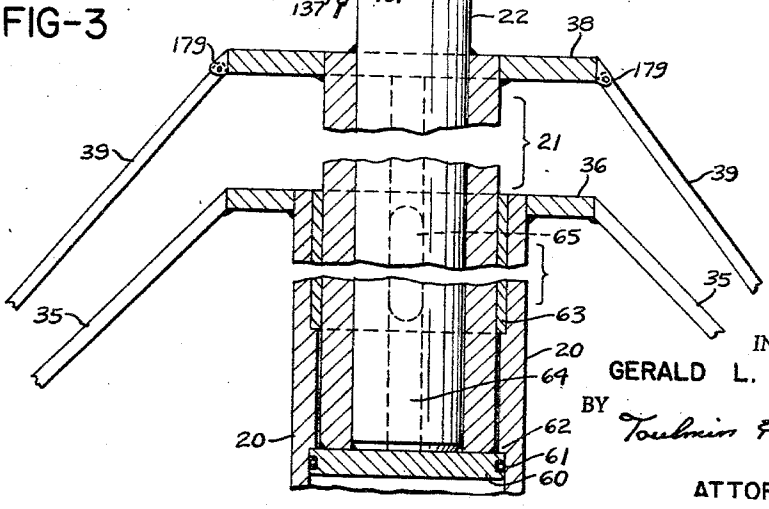


FIG-3



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AMUSEMENT RIDE

Filed Jan. 18, 1963 6 Sheets-Sheet 4

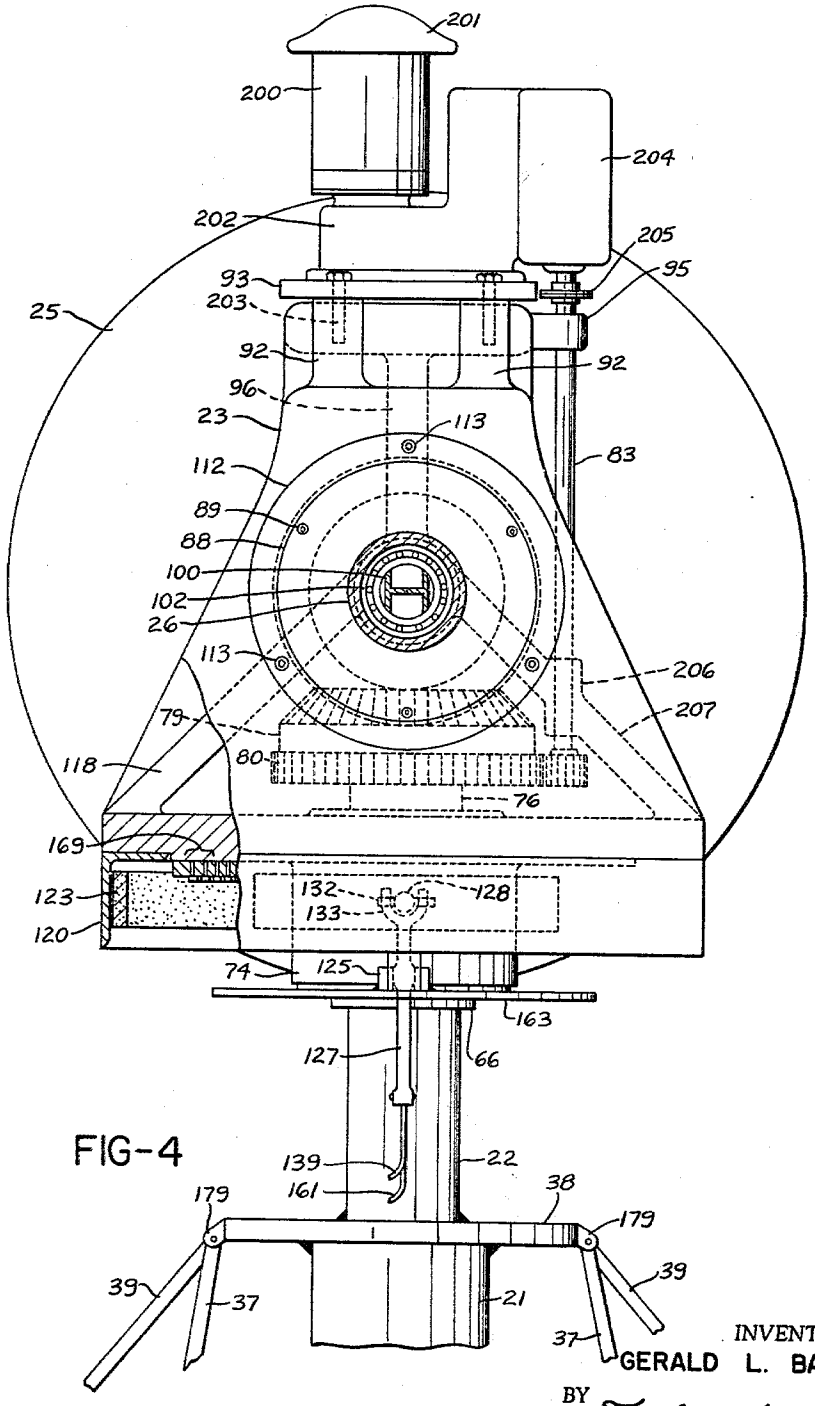

FIG-4

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AMUSEMENT RIDE

Filed Jan. 18, 1963 6 Sheets-Sheet 5

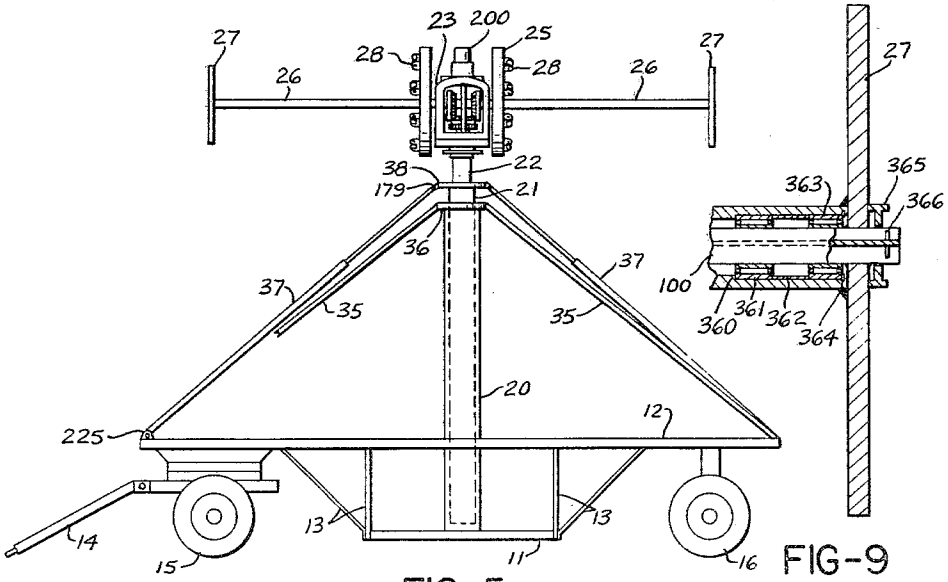

FIG-5

FIG-9

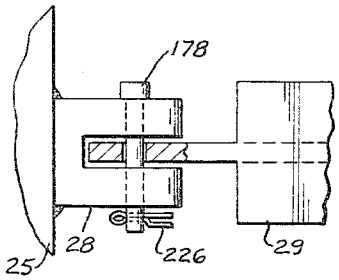

FIG-6

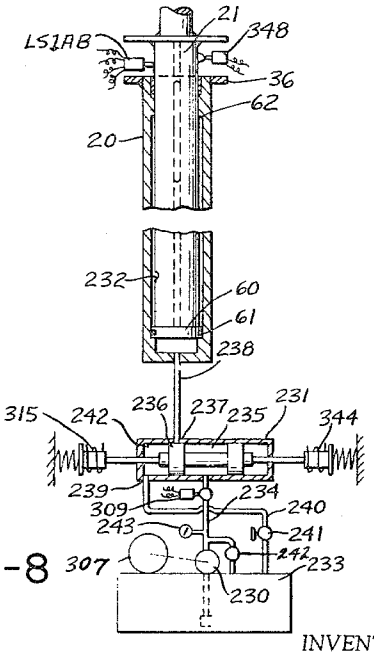

FIG-8

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AMUSEMENT RIDE

Filed Jan. 18, 1963 6 Sheets-Sheet 6

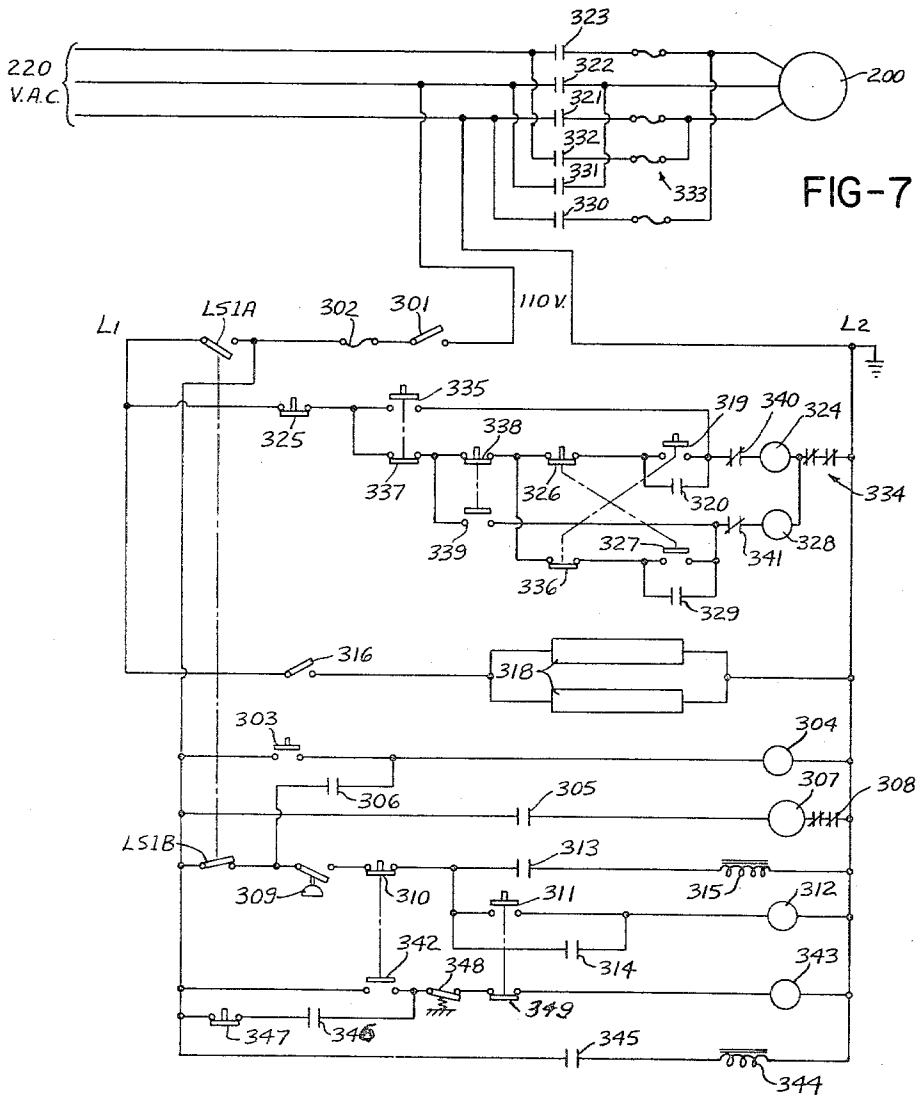

FIG-7

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United States Patent Office

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Patented Apr. 6, 1965

3,176,983

AMUSEMENT RIDE

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Filed Jan. 18, 1963, Ser. No. 252,325

11 Claims. (Cl. 272—29)

This invention relates to a new amusement ride and more particularly it relates to a mobile amusement ride which is capable of being readily transported and operated at different fairs and amusement parks as desired.

The object of this invention is to provide an amusement ride which produces a new motion sensation for the riders.

