C. HERMANN.

AMUSEMENT APPARATUS.

APPLICATION FILED AUG. 3, 1914.

1,149,513.

Patented Aug. 10, 1915.

2 SHEETS—SHEET 1.

Fig. 6.

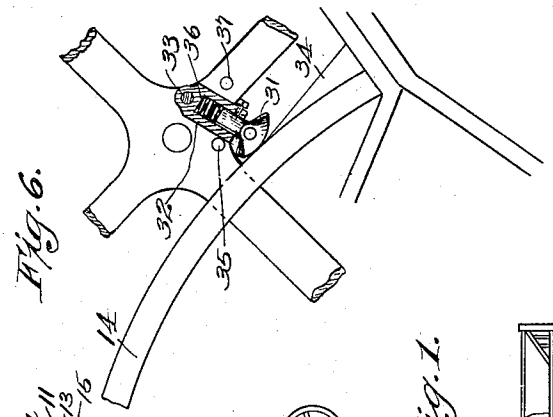
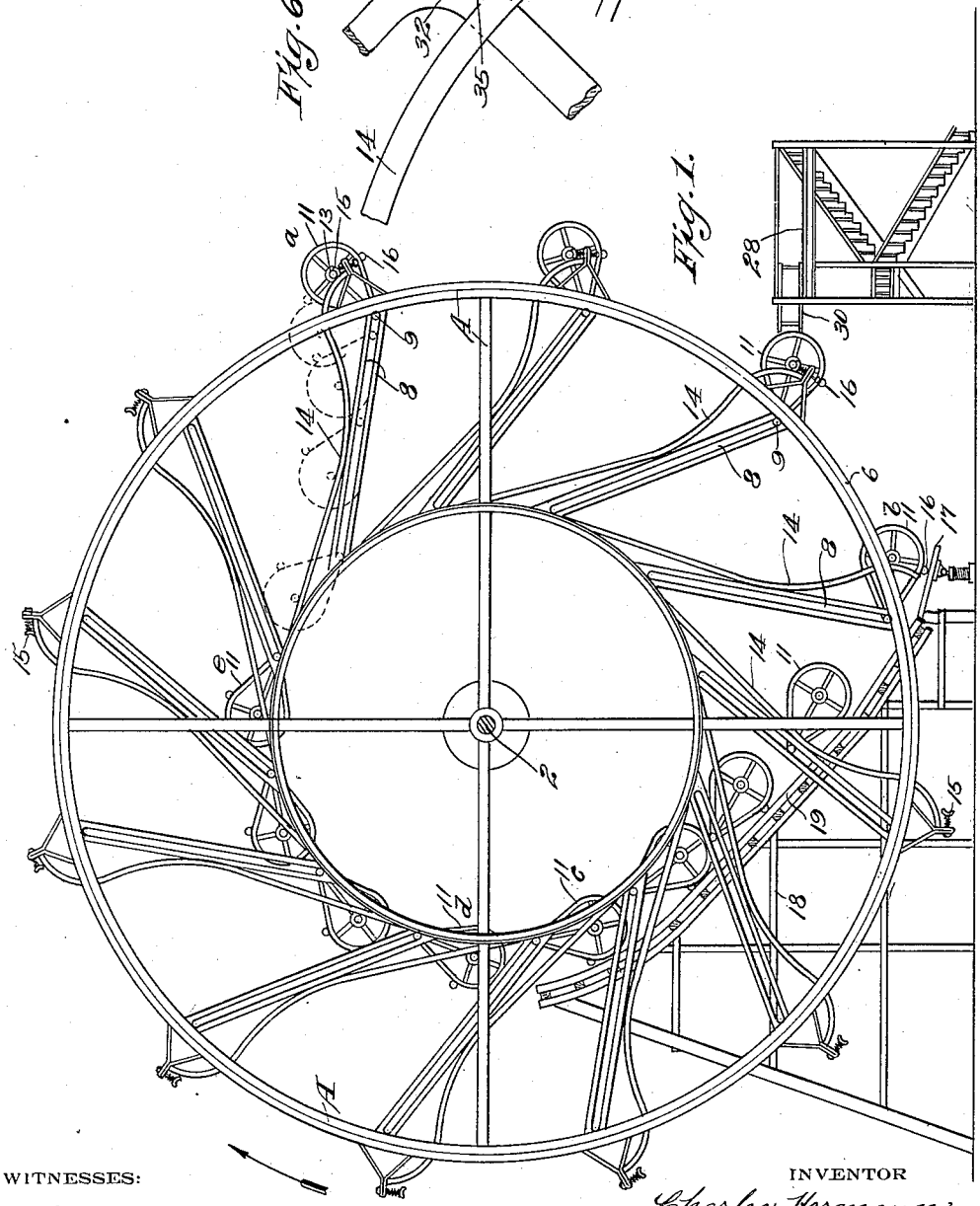


Fig. 1.



