May 26, 1925.

1,539,094

J. A. MILLER

AMUSEMENT STRUCTURE

Filed Nov. 5, 1924

Fig. 1.

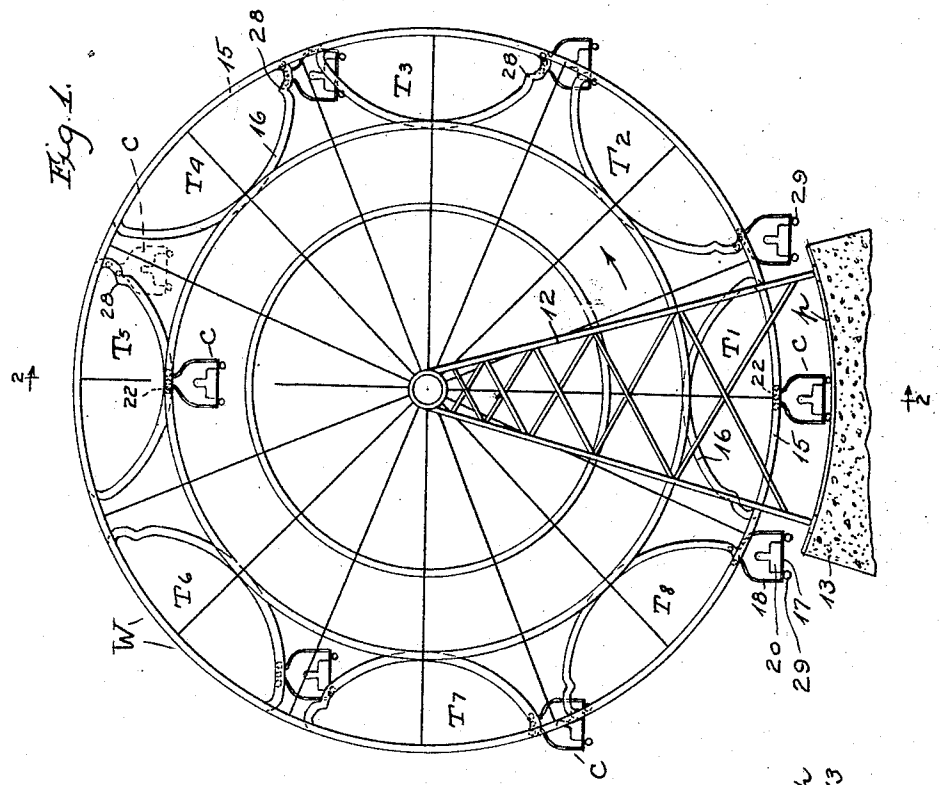


Fig. 2.

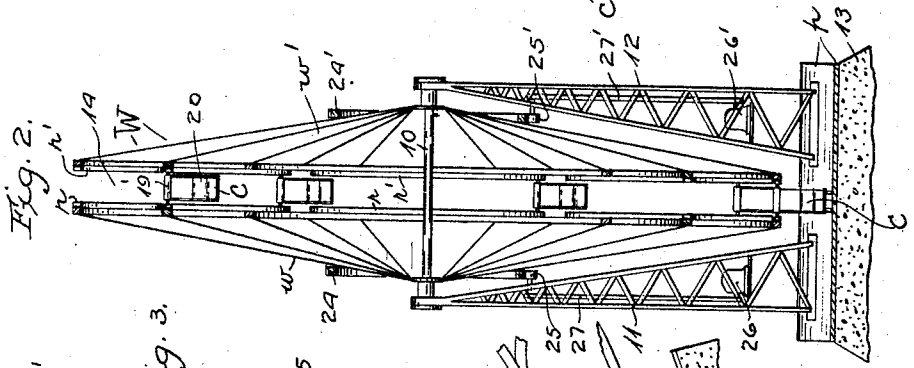


Fig. 3.

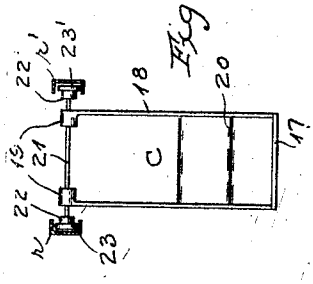


Fig. 4.

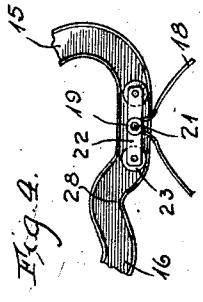
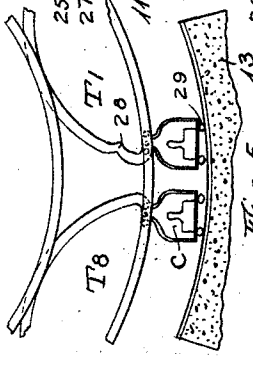


Fig. 5.



INVENTOR.
John A. Miller
Charles J. Schmitt
ATTORNEYS.

Patented May 26, 1925. 1,539,094

UNITED STATES PATENT OFFICE.

JOHN A. MILLER, OF HOMEWOOD, ILLINOIS.

AMUSEMENT STRUCTURE.

Application filed November 5, 1924. Serial No. 747,905.

To all whom it may concern:

Be it known that I, JOHN A. MILLER, a citizen of the United States, and a resident of Homewood, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Amusement Structures, of which the following is a specification.