A further object is to provide a ride having a large rider capacity but one which is also readily assembled and disassembled for loading onto the bed of a truck for transportation to a new amusement site.

Another object of this invention is to produce an apparatus which permits the riders to be loaded on and unloaded from the apparatus with ease.

A still further object of this invention is to produce a ride which is relatively economical to manufacture.

FIGURE 1 is a front view showing the support structure for the driving mechanism and the seats of this invention;

FIGURE 2 is a side view of FIGURE 1; the operator's control box is also conveniently shown;

FIGURE 3 is a modified cut-away view of the center section of FIGURE 1 showing details of the driving mechanism and support structure;

FIGURE 4 is a modified end view of the center section taken along lines 4—4 of FIGURE 3 showing the method of mounting the motor and gear reduction unit and further details of the yoke;

FIGURE 5 is a front view showing the apparatus in the lowered position with the seats and supporting braces removed;

FIGURE 6 is a top view taken along line 6—6 of FIGURE 3 showing the method of mounting the seat support arms on the rotating hubs;

FIGURE 7 shows the electrical circuit used in this invention;

FIGURE 8 shows the hydraulic circuit used in this invention; and

FIGURE 9 is an enlarged view of the outer end of a revolving cylinder showing the bearings employed around the H beam.

Referring more in detail to the drawings, FIGURE 1 shows a truck body generally designated 10. The body 10 has been modified to provide a lower platform 11, which is suitably attached to upper platform 12 and is reinforced by braces 13. A tow bar 14, front supporting wheels 15, and rear supporting wheels 16 are also shown.

The stationary supporting column 20 is suitably anchored upon the lower platform 11. Column 20 is the stationary member of a hydraulic lift of known variety, column 21 telescopes inside stationary column 20 and a steel collar 38 is welded on to the top of telescoping column 21. A center post 22 is inserted in telescoping column 21 and is suitably welded on to collar 38. The driving mechanism and the support structure conveniently called a yoke 23 are rotatably mounted on the center post 22. The details of the driving mechanism will be discussed in relation to FIGURE 3. Drive motor means generally designated 24 is suitably mounted on yoke 23 as shown in FIGURE 1.

Also shown in FIGURE 1 are steel revolving hubs 25 and steel revolving cylinder 26 which will be fully explained hereinafter. At the outer ends of revolving cylinders 26 are outer steel revolving hubs 27. Generally, these members provide the framework for supporting and rotating the seats.

Ten steel brackets 28 are suitably welded on the perimeter of each of the revolving hubs 25 as shown. The steel support arms 29 are joined to the brackets 28 by a hinge pin 178, as shown in FIGURE 6, and the arms diverge outwardly at an angle of 45 degrees with the horizontal cylinders 26.

A steel axle 30 which has a 90 degree bend in it is suitably welded on to the end of each seat support arm 29, as shown in FIGURE 1. A seat swivel 31 is then mounted on the axle 30 and retained by suitable pin means (not shown in the drawings).

The seat swivel 31 consists of two portions of steel tubular rods which are welded to each other at an angle of 90 degrees as shown. One portion is mounted on axle 30, and the other tubular portion provides an opening in which the axle from the seat hangar arm 32 is mounted. Seat 33 which normally holds up to three person is welded to hangar arm 32 and is supported thereby.

Steel braces 34 are rigidly mounted to revolving hub 27 in known manner and provide support for arms 29. Addtional braces 40 similarly joint adjacent seat supporting arms 29 as shown.

To provide support for the ride while in the elevated position shown in FIGURE 1, the following support braces are used. Stationary end braces 35 are suitably welded to the upper truck body 12 and a steel collar 36 is welded on to the top of stationary supporting column 20 as shown. Telescoping end braces 37 are hingedly mounted to the upper truck body 12 and collar 38 on the telescoping column 21 in known manner. These telescoping braces 37 have suitable pins 49 to lock the brace in the extended position. An outside telescoping brace 39 suitably joins collar 38 and junction brace 47, better seen in FIGURE 2.

FIGURE 2 shows the amusement ride as seen from the front of the truck body. In addition to the braces previously mentioned, there are these additional support braces. From the side of the truck, rigid braces 45 are suitably hinged to the upper truck platform and to a brace junction generally shown at 47. A rigid ground brace member 46 which normally lies on the ground is joined to the brace junction 47 in known manner. Two outer telescoping braces 39 are detachably joined to collar 38 and junction brace 47 in known manner. The operator's control box is generally shown at 48. The controls for the amusement ride will be discussed in detail hereinafter.

FIGURE 3 is a modified cut-away view of the center section shown in FIGURE 1. It shows the details of the driving mechanism and the supporting structure or yoke 23. The apparatus is shown in the elevated position with hydraulic pressure in stationary supporting column 20. Piston head 60 has a groove and O-ring seal 61 to seal in the hydraulic fluid. Piston head 60 is welded on to the bottom of telescoping column 21 and center post 22 rests upon the piston head 60 as shown. In this upper position, the piston head 60 is stopped from further travel by the shoulder 62 in column 20. A bushing 63 is mounted in stationary column 20 as shown.

In order to prevent telescoping column 21 from rotating while the ride is in progress, a keyway 64 is provided in telescoping column 21 and bushing 63. A suitable key 65 extends through a portion of column 20 through bushing 63 and into a portion of column 21. As previously explained, center post 22 is welded to telescoping column 21.

The support structure or yoke 23 is rotatably mounted on support 66 which is welded on to center post 22 as shown. To provide bearing support for yoke 23, lower yoke bearing 67 is positioned on yoke support 66 as shown. The yoke bottom 68 rests and rotates upon this lower yoke bearing 67. Fitted inside the yoke bottom 68 and around the center post 22 is a lower side bearing 69. A

spacer 70 lies between upper side bearing 71 and lower side bearing 69 as shown. Suitable packing 72, and a bearing cover 73 are also shown. A sleeve 74 is fitted on to the yoke bottom 68 in order to keep dust out of the lower yoke bearing 67.

A bushing 75 is located in center post 22 as shown and axle 76 for the driving gear is located inside this bushing. A suitable flange 77 exists on the top of center post 22 to provide a bearing surface for bearing 78 and for driven bevel pinion gear 79. While the driven bevel pinion gear 79 and the driven spur gear 80 are shown as an integral unit on the drawings, it is understood that the bevel gear and the spur gear may be made separately and suitably fastened together.