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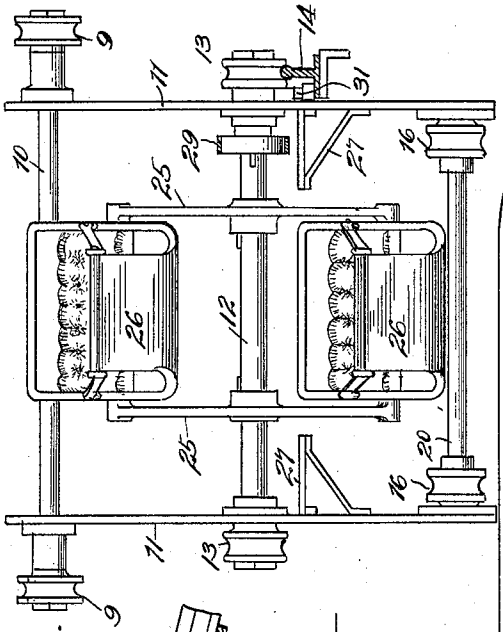

Fig. 4.

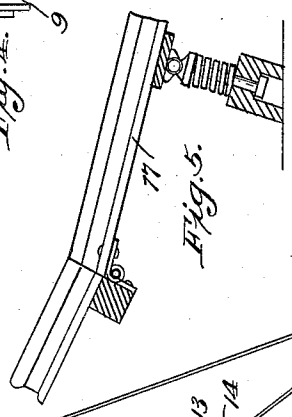

Fig. 5.

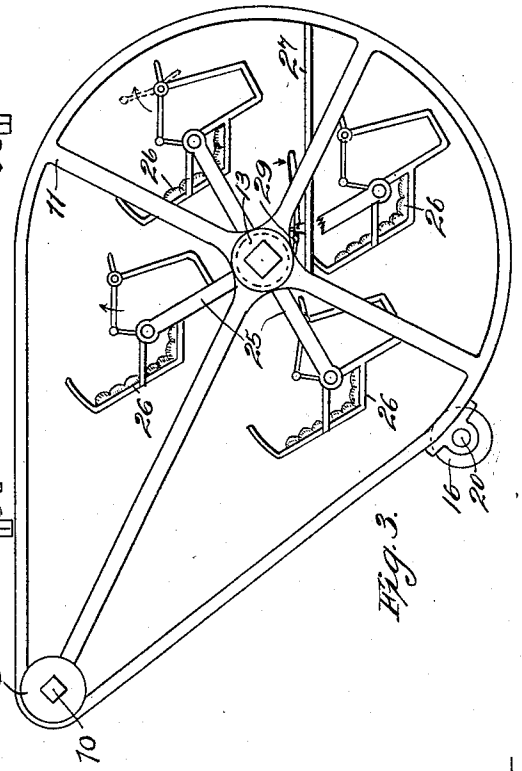

Fig. 3.

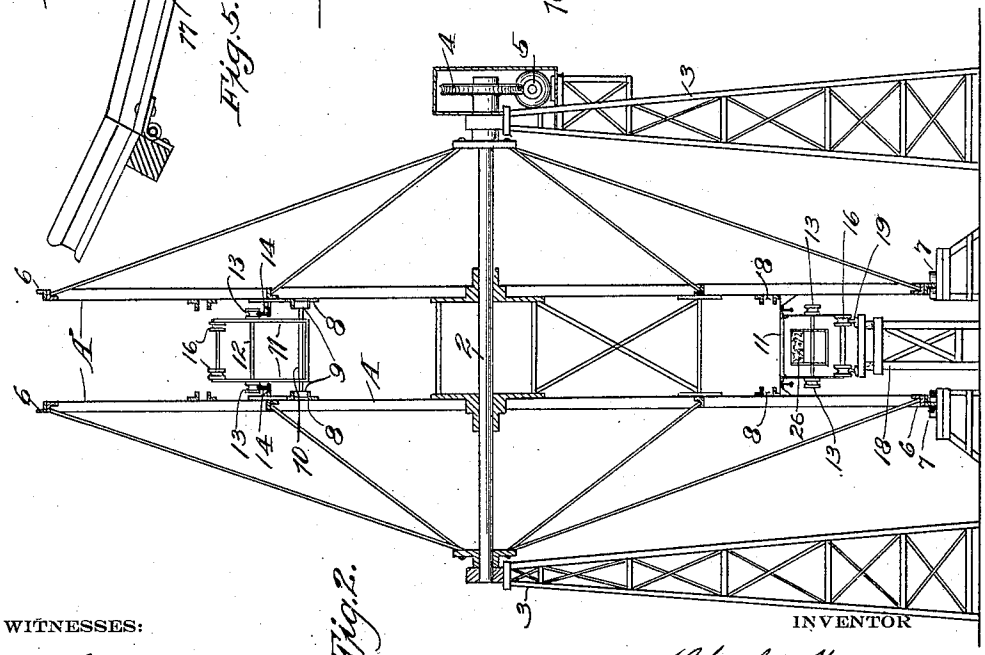

Fig. 2.

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CHARLES HERMANN, OF SAN FRANCISCO, CALIFORNIA.

AMUSEMENT APPARATUS.

1,149,513. Specification of Letters Patent. Patented Aug. 10, 1915.

Application filed August 3, 1914. Serial No. 854,696.

To all whom it may concern:

Be it known that I, CHARLES HERMANN, a subject of the King of Roumania, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Amusement Apparatus, of which the following is a specification.

This invention relates to amusement apparatus, and particularly to a combined Ferris wheel and scenic railway.

It is an object of the present invention to provide a novel amusement apparatus in which is included a chair or chairs for the carrying of passengers, which chairs are adapted to rotate freely about a common axis, and to mount the chairs in a car, carriage or basket which is carried through a definite irregular path of movement which is the result of the combined actions of a rotary wheel and sets of tracks; the car being reversible during its traverse of the definite orbit.

A further object of the present invention is to provide an amusement apparatus in which there is a Ferris wheel provided with a plurality of closed tracks or channels upon which is pivotally and slidably mounted a car which is movable through a predetermined orbit and is turned entirely over during its traverse of the orbit and moves from a position exterior to the perimeter of the wheel to a position within the circumference of the wheel; to provide means for operating and controlling the apparatus which is designed particularly to be economical in the consumption of power; and further to provide means tending to strengthen, support and steady the apparatus, and means for the control of the chair or chairs in the car for purposes of safety, and to control the movement of the car to avoid sudden shocks and thus protect the parts, as well as being conducive to the pleasure of the passengers in the car.

Further objects of the invention will be made manifest in the following specification.

The invention consists of the parts and the construction and combination of parts, as hereinafter more particularly described and claimed, having reference to the accompanying drawings in which—

Figure 1 is a side elevation of the apparatus in general. Fig. 2 is a central vertical section through the structure. Fig. 3 is a side elevation of a car with its chairs. Fig. 4 is a detail transverse vertical section through same. Fig. 5 is a detail view of the yieldable foot of the trestle or platform. Fig. 6 is a detail showing a yieldable brake for the car.

A Ferris wheel is shown having a central driving shaft 2 mounted in suitable bearings upon a supporting structure 3 on each side of the wheel, and on one end of the shaft 2 is a gear 4 which may be driven by a motor 5, although any other type of drive may be utilized. The wheel comprises spaced rim members 6, in the form of angle irons, which are adapted to run between suitable stationary guide rollers 7 mounted upon a suitable platform at the lower portion of the wheel; the guide rollers 7 operating to control the wheel and prevent lateral play or vibration of the same.

Suitably and substantially erected upon the wheel are coördinate sets of double tracks 8 forming closed channels which are disposed tangentially to the center of the wheel. Running to and fro, in coördinate pairs of the channel tracks 8, are axial pivot rollers 9, which are clearly shown in Figs. 3 and 4 as mounted upon a transverse spindle or shaft 10 extending across the wheel from side to side and journaled in the framework of a cage or car structure 11 which has a central shaft or spindle 12 of less length than the roller spindle 10, and upon the ends of which are mounted rollers 13.

In side view, the cage or car 11 is approximately pear-shaped and the spindle 10 is located at the upper or smaller end thereof, while the shaft 12 is located in the center of the circular portion, as clearly shown in Fig. 2. The cage or car is always partly supported and controlled in its movement by the interengagement of the rollers 9, on the ends of the shaft 10, with their respective channel tracks 8. In the position indicated at *a*, Fig. 1, a car is shown in such a position that its roller 9 is bearing against the outermost end of the channel tracks 8, while the central rollers 13 are resting upon curved or undulating rails 14 of which there is a set

arranged and secured upon the wheel coördinately with the tangential straight channel tracks 8 and within the vertical plane of the same. Thus also the end rollers 9 of a cage project beyond the planes of the central rollers 13 for reasons which will be manifest hereinafter.

When in the position *a*, Fig. 1, the weight of the car is partly carried in conjunction with the undulating rails 14 by yieldable bumpers 15 which take up and carry the weight of the car as the main wheel A turns in the direction of the arrow at the right of Fig. 1. As a car moves from a position above the horizontal axis of the wheel A to the position indicated at *b*, Fig. 1, during which time it is supported on its respective bumpers, rollers 16, which are mounted upon the perimeter of each cage or car 11, will encounter a yieldable track section 17 of a fixed trestle or platform structure 18 with rails 19 erected on the ground and standing between the wheel sides. The rollers 16 are clearly shown in Fig. 4 as mounted within the sides of the cage or car 11 upon a transverse spindle 20 attached to the car sides.