A locking nut 81 keeps bevel gear 79 on axle 76. The drive gear 82 is shown 90 degrees displaced from its actual position on the periphery of the driven spur gear 80 (see FIGURE 4 for the actual location).

Drive shaft 83 is suitably keyed to drive gear 82. Further details concerning this drive mechanism will be discussed in relation to FIGURE 4. Driven bevel pinion gears 84 are rotatably mounted on stationary axle 85 and will be discussed in detail hereinafter.

While bevel pinion gears 84 rotate on axle 85, these gears are welded to horizontal cylinders 26 as shown, and provide the driving force for turning revolving hubs 25. These horizontal cylinders 26 are steel pipes which are rotatably mounted in the yoke 23 as shown. Standard bearing end cap 86 is fastened on to the yoke by cap screws 87. The pinion gears 84 and driving bevel gear 79 have a 1:1 gear ratio.

A similar standard bearing end cap 88 is fastened to the outside of the yoke 23 by cap screws 89. A standard bearing end cap 90 is fastened to driven bevel pinion gears 84 by cap screw 91 as shown.

Bosses 92 are present on yoke 23 and provide the means for mounting motor platform 93. Cap screws 94 are used to anchor the platform 93 on to the bosses 92. A cast-on boss 95 is also present on yoke 23 and will be discussed more in detail in relation to FIGURE 4.

The main support for the seat support arms 29 comes from a standard 10" steel H beam 100 which extends through yoke 23 and out to the two outer revolving hubs 27 shown in FIGURE 1. The horizontal cylinders 26 are rotatably mounted on beam 100 and in yoke 23.

Since the revolving cylinders 26 rotate about the stationary H beam 100, suitable bearings are provided as follows: On the inside of revolving cylinders 26 are located shoulders 101. Needle bearing 102 is positioned between the outermost points of the H beam and the inside diameter of revolving axles 26 as shown. This bearing 102 abuts against shoulder 101. Bearing support on beam 100 is thereby provided for the driving hub 25.

A spacer 103 is placed between needle bearing 102 under the hub 25, and needle bearings 104 which are located between the yoke and beam 100. Bearing 102, spacer 103 and bearing 104 are held in position by snap ring 105 which fits into a recess on the inside diameter of revolving axle 26 as shown.

Bearing means between the outside diameter of axle 26 and yoke 23 is accomplished as follows: A shoulder 106 is present on the outside diameter of revolving cylinder 26 as shown. Tapered bearings 107 are positioned against the shoulder 106. The bearings 107 are retained by the standard bearing end cap 88, as previously explained. The tapered side of bearings 107 fit against tapered member 112 which is suitably fastened to yoke 23 by cap screws 113 as shown.

The method of driving the horizontal cylinders 26 is as follows: A shoulder 114 is cut on the outside diameter of cylinder 26 as shown. Driven bevel pinion gear 84 is pressed against the shoulder 114, welded on to revolving cylinder 26, and rotatably mounted on stationary axle 85.

The method of mounting bevel pinion gear 84 on axle 85 is as follows: Stationary axle 85 is a steel cylinder or

sleeve which is slipped over the outside edges of H beam 100 and welded thereto. The inside diameter of gear 84 has a shoulder 113' against which the first bearing 115 abuts. A second bearing 117 is slipped on axle 85 and is separated from bearing 115 by a suitable spacer 116. These bearings are suitably covered by a standard bearing end cap and anchored to gear 84 by cap screws 91 as shown. It is thus seen that bevel pinion gears 84 rotate on stationary shaft 85 and transmit torque to horizontal cylinders 26.

Center yoke ribs 96 and 118 provide rigid support means for the stationary axle 85 within the yoke 23 and is better seen on FIGURE 4.

To fasten the braking means to the bottom of the yoke 23 the following structure is used: A recess 119 is provided at the bottom of yoke 23. Into this recess 119 a flange 120 is fitted and fastened to the yoke by cap screws 121. A chamfer 122 is also present on this flange and an asbestos brake lining 123 is bonded to the inside of this flange 120. This brake lining 123 extended around the entire inside diameter of the flange as shown.

A brake support platform 124 is suitably fastened to the yoke support with cap screws as shown. A pivot support 125 is welded on to the brake platform 124 and the platform is provided with an opening 126 through which brake rod 127 extends. Brake push rod 128 is suitably journalled in rod support member 129. A metal brake shoe 130 is welded on to the brake push rod 128 and the metal brake shoe 130 has a curvature conforming to that of the inside diameter of flange 120. A suitable asbestos brake shoe lining 131 is bonded on brake shoe 130. Brake push rod pin 132 as shown in FIGURE 4 is press fitted into brake push rod 128 and is nestled in the cradle 133 on brake rod 127. When not in use, brake rod spring 134 pushes the brake shoe away from the lining of the flange 120.

In order to provide the linkage between brake rod 127 and the operator's box, a brake cable 135 is attached to the lower end of rod 127 and travels around a brake pulley 136 which is welded on pulley support 137 as shown. Flexible cable housing 139 is anchored to pulley support 137 by clamp 140. The flexible cable in housing 139 is joined to brake cable 135 by coupling 138. The cable 139 is led to appropriate brake lever controls in the operator's box 48.

In order to brake the spur gear 80 when desired, the following structure is used: An asbestos brake lining 150 extends entirely around the inside diameter of spur gear 80 as shown. A steel tube 151 is welded to flange 77 and brake rod 152 slides within this tube. An asbestos brake shoe 153 is bonded to brake shoe 154 which is welded to the brake rod 152. Gear brake cam 155 is pivotally mounted on tube 151, and when desired, tension on gear brake cable 156 will bring the camming surface of brake cam 155 to bear against the brake shoe 154, thereby urging the brake shoe against the brake lining 150 on spur gear 80.

Tension from spring 149 which is anchored to the brake shoe 154 and to the center post 22 will keep the brake linings separated when the brake is not in use.