During the continued rotation of the Ferris wheel A a car or cars 11 will be carried upwardly over the trestle tracks 19, the effect of which rails, as determined by their position and contour, is to shift the cars gradually from the position *b*, Fig. 1, to an inner position *c*, at which time substantially the entire weight of the car will be removed from the trailing rollers 16 and the tracks 19 and taken up by the pivot rollers 9 which will have been shifted from a position at the outer end of the channel tracks 8 at position *b* to a position at *c*, at the inner end of their respective channel tracks, so that from the position *c* to the position *d* the cage or car is free to swing pendulum-fashion from the pivot rollers 19.

From the position *d*, as the wheel A turns, the car is carried through the upper left-hand quarter of its orbit, with the pivot rollers 13 resting in the inner ends of the channel tracks 8; meanwhile the central rollers 13 will assume a position against the adjacent and inner ends of their respective undulating rails. From the position *d* to the position *e* there is substantially no change of position of a car with relation to its supporting tracks and rails, but as the straight channel tracks 8 approach a horizontal position between the positions *e* and *a* of a car, a car will gravitate outwardly from its inner position *e* to its outer position *a*, as shown in the dotted lines thereat.

During the upward movement of a car from position *e* to position *a*, while the pivot or suspension rollers 9 move in a straight path through the channel tracks 8 the central rollers 13 will ride over the undulating rails 14, which are purposely so designed as to produce a wave-like motion of the car and to engender the sensation of such motion in the minds of the passengers in the car. The rails 14 further operate to cause an entire reversal of the position of their respective cars; the outer ends of a coördinate set of rails 14 being curved in an arc struck from a center approximate the outer ends of the correlative channel tracks 8. Thus the car is thrown over from the position *e* at the highest point in its orbit to the position *a* from whence, during the rotation of the Ferris wheel A, a similar cycle as just described will be completed. The momentum of the car 13 as it is thrown over the ends of the undulating tracks 14 is checked by the yieldable bumpers 15.

It is understood that the channel tracks 8 and the reversing rails 14 may be made of any suitable contour for the purpose of producing varied motions of their car with respect to others. As clearly shown in Figs. 3 and 4, there is keyed upon the central shaft 12 of each car 11 bearings or bracket structure 25 carrying one or more chairs 26; these preferably being mounted upon the bearing or bearings 25 for free rotation relative thereto and to each other.

For the purpose of loading and unloading the cars, each is provided with foot boards 27, which, when the car moves downwardly to a predetermined position in convenient relation to a landing platform 28, provide for the access to and egress of passengers and operators. In order that the several chairs 26 may be readily loaded and unloaded of passengers, a suitable brake 29 is provided upon each car for the convenient operation by an operator standing on the foot board 27. The landing station 28 is provided with a horizontally shiftable apron 30 movable toward and from the cars as they move toward the landing 28; the Ferris wheel A being held against rotation while a car is at the landing station to permit egress and ingress of passengers.

In Fig. 6 there is shown in detail an automatic brake, consisting of a shoe 31 slidably mounted in a link 32 which is pivoted at 33 upon a portion of the cage or car structure; the shoe being adapted to ride against a relatively stationary wedge 34 mounted for engagement therewith upon the ends of the undulating rails 14. As the car 11 swings over the circular portion of said rails, the shoe 31 rides into engagement with the wedge block 34; the link or bearing of the shoe 31 being prevented from swinging in one direction by a stop 35. The frictional engagement of the shoe with the wedge acts to gradually check the swinging movement of the car 11, the shoe 31 being yieldably supported by a spring 36 reacting between it and the link 32. When the car tends to swing away from the rails 14, after en-

countering the stationary platform rails 19, as when moving from position *b*, then the brake shoe 31 quickly disengages from the wedge block 34 by the swinging of the link 32 on its pivot 33. Undue swinging movement at the unlocking instant is prevented by a stop 37 acting oppositely to the stop 35.

The operation of the apparatus is as follows: With the Ferris wheel suitably constructed and assembled, and with the several cages or cars 11 mounted so that their several rollers engage their correlative rails and tracks; that is, when the cars have been installed with their pivot rollers 9 mounted upon the channel tracks 8 for movement to and fro therealong so that their central rollers 13 are engageable with the respective undulating and reversing tracks 14, then when the driving mechanism, here represented by the motor and gear 5—4, is energized, the Ferris wheel A will be revolved. During the rotation of the wheel the cars will successively be swung, through an orbit which is partly a true arc of the circle, from the position *a* to the position *b*, Fig. 1, at which time they are beyond the periphery of the wheel. During further movement of the wheel the cars are shifted from the position *b*, exterior to the wheel, to the position *c* nearer to the center of the same, during which time the cars are supported in part by their pivot rollers 9, running on their respective channel rails 8, and in part by the trailing rollers 16 running up the platform or trestle tracks 19. Further rotation of the wheel A carries the cars from position *c* through the arc of a circle to position *e*, during which time the trailing rollers 16 are disengaged from their correlative tracks 19 and each car is supported by its center rollers 13 engaging correlative tracks 14 and the pivot rollers 9 engaging their respective channel tracks 8. From their uppermost positions, during movement through their orbits at position *e* to the inner position *a*, the cars move automatically through the force of gravity during the change from inner to outermost position. Thus this movement occurs without the requirement of mechanical or other extraneous power, and owing to the increased leverage obtained by the weight of the cars when they are at the perimeter of the wheel, the force derived from their weight is added to that of the driving mechanism to assist in rotating the Ferris wheel A. Therefore, the present invention is economical in the consumption of power because of its provision for automatically changing the leverage of the load of the cars and utilizing the load at the increased leverage to aid in the operation of the machine. By the utilization of the load of the cars to assist in operating the machine but a small amount of mechanical or extraneous power is utilized to obtain the change of position of the cars from the position *b* to position *c;* this change being obtained by the movement of the suspended and freely shiftable cars by the inclined rails 19.

Since the vehicle or car 11 is adapted to make a complete turn or revolution about an indeterminate axis, as when turning about the pivot rollers 9, during the movement of the car through its orbit, it is for this reason that the pivot rollers 9 are disposed in planes beyond the parallel sides of the car structure. In order to provide for the free and uninterrupted movement of the central rollers 13, these are located within the planes of the rollers 9, as also are the undulating rails 14, and, again, the trailing rollers 16 are located in planes within the planes of the rollers 13; the rollers 16 moving into engagement with the tracks 19 which are erected in vertical planes within the structure of the main or Ferris wheel A.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. An amusement apparatus comprising the combination of a wheel structure rotating on a horizontal axis, and a series of passenger conveyances mounted thereon and pivotally turning and movable during their travel along suitable guides toward and from the axis of rotation of the structure.

2. An amusement apparatus comprising the combination of a wheel structure rotating on a horizontal axis, a series of passenger conveyances slidably pivoted thereon and movable during their travel along suitable guides toward and from the axis of rotation of the structure, and means for causing the passenger conveyances to revolve about an axis eccentric to the wheel axis during the latter's rotation.

3. An amusement apparatus comprising the combination of a wheel-like structure, and passenger conveyances thereon each movable independently toward and from the axis of rotation and adapted to be turned entirely over during a revolution of the structure.

4. A wheel-like structure rotating about a horizontal axis, a passenger car pivoted thereon, and means including a fixed guide supported independently of the wheel structure coöperating with the car to move the latter toward and from the periphery of the structure.

5. In an amusement apparatus, the combination of a rotary wheel structure with tracks oblique to radii of the wheel, means for operating said structure, and a plurality of passenger-carrying cars adapted to automatically change their radial position upon the tracks.

6. In an amusement apparatus, the combination of a rotary wheel structure, means for operating said structure, a plurality of pas-

senger-carrying cars adapted to automatically change their radial position upon the wheel, and stationary means for shifting said cars from an outer position to an inner position upon and relative to the wheel.

7. The combination with a driven wheel structure and a bearing support therefor, of a plurality of vehicles slidably and pivotally movable from one position toward and from the center of the wheel so as to effect an increase of leverage of the vehicles upon said wheel, and means for positively shifting the vehicles inwardly.

8. The combination with a driven wheel structure and a bearing support therefor, of a plurality of vehicles slidably movable from one position to and from the center of the wheel, said vehicles operating automatically during their movement in the direction of an increase of leverage, and means for acting upon said vehicles to again move them toward the center of the wheel.

9. The combination with a wheel and its bearings, of a plurality of sets of channelways, coördinate sets of rails for each set of channelways, said channelways being disposed relatively tangential to a circle within the wheel rim, and a plurality of vehicles pivotally and slidably supported in said channelways, one vehicle for each channelway, and having supporting rollers running upon said rails, said vehicles operating under the force of gravitation to move outwardly upon said channelways to effect an increase of leverage.

10. The combination with a wheel and its bearings, of a plurality of sets of channelways, coördinate sets of rails for each set of channelways, said channelways being disposed relatively tangential to a circle within the wheel rim, and a plurality of vehicles pivotally and slidably supported in said channelways, one vehicle for each channelway, and having supporting rollers running upon said rails, said vehicles operating under the force of gravitation to move outwardly upon said channelways to effect an increase of leverage, and said rails operating to control the movement of and reverse their respective vehicles.