Since the yoke 23 rotates about center post 22, it is necessary to provide a keyway 157 in center post 22 through which the brake cable 156 can be passed. A suitable cover 158 can be placed over the keyway as shown.

After the brake cable 156 comes out of the keyway 157, it travels around a pulley 159 which is welded to a pulley support 137. The gear brake cable 156 is then connected to flexible brake cable 161 by coupling 160 of known variety.

The outer sheath of the flexible cable 161 is anchored to the pulley support 137 by suitable clamp means 162. The flexible brake cable 161 is then routed to the operator's box 48 wherein the brake may be applied at will when necessary.

To provide electricity for the driving mechanism, the following means are used: An electrical connector support plate 163 is suitably fastened to the yoke support 66 with cap screws (not shown). An insulated block 164 for the mounting of the electrical brushes is supported on member 165. Three electrical leads 166 provide the energy to the brushes 166*a* which lead to the driving motor 200. Two electrical leads 167 provide the energy to the two brushes 167*a* which transfer the energy to the lights on the support arm 29. These two brushes 167*a* are in contact with appropriate slip rings which are insulatingly mounted on block 168 in known manner. The wire leads 169 and wire leads 170 are connected to the support arm brushes 171 and motor 200, respectively.

To transfer the electrical energy from the yoke to the rotating hubs, the following means are used: Brushes 171 are mounted on insulator block 172 which in turn is mounted on yoke 23; slip rings 173 then pick up the energy transferred from the brushes 171 and deliver the energy to the lights 318 (not shown) mounted on supporting arms 29. The slip rings 173 are similarly mounted on an insulator block 174. Electrical leads (not shown) from the slip rings 173 are connected to female plug 175.

Since the supporting arms 29 are disconnected from the revolving hub 25 when the ride is disassembled for transporting on the truck platform 12, a male plug 176 with leads 177 provide a convenient disassembly of the electrical connection to the lights 318 on the supporting arms. The lights 318 are not shown on the drawings, but are conveniently placed on the supporting arms 29 wherever desired. While only one female plug 175 and male plug 176 are shown in the drawings, a similar hook up is provided for each of the supporting arms.

FIGURE 4 shows the method of mounting motor 200 on the yoke 23. A suitable cover 201 is placed over the motor and cover 202 houses a portion of the linkage connecting motor 200 with gear reduction unit 204. A standard flexible coupling 205 takes care of any misalignment between gear reduction unit 204 and shaft 83.

The lower end of shaft 83 is suitably journaled in a boss 206 which is cast on lower front support rib 207. While the bosses 92, 95 and 206 are referred to as cast on bosses, it is understood that the entire support structure or yoke 23 can be made as a weldment rather than as a casting.

FIGURE 5 shows the amusement ride in the collapsed position with the supporting arms 29, seats 33 and braces removed. The parts which are disassembled from the ride are stored on the truck platform 12 for transmission to a new erection site. A swivel joint 225 of known variety is shown enabling the telescoping column 37 to rotate when the ride is collapsed.

FIGURE 6 is an enlarged view showing a portion of a steel revolving hub 25 on to which steel brackets 28 are welded. A standard pin 178 and cotter pin 226 are used to retain seat support arm 29 in bracket 28.

FIGURE 7 shows the electrical circuit used in controlling the apparatus of this invention. A normal 220 volt line is used to drive the motor 200 and the line is split to provide 110 volts for the electrical controls as shown.

To operate the apparatus, line switch 301 is closed, permitting electricity to travel through line fuse 302 to the pump switch 303 as shown. When switch 303 is closed, a standard relay coil 304 is energized and its two normally open blades 305 and 306 are thereby closed. Blade 305 energizes the circuit to the pump motor 307, and blade 306 holds the circuit closed to coil 304 through the limit switch LS1B which is normally closed when the telescoping column 21 is in the lower position. Standard overload thermal relays 308 in series with the pump motor 307, prevent damage to the pump.

The running pump 230 continues to build up fluid pressure which closes pressure actuated switch 309 when sufficient pressure is reached to raise the ram. Since the ram-down switch is normally closed, the circuit is completed through LS1B to the ram-up switch 311. Upon depressing ram-up switch 311, a standard relay coil 312 is energized, closing its two normally open blades 313 and 314. Blade 313 completes the circuit to the ram-up solenoid 315 in the standard 4-way spring centered hydraulic control valve 231, as seen in FIGURE 8, and blade 314 provides the holding circuit for keeping coil 312 energized when the ram-up switch 311 is released. Blade 349 which is connected to switch 311, opens and breaks the ram-down circuit providing a mechanical safety interlock.

When the ram reaches its topmost position, an indent 232 on telescoping column 21 actuates switch LS1AB which closes LS1A and opens LS1B. This action energizes the circuit for operating the motor and breaks the circuit raising the ram respectively.

With this latter circuit broken, solenoid 315 is de-energized, thereby permitting spring centered valve 231 to return to center position to close port 237 and maintain telescoping column 21 in an elevated position.

In this elevated position, the seat supporting arms 29, seats 33 and telescoping braces 317, and so forth, are installed as will be explained hereinafter. Light switch 316 can be closed to energize the lights 318 on the supporting arms when desired, and the ride is ready for operation.

To start the ride forward switch 319 is depressed thereby closing the circuit to standard relay coil 324 which energizes the coil 324 thereby closing its four normally open blades 320, 321, 322, and 323. Closing these latter three blades energizes motor 200, while blade 320 provides the holding circuit to keep the motor energized when switch 319 is released. Switch 319 also has a mechanical interlock blade 336 which breaks the reversing circuit when switch 319 is depressed.

When it is desired to stop the ride, emergency stop switch 325 can be depressed, thereby breaking the circuit, or reverse switch 326 can be depressed, which will also break the forward circuit and energize the reversing circuit as follows:

Upon pressing the reverse switch 326, blade 327 closes the circuit to reverse coil 328. This coil, too, is a standard relay switch having four normally open blades 329, 330, 331 and 332. Blade 329 is a holding blade which keeps the motor running in reverse after switch 326 is released. Blades 330, 331 and 332 are wired to reverse the current to the motor 200 as shown. There are suitable line fuses 333 leading to motor 200. There also are suitable overload thermal relays 334 connected in the forward and reversing circuit.