11. The combination with a wheel and its bearings, of a plurality of sets of channelways, coördinate sets of rails for each set of channelways, said channelways being disposed relatively tangential to a circle within the wheel rim, a plurality of vehicles pivotally and slidably supported in said channelways, one vehicle for each channelway, and having supporting rollers running upon said rails, said vehicles operating under the force of gravitation to move outwardly upon said channelways to effect an increase of leverage, and said rails operating to control the movement of and reverse their respective vehicles, and a member relatively stationary with relation to the wheel for acting upon said vehicles to shift them from an inner to an outer position upon their respective channelways during rotation of the wheel.

12. The combination in an amusement apparatus, of a wheel structure and a journal bearing upon which the wheel is rotated, channel tracks arranged in pairs, each pair being disposed tangential to a circle within the wheel rim, and vehicles with passenger-carrying seats pivotally and slidably mounted upon said channel tracks for inward and outward movement with relation to the wheel.

13. The combination in an amusement apparatus, of a wheel structure and a journal bearing upon which the wheel is rotated, channel tracks arranged in pairs, each pair being disposed tangential to a circle within the wheel rim, vehicles with passenger-carrying seats pivotally and slidably mounted upon said channel tracks for inward and outward movement with relation to the wheel, and pairs of rails coördinate with respective pairs of channel tracks for supporting and controlling the movement of respective vehicles.

14. The combination in an amusement apparatus, of a wheel structure and a journal bearing upon which the wheel is rotated, channel tracks arranged in pairs, each pair being disposed tangential to a circle within the wheel rim, vehicles with passenger-carrying seats pivotally and slidably mounted upon said channel tracks for inward and outward movement with relation to the wheel, pairs of rails coördinate with respective pairs of channel tracks for supporting and controlling the movement of respective vehicles, said vehicles moving automatically under the force of gravity from one position to a position farther distant from the center of the wheel, stationary means for engagement with which said vehicles are carried by the rotation of the wheel and whereby the vehicles are moved inwardly toward the center of the wheel, and a suitable driving mechanism for aiding in the rotation of the wheel.

15. The combination in an amusement apparatus, of a wheel structure and a journal bearing upon which the wheel is rotated, channel tracks arranged in pairs, each pair being disposed tangential to a circle within the wheel rim, and vehicles with passenger-carrying seats pivotally and slidably mounted upon said channel tracks for inward and outward movement with relation to the wheel, said vehicle seats being mounted upon their respective vehicles for independent rotative movement relative thereto.

16. The combination in an amusement apparatus, of a wheel structure and a journal bearing upon which the wheel is rotated,

channel tracks arranged in pairs, each pair being disposed tangential to a circle within the wheel rim, vehicles with passenger-carrying seats pivotally and slidably mounted upon said channel tracks for inward and outward movement with relation to the wheel, said vehicle seats being mounted upon their respective vehicles for independent rotative movement relative thereto, and foot-boards erected within the vehicles for providing access to and egress from the vehicle seats.

17. The combination in an amusement apparatus, of a wheel structure and a journal bearing upon which the wheel is rotated, channel tracks arranged in pairs, each pair being disposed tangential to a circle within the wheel rim, vehicles with passenger-carrying seats pivotally and slidably mounted upon said channel tracks for inward and outward movement with relation to the wheel, said vehicle seats being mounted upon their respective vehicles for independent rotative movement relative thereto, foot-boards erected within the vehicles for providing access to and egress from the vehicle seats, and a brake for controlling the rotation of said seats with relation to their vehicle.

18. The combination in an amusement apparatus, of a wheel structure and a journal bearing upon which the wheel is rotated, channel tracks arranged in pairs, each pair being disposed tangential to a circle within the wheel rim, vehicles with passenger-carrying seats pivotally and slidably mounted upon said channel tracks for inward and outward movement with relation to the wheel, said vehicle seats being mounted upon their respective vehicles for independent rotative movement relative thereto, foot-boards erected within the vehicles for providing access to and egress from the vehicle seats, a brake for controlling the rotation of said seats with relation to their vehicle, and a landing structure disposed adjacent to the wheel and into coincidence with which said vehicles may be moved, said landing structure including a shiftable apron.

19. The combination with a wheel structure having tracks tangential to an inner circle thereof, of members slidable therealong by the rotation of the wheel, and an incline stationary with relation to said wheel and engageable by said members during the rotation of the wheel and effecting a movement of the members toward the center of the wheel.

20. The combination with a wheel structure having coördinate tracks tangential to an inner circle thereof, of members slidable therealong by the rotation of the wheel, an incline stationary with relation to said wheel and engageable by said members during the rotation of the wheel and effecting a movement of the members toward the center of the wheel, and means for imparting rotative power to the wheel.

21. The combination of a wheel structure turnable on a horizontal axis and having tracks tangential to an inner circle thereof, a member slidable outwardly and downwardly under force of gravity along each track and tending to actuate the wheel rotatively, and means reacting upon said members to shift them toward the center of the wheel during its rotation.