During the time when passengers are being boarded on the ride, it may be necessary to slightly rotate or jog the seat supporting arms. Forward or reverse jogging means are incorporated in the circuit as follows:

When jog-forward switch 335 is depressed, forward relay coil 324 is energized, closing blades 321, 322 and 323 leading to motor 200. While jog-forward switch 335 is depressed, blade 337 breaks the circuit leading to blade 320 thereby preventing the holding circuit from being energized. Therefore, when jog-forward switch 335 is released the forward circuit is broken and the motor 200 comes to a halt.

A similar circuit is employed on jog-reverse switch 338 with its mechanical interlock blade 339.

An additional safety feature is built into the circuit with the use of an electrical interlock which comprises a normally closed blade 340 on standard reverse relay coil 328 which opens when the reversing coil 328 is energized. Similarly, normally closed blade 341 is opened when forward coil 324 is energized, thereby breaking the circuit to reverse coil 328.

When the ride apparatus is to be disassembled, the ram-down switch 310 is depressed and the circuit leading to standard relay coil 312 is broken, thereby de-energizing the ram-up circuit. Pressing ram-down switch 310 also closes blade 342, which completes the circuit to standard relay coil 343 thereby closing its two normal-

ly open blades 345 and 346, completing the circuit to ram-down solenoids 344 of the 4-way spring centered control valve 231 shown in FIGURE 8. This permit the telescoping column 21 to lower into stationary column 20.

Blade 346 provides the holding circuit for keeping relay coil 343 energized. The telescoping column 21 can be stopped part way down in stationary column 20 by pressing switch 347, which breaks the holding circuit and the circuit to ram-down solenoid 344 and thereby permits the valve 231 to center itself and hold the telescoping column 21 in a partially lowered position.

When the telescoping column 21 reaches its lowermost position, as shown in FIGURE 8, switch 348 which is normally closed by spring loading, opens to break the ram-down circuit. Line switch 301 can now be opened, de-energizing the control circuit, and thereby permitting the ride to be disassembled.

As a safety precaution, one side of the 110 volt electrical supply shown in FIGURE 7 is shown grounded to the control panel. The electrical controls discussed herein are located in the operator's control box 48 shown in FIGURE 2. The brake controls for the ride are also located in the operator's control box 48, which is placed at a suitable distance from the ride.

FIGURE 8 shows the hydraulic circuit and controls used in raising column 21 to an elevated position. The hydraulic system operates as follows: When it is desired to raise the ram up, it is first necessary to start pump motor 307. Pump 230 will then build up pressure in the center portion 235 of the 4-way spring centered control valve 231. A pressure indicator 243 and pressure switch 309 are located in pressure line 234 leading from the pump to chamber 235.

As previously explained when sufficient pressure is reached in chamber 235, the ram-up circuit becomes energized. When the ram-up switch 311 is depressed solenoid 315 is energized, thereby pulling piston 236 to the left, which opens port 237, enabling the fluid under pressure to be transferred to the bottom of the stationary column 20.

Telescoping column 21 is thereby raised until it reaches its topmost position, when indent 232 actuates switch LS1AB. This switch deenergizes the ram-up circuit and permits piston 236 to become centered in valve 231, thereby closing port 237.

Telescoping column 21 will remain in this elevated position due to the fluid pressure in stationary column 20. However, as a safety measure an additional safety rod of known variety can be installed to keep column 21 in an elevated position should the fluid pressure fail for any reason. This safety rod is not shown on the drawings.

When it is desired to lower the telescoping column 21, the ram-down switch 310 is actuated, which in turn actuates solenoid 344, which in turn pulls piston 236 to the right. This enables the fluid from column 20 to travel through chamber 242, out port 239, through return line 240 to the reservoir 233.

The rate of rise and descent of telescoping column 21 can be controlled by a throttle valve 241 of known variety, which is located in return line 240. A pressure relief valve 242 is also incorporated in the hydraulic system as shown. While not shown on the drawings, the hydraulic pressure system herein explained can be installed in a convenient place on lower truck platform 11.

FIGURE 9 shows the method of providing bearings in the outer ends of revolving cylinders 26. A shoulder 360 is cut on the inside diameter of cylinder 26 against which a needle bearing 361 is positioned. A spacer 362 is then installed between bearing 361 and an additional bearing 363. A snap ring 364 is used to hold the two bearings and the spacer in place around H beam 100. A disc-like bushing 365 and suitable pin means 366 are used to retain revolving cylinders 26 on H beam 100.

Method of operation

All the supporting arms, braces, and so forth, are stored on the truck body 10 when not in use. In this way, the amusement ride can be readily transported to new sites when desired. Since the overall height of the ride when in the collapsed position, as shown in FIGURE 5, is less than 13 feet 6 inches, the ride can conveniently be transported under most highway underpasses.

When at the site for erection, the supporting arms, braces, and so forth, are unloaded from the truck body 10. The following procedure is used in assembling the braces:

Ground brace 46 is slipped under the body of the truck as shown in FIGURE 2. Braces 45 are suitably attached to truck platform 13 and lower ground brace 46 at junction 47. Brace junctions 47 are also conveniently anchored to the ground. Outer telescoping braces 39 are suitably attached to junction 47 and the collar 38 on telescoping column 21.

The electrical motor leads 166 and the light leads 167 are suitably connected to the appropriate terminals in the control box 48. The flexible shaft brake cables 139 and 161 are then connected to common brake levers in the operator's box 48. The operator's box 48 is located conveniently outside the path of seats 33 when the ride is in motion.

A 220 volt supply of electricity is appropriately connected to the electrical control panel and the apparatus is ready for elevating yoke 23.

As explained previously in connection with FIGURE 7, after sufficient hydraulic pressure is reached, the ram-up switch 311 is closed, energizing the electrical circuit to raise telescoping column 21 to its topmost position. When its topmost position is reached, 4-way spring centered control valve 231 returns to its center position, thereby holding telescoping column 21 in an elevated position.

At this time, pins 49 are placed in telescoping braces 37 and 39 thereby locking telescoping column 21 in an elevated position. The seat support arms 29 are then anchored in the lowermost brackets 28 on hub 25. Braces 34 are then installed.