22. The combination of a wheel structure turnable on a horizontal axis and having tracks tangential to an inner circle thereof, a member slidable outwardly and downwardly under force of gravity along each track and tending to actuate the wheel rotatively, and means reacting upon said members to shift them toward the center of the wheel during its rotation, said members being moved in an orbit about the axis of the wheel.

23. The combination of a wheel structure turnable on a horizontal axis and having tracks, a member slidable outwardly and downwardly under force of gravity along each track and tending to actuate the wheel rotatively, and means reacting upon said members to shift them toward the center of the wheel during its rotation, said members being moved in an orbit about the axis of the wheel and being partly supported by said means when adiacent thereto.

24. The combination with a wheel structure mounted for rotation about a horizontal axis and having concentric rings, of trackways arranged tangentially to the inner ring, and a traveling member mounted upon each of said trackways and slidable automatically outwardly along the trackways and adapted to be carried by the rotation of said wheel in a predetermined orbit, during a portion of which the center of gravity of each of said traveling members is beyond the outer ring of the wheel and during a portion of the travel of the members they are supported adjacent to the inner ring while suspended upon the inner ends of their respective tracks.

25. The combination with a wheel structure mounted for rotation about a horizontal axis and having concentric rings, of trackways arranged and connected to said rings at their inner and outer ends, and a traveling member mounted upon each of said trackways and slidable automatically outwardly along the trackways and adapted to be carried by the rotation of said wheel in a predetermined orbit, during a portion of which the center of gravity of each of said traveling members is beyond the outer

ring of the wheel and during a portion of the travel of the members they are supported adjacent to the inner ring while suspended upon the inner ends of their respective tracks, said members being pivotally suspended upon their respective trackways.

26. The combination with a wheel structure mounted for rotation about a horizontal axis and having concentric rings, of trackways arranged and connected to said rings at their inner and outer ends, a traveling member mounted upon each of said trackways and slidable automatically outwardly along the trackways and adapted to be carried by the rotation of said wheel in a predetermined orbit, during a portion of which the center of gravity of each of said traveling members is beyond the outer ring of the wheel and during a portion of the travel of the members they are supported adjacent to the inner ring while suspended upon the inner ends of their respective tracks, said members being pivotally suspended upon their respective trackways, and means providing for the turning of said members over about their pivotal connections with their respective trackways.

27. The combination with a wheel structure mounted for rotation about a horizontal axis and having concentric rings, of trackways arranged and connected to said rings at their inner and outer ends, a traveling member mounted upon each of said trackways and slidable automatically outwardly along the trackways and adapted to be carried by the rotation of said wheel in a predetermined orbit, during a portion of which the center of gravity of each of said traveling members is beyond the outer ring of the wheel and during a portion of the travel of the members they are supported adjacent to the inner ring while suspended upon the inner ends of their respective tracks, said members being pivotally suspended upon their respective trackways, and means providing for the turning of said members over about their pivotal connections with their respective trackways, said means comprising undulating rails arranged contiguous to respective trackways and engageable with rollers on said members.

28. The combination with a wheel structure mounted for rotation about a horizontal axis and having concentric rings, of trackways arranged and connected to said rings at their inner and outer ends, a traveling member mounted upon each of said trackways and slidable automatically outwardly along the trackways and adapted to be carried by the rotation of said wheel in a predetermined orbit, during a portion of which the center of gravity of each of said traveling members is beyond the outer ring of the wheel and during a portion of the travel of the members they are supported adjacent to the inner ring while suspended upon the inner ends of their respective tracks, said members being pivotally suspended upon their respective trackways, and means providing for the turning of said members over about their pivotal connections with their respective trackways, said means comprising undulating rails arranged contiguous to respective trackways and engageable with rollers on said members, said rails and rollers becoming engaged when their respective sliding members move through the upper portion of their orbit.

29. The combination with a wheel structure mounted for rotation about a horizontal axis and having concentric rings, of trackways arranged and connected to said rings at their inner and outer ends, a traveling member mounted upon each of said trackways and slidable automatically outwardly along the trackways and adapted to be carried by the rotation of said wheel in a predetermined orbit, during a portion of which the center of gravity of each of said traveling members is beyond the outer ring of the wheel and during a portion of the travel of the members they are supported adjacent to the inner ring while suspended upon the inner ends of their respective tracks, said members being pivotally suspended upon their respective trackways, means providing for the turning of said members over about their pivotal connections with their respective trackways, said means comprising undulating rails arranged contiguous to respective trackways and engageable with rollers on said members, said rails and rollers becoming engaged when their respective sliding members move through the upper portion of their orbit, and an incline relatively stationary as to the wheel engageable with coördinate rollers on said members to move them from their outermost positions on the wheel structure toward the inner ends of the trackways.