By applying the brake to yoke 23 and by "jogging" referred to earlier, hub 25 is rotated and another bracket 28 is brought into its lowermost position where seat support arms 29 are again installed. Outer braces 40 are then bolted in place and the process is repeated until all the seat support arms 29 and braces 34 and 40 are in place. Seats 33 are then installed in the swivels 31 while being mindful of balancing the load on each side of the apparatus. The seats 33 are mounted on support arms 29 in opposite directions as shown in FIGURE 1.

The seats 33 come sufficiently close to the ground so that the passengers can climb into the seats without the aid of any loading platform. Generally two seats can be loaded simultaneously on each side of the ride. Up to three passengers can sit in each of the seats 33, making a total maximum capacity of 60 riders. When the seats are appropriately loaded with passengers, the apparatus is ready for operation.

To begin the ride, the brake 130 on yoke 23 is released and the brake 153 on spur gear 80 is applied to hold spur gear 80 stationary. Forward switch 319 is closed, thereby energizing motor 200 which is fastened to yoke 23. Since spur gear 80 is now stationary, the yoke 23 which is driven by drive gear 82, will now revolve about center post 22 and produce motion of the ride. To stop the ride, emergency stop switch 325 can be opened to break the circuit to the motor. The ride can then coast to a halt, or the brake 130 on yoke 23 can be applied if desired.

To disassemble the ride, the process is the reverse of the assembling operation. As previously explained, the component parts which are disassembled are stored on the top platform 12 for transit. A suitable brace (not shown)

is placed from the outer hubs 27 to the top platform 12 for support of apparatus while in transit.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions and accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

What is claimed is:

1. An amusement ride apparatus comprising; a vertical column and a support structure rotatably mounted thereon, lift means selectively operable for elevating said vertical column from a lowered position to an upper position, a horizontally extending H beam rigidly attached at its center to said support structure, horizontal tubular sections rotatably mounted on said H beam and jointly rotatably mounted in said support structure, bearing means for rotatably mounting said support structure and said horizontal tubular sections, a bevel pinion gear rigidly attached to each said horizontal tubular section to rotate therewith, a bevel gear rotatably mounted on said vertical column, said bevel pinion gears being in mesh with said bevel gear, a spur gear integrally formed under said bevel gear to rotate therewith, a driving gear in mesh with said spur gear, a motor and gear reduction unit mounted on said support structure and drivingly connected to said driving gear, first brake means operatively connected between said support structure and said vertical column and selectively operable to prevent the rotation of said support structure on said column, second brake means operatively connected between said spur gear and said vertical column and selectively operable to prevent the rotation of said spur gear and bevel gear on said column, disc-like hubs rigidly attached to said horizontal tubular sections to rotate therewith, braced seat support arms detachably mounted on said disc-like hubs to form an angle of approximately 45 degrees with said horizontal tubular sections, swivels mounted on the outer ends of said braced seat support arms, seats suspended from said swivels, and control means operatively connected to said motor and said first and second brake means, said support structure and said horizontal tubular sections being rotated when said second brake means are engaged and said motor is energized, the outer ends of said braced seat support arms describing cycloidal paths while simultaneously being rotated in a horizontal plane.

2. An amusement ride comprising; a vertical supporting column, a support structure rotatably mounted on said column, laterally extending support means rotatably mounted in said support structure and having inner and outer ends with the outer ends extending out of said support structure, bevel gear means rotatably mounted on said column, a pinion gear fixed on the inner end of each said laterally extending support means to rotate therewith and in mesh with said bevel gear means, a driving motor mounted on said support structure to rotate therewith, means drivingly connecting said motor with said bevel gear means, first brake means operatively connected between said support structure and said column and selectively operable to prevent the rotation of said support structure on said column, second brake means operatively connected between said bevel gear means and said column and selectively operable to prevent the rotation of said bevel gear means on said column, and seat supporting structure fixed to said laterally extending support means to rotate therewith and having outer ends adapted for pivotally suspending seats therefrom.

3. A mobile amusement ride apparatus comprising; a mobile platform, a stationary vertical supporting column rigidly mounted on said platform, telescoping column means mounted in said supporting column means, means to raise said telescoping column means from a lowered position above said platform to a raised position from which the amusement ride is operated, means to support said telescoping column means in said raised position, a support structure rotatably mounted on said telescoping column means, laterally extending support means rotatably mounted in said support structure and having inner and outer ends with the outer ends extending out of said support structure, bevel gear means rotatably mounted on said telescoping column means, a pinion gear fixed on the inner end of each said laterally extending support means to rotate therewith and in mesh with said bevel gear means, a driving motor mounted on said support structure to rotate therewith, means drivingly connecting said motor with said bevel gear means, first brake means operatively connected between said support structure and said telescoping column means and selectively operable to prevent the rotation of said support structure on said telescoping column means, second brake means operatively connected between said bevel gear means and said telescoping column means and selectively operable to prevent the rotation of said bevel gear means on said telescoping column means, and seat supporting structure fixed to said laterally extending support means to rotate therewith and having outer ends adapted for pivotally suspending seats therefrom.

4. In combination, an apparatus comprising; a vertical column, a support structure rotatably mounted on said column, first brake means operatively connected between said support structure and said column and selectively operable to prevent the rotation of said support structure on said column, a combined bevel and spur gear means mounted on said vertical column to rotate together in a horizontal plane, second brake means operatively connected between said combined gear means and said column and selectively operable to prevent the rotation of said combined gear means on said column, horizontal cylinder means rotatably mounted in said support structure and having inner and outer ends with the outer ends extending laterally out of said support structure, a pinion gear fixed to the inner end of each said horizontal cylinder means to rotate therewith and each said pinion gear being in mesh with the bevel gear of said combined gear means, driving means mounted on said support structure to rotate therewith, a driving gear in mesh with said spur gear of said combined gear means and operatively connected to said driving means, seat supporting structure fixed to said horizontal cylinder means to rotate therewith and having outer ends adapted for pivotally suspending seats therefrom, and a seat pivotally suspended from each said outer end of said seat supporting structure.

5. A mobile amusement ride apparatus comprising; a mobile platform, a stationary vertical supporting column rigidly mounted on said platform, telescoping column means inside said supporting column means, means to raise said telescoping column means from a lowered position above said platform to a raised position from which the amusement ride is operated, means to support said telescoping column means in said raised position, a support structure rotatably mounted on said telescoping column means, first brake means operatively connected between said support structure and said telescoping column means and selectively operable to prevent the rotation of said support structure on said telescoping column means, a combined bevel and spur gear means mounted on said telescoping column means to rotate together in a horizontal plane, second brake means operatively connected between said combined gear means and said telescoping column means and selectively operable to prevent the rotation of said combined gear means on said telescoping column means, horizontal cylinder means rotatably mounted in said support structure and having inner and outer ends with the outer ends extending laterally out of said support structure, a pinion gear fixed to the inner end of each said horizontal cylinder means to rotate therewith and each said pinion gear being in mesh with the bevel gear of said combined gear means, driving means mounted on said support structure to rotate therewith, a driving gear in mesh with said spur gear of said combined gear means and operatively connected to said driving means,

seat support structure fixed to said horizontal cylinder means to rotate therewith and having outer ends adapted for pivotally suspending seats therefrom, and a seat pivotally suspended from each said outer end of said seat supporting structure.

6. An amusement ride apparatus comprising; a vertical supporting column, a support structure rotatably mounted on said column, laterally extending axle means having its center rigidly fixed in said support structure and having its ends extending out of said support structure, laterally extending support means rotatably mounted in said support structure and on said axle means with each said support means having inner and outer ends with the outer ends extending laterally out of said support structure, first brake means operatively connected between said support structure and said column and selectively operable to prevent the rotation of said support structure on said column, bevel gear means rotatably mounted on said column, a pinion gear fixed on the inner end of each said laterally extending support means to rotate therewith and in mesh with said bevel gear means, second brake means operatively connected between said bevel gear means and said column and selectively operable to prevent the rotation of said bevel gear means on said column, a driving motor mounted on said support structure, means drivingly connecting said motor with said bevel gear means, and seat supporting structure fixed to said laterally extending support means to rotate therewith and having outer ends adapted for pivotally suspending seats therefrom.

7. The apparatus as claimed in claim 6 in which said bevel gear means has a spur gear thereon to rotate therewith and in which said means drivingly connecting said motor with said bevel means includes a drive gear in mesh with said spur gear.

8. An amusement ride apparatus comprising; a vertical supporting column, a support structure rotatably mounted on said column, laterally extending axle means having its center rigidly fixed in said support structure and having its ends extending out of said support structure, laterally extending support means rotatably mounted in said support structure and on said axle means with each said support means having inner and outer ends with the outer ends extending laterally out of said support structure, first brake means operatively connected between said support structure and said column and selectively operable to prevent the rotation of said support structure on said column, bevel gear means rotatably mounted on said column, a pinion gear fixed on the inner end of each said laterally extending support means to rotate therewith and in mesh with said bevel gear means, second brake means operatively connected between said bevel gear means and said column and selectively operable to prevent the rotation of said bevel gear means on said column, a driving motor mounted on said support structure, means drivingly connecting said motor with said bevel gear means, disc like hubs rigidly attached to each said laterally extending support means between the outer end thereof and said support structure, seat support arms having inner and outer ends with the inner ends secured to said hubs, and brace means connecting said support arms with the outer end of the pertaining said laterally extending support means, the outer ends of each said support arm having means thereon for pivotally suspending a seat therefrom.

9. The apparatus as claimed in claim 8 in which said support arms are detachably secured to said hubs and form an angle of approximately 45 degrees with said laterally extending support means.

10. A mobile amusement ride apparatus comprising; a mobile platform, a stationary vertical supporting column rigidly mounted on said platform, a support structure rotatably mounted on said column, telescoping column means mounted in said supporting column means,

means to raise said telescoping column means from a lowered position above said platform to a raised position from which the amusement ride is operated, means to support said telescoping column means in said raised position, laterally extending axle means having its center rigidly fixed in said support structure and having its ends extending out of said support structure, laterally extending support means rotatably mounted in said support structure and on said axle means with each said support means having inner and outer ends with the outer ends extending laterally out of said support structure, first brake means operatively between said support structure and said telescoping column means and selectively operable to prevent the rotation of said support structure on said telescoping column means, bevel gear means rotatably mounted on said telescoping column means, a pinion gear fixed on the inner end of each said laterally extending support means to rotate therewith and in mesh with said bevel gear means, a driving motor mounted on said support structure to rotate therewith, means drivingly connecting said motor with said bevel gear means, second brake means operatively connected between said bevel gear means and said telescoping column means and selectively operable to prevent the rotation of said bevel gear means on said telescoping column means, disc like hubs rigidly attached to each said laterally extending support means between the outer end thereof and said support structure, seat support arms having inner and outer ends with the inner ends detachably secured to said hubs, said support arms forming an angle of approximately 45 degrees with said laterally extending support means, and brace means detachably connecting said support arms with the outer end of the pertaining laterally extending support means, the outer end of each seat support arm having means thereon for pivotally suspending a seat therefrom.

11. An amusement ride apparatus comprising; a vertical supporting column, a support structure rotatably mounted on said column, a laterally extending H beam having its center located in said support structure and its ends extending out of said support structure, a sleeve on the center of said H beam and rigidly secured thereto, means rigidly securing said sleeve to said support structure, laterally extending support means rotatably mounted in said support structure and on said H beam with each said support means having inner and outer ends with the outer ends extending laterally out of said support structure, first brake means operatively connected between said support structure and said column and selectively operable to prevent the rotation of said support structure on said column, bevel gear means rotatably mounted on said column, a pinion gear fixed on the inner end of each said laterally extending support means to rotate therewith, each said pinion gear being rotatably mounted on an end of said sleeve and also being in mesh with said bevel gear means, second brake means operatively connected between said bevel gear means and said column and selectively operable to prevent the rotation of said bevel gear means on said column, seat supporting structure fixed to said laterally extending support means to rotate therewith and having outer ends adapted for pivotally suspending seats therefrom, a driving motor mounted on said support structure, and means drivingly connecting said motor with said bevel gear means.

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