30. The combination with a wheel structure mounted for rotation about a horizontal axis and having concentric rings, of trackways arranged and connected to said rings at their inner and outer ends, a traveling member mounted upon each of said trackways and slidable automatically outwardly along the trackways and adapted to be carried by the rotation of said wheel in a predetermined orbit, during a portion of which the center of gravity of each of said traveling members is beyond the outer ring of the wheel and during a portion of the travel of the members they are supported adjacent to the inner ring while suspended upon the inner ends of their respective tracks, said members being pivotally suspended upon their respective trackways, means providing

for the turning of said members over about their pivotal connections with their respective trackways, said means comprising undulating rails arranged contiguous to respective trackways and engageable with rollers on said members, said rails and rollers becoming engaged when their respective sliding members move through the upper portion of their orbit, and an incline relatively stationary as to the wheel engageable with coördinate rollers on said members to move them from their outermost positions on the wheel structure toward the inner ends of the trackways, said members being lifted from the incline as they approach the upper end thereof during their upward movement and being suspended upon the inner ends of said trackways.

31. The combination in an amusement apparatus, of a wheel structure comprising parallel, spaced framework rigidly interconnected for rotation about a horizontal axis, coördinate sets of trackways mounted upon the wheel frame, and car or cage members slidable to and fro along said trackways between said wheel side frames and pivotally suspended on the trackways.

32. The combination in an amusement apparatus, of a wheel structure comprising parallel, spaced framework rigidly interconnected for rotation about a horizontal axis, coördinate sets of trackways mounted upon the wheel frame, and car or cage members slidable to and fro along said trackways between said wheel side frames and pivotally suspended on the trackways, and adapted to be turned about a pivotal connection with the trackways.

33. The combination in an amusement apparatus, of a wheel structure comprising parallel, spaced framework rigidly interconnected for rotation about a horizontal axis, coördinate sets of trackways mounted upon the wheel frame, car or cage members slidable to and fro along said trackways between said wheel side frames and pivotally suspended on the trackways, and adapted to be turned about a pivotal connection with the trackways, and undulating rails coördinate with respective trackways for turning said cages about their pivotal connections.

34. The combination in an amusement apparatus, of a wheel structure comprising parallel, spaced framework rigidly interconnected for rotation about a horizontal axis, coördinate sets of trackways mounted upon the wheel frame, car or cage members slidable to and fro along said trackways between said wheel side frames and pivotally suspended on the trackways, and adapted to be turned about a pivotal connection with the trackways, and undulating rails coördinate with respective trackways for turning said cages about their pivotal connections, said cages automatically moving outwardly along said trackways and rails from an innermost position relative to the wheel structure to an outermost position.

35. The combination in an amusement apparatus, of a wheel structure comprising parallel, spaced framework rigidly interconnected for rotation about a horizontal axis, coördinate sets of trackways mounted upon the wheel frame, car or cage members slidable to and fro along said trackways between said wheel side frames and pivotally suspended on the trackways, and adapted to be turned about a pivotal connection with the trackways, undulating rails coördinate with respective trackways for turning said cages about their pivotal connections, said cages automatically moving outwardly along said trackways and rails from an innermost position relative to the wheel structure to an outermost position, and yieldable bumpers at the outer ends of the undulating rails for gradually checking their turning movement about their pivots.

36. The combination in an amusement apparatus, of a wheel structure comprising parallel, spaced framework rigidly interconnected for rotation about a horizontal axis, coördinate sets of trackways mounted upon the wheel frame, car or cage members slidable to and fro along said trackways between said wheel side frames and pivotally suspended on the trackways, and adapted to be turned about a pivotal connection with the trackways, undulating rails coördinate with respective trackways for turning said cages about their pivotal connections, said cages automatically moving outwardly along said trackways and rails from an innermost position relative to the wheel structure to an outermost position, yieldable bumpers at the outer ends of the undulating rails for gradually checking their turning movement about their pivots, and brakes upon each of said cages for coöperating with said rails to check the outward movement of the cages gradually.

37. The combination in an amusement apparatus, of a wheel structure comprising parallel, spaced framework rigidly interconnected for rotation about a horizontal axis, coördinate sets of trackways mounted upon the wheel frame, car or cage members slidable to and fro along said trackways between said wheel side frames and pivotally suspended on the trackways, and adapted to be turned about a pivotal connection with the trackways, undulating rails coördinate with respective trackways for turning said cages about their pivotal connections, said cages automatically moving outwardly along said trackways and rails from an innermost position relative to the wheel structure to an outermost position, yieldable bumpers at the outer ends of the undulating rails for

gradually checking their turning movement about their pivots, and brakes upon each of said cages for coöperating with said rails to check the outward movement of the cages gradually, said brakes operating to instantly disengage from their rails when the cages are to be released for reverse movement along their rails.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES HERMANN.

Witnesses:
JOHN HERRMANN,
JACOB W. WHITE.