My invention relates to amusement structures for pleasure resorts, fairs, parks, and other amusement places. My improved structure is of the Ferris wheel type in which cars are suspended on a vertical wheel to be carried around when the wheel revolves. So far as I know, in prior structures of this class, the cars travel bodily only in a circular path, and the wheel must be stopped during loading or unloading of the cars. This causes considerable waste of time and consequently limits the capacity of the structure in the number of passengers per hour, and the repeated starting and stopping also requires greater operating expense.

The important object of my invention is to produce construction and arrangement in which the cars, besides traveling bodily through a circular orbit, also travel bodily through localized paths, such paths being in the form of elliptical track circuits with their outer sides concentric with the wheel axis and their inner sides of reduced radius so that when a track circuit approaches the top of the wheel the car thereon will suddenly dip downwardly along the inner side of the circuit, thus producing considerable sensation for the occupants of the car. The cars are suspended on trucks engaging the rails of the local track circuits, and a loading platform is provided which is concentric with the wheel so that when a track circuit approaches the platform the car suspended therefrom will engage with and come to rest on the platform, and will remain at rest while the concentric outer side of its supporting track circuit travels over the platform, the car being then again picked up by the track circuit and carried around with the wheel for another revolution. The outer sides of the track circuits which are concentric with the wheel axis are of sufficient length to give ample time for loading and unloading the cars while they are at rest on the platform, and this permits the wheel to be rotated continuously thus saving a great deal of time, greatly increasing the capacity, and reducing the operating expense, besides greatly increasing the sensational and amusement feature of the structure. My invention and its operation are clearly shown on the accompanying drawing in which—

Fig. 1 is an end elevational view,

Fig. 2 is a sectional view on plane 2—2 Fig. 1.

Fig. 3 is an enlarged sectional view through the rail frames showing a car supported therefrom,

Fig. 4 is an enlarged side view of one of the trucks and rails, and

Fig. 5 is a fragmentary view showing another position of the cars on the platform.

The wheel W of the structure is supported by its axle 10 on the towers 11 and 12 mounted on the foundation 13. The sides w and w' of the wheel are constructed of framework spokes, braces, etc. and are securely connected together to form a rigid and strong wheel structure. The sides are separated adjacent to their circumferences to leave the annular passageway 14 for the travel of the passenger cars c. Supported by the sides w—w' adjacent to their circumferences and at opposite sides of the passageway 14 are sets of rail frames r, r' forming local track circuits T^1, T^2, T^3 and so on, eight such track circuits being shown. The rail frames shown are elliptical, their outer sections 15 being parallel with the wheel circumference while their inner sections 16 are of shorter radius, the ends of the outer and inner sections of each rail frame being connected together to form a continuous closed rail. Each track circuit supports one of the passenger cars c. These cars may be of any suitable construction, the cars shown comprising a floor 17 suspended by rods or framework 18 from a bearing 19, a seat structure 20 on the floor providing the necessary seating space for passengers. The seat structure shown has two back to back seats with each seat accommodating two persons. The bearing 19 for each car receives an axle 21 which extends between the truck frames 22, 22′ whose wheels 23, 23′ respectively engage the rail frames r and r' of the respective track circuit. As shown in Fig. 3 the rails are of channel shaped cross section with their flanges extending inwardly, the lower flanges supporting the truck wheels and the upper

flanges and the sides forming guard walls for holding the truck to the rails. To drive the wheel it may be provided on opposite sides with annular gears 24 and 24′ engaged by pinions 25 and 25′ which are connected in driving relation with motors 26 and 26′ by chains 27 and 27′.

The platform p on top of the foundation 13 is in a plane parallel with the wheel circumference, and the wheel is sufficiently elevated above the platform to allow passage of the cars across the platform for loading and unloading. When a car reaches the center or lowest part of the platform it will come to rest but its supporting track circuit will continue to travel with the wheel until the end of its concentric part 15 engages with the car supporting trucks when the car will again be carried with the wheel. If the wheel is rotated at the rate of say 40 revolutions per hour then the car of each of the eight track circuits will be allowed 11 seconds of rest on the platform which will be ample time for loading and unloading of the passengers. With such rate of travel of 40 revolutions per hour, and with eight cars of four passengers capacity each, the capacity of the entire structure will be 1,280 passengers per hour, the wheel rotating continuously.

In Fig. 1 the track circuits T^1 and T^5 are respectively at the lower and upper parts of the wheel, the car for the track circuit T^1 being at rest on the platform, and it will remain at rest until the trailing end of the circuit T^1 reaches the trucks which suspend the car. Then the car will be again carried with the wheel. This is illustrated in Fig. 5 where the car of track circuit T^1 has just reached the platform and the car of track circuit T^2 is just about to be started on its next bodily trip around with the wheel. As soon as a car reaches the center or lowest part of the platform it will come to rest and will stay at rest throughout the entire travel of the outer side of its track circuit past the suspending trucks, and during such stationary period of the car it is unloaded and reloaded ready for its next trip.

The wheel travels in the direction indicated by the arrow and as the car is carried upwardly with the wheel its trucks engage along the trailing corners of the track frame. When a track circuit approaches the top of the wheel the trucks of the respective car will enter upon and travel along the inner side 16 of the track circuit as indicated at circuit T^5. The path of the car is thus suddenly changed from that of a circle to a downward direction, producing considerable sensation to car occupants. To increase the sensational effect the start of the car on its downward travel is delayed or retarded and this may be accomplished as shown by the provision of the humps or elevations 28 (Fig. 4) on the inner sides of the track rails adjacent to the trailing corners thereof. This will permit a track circuit to get closer to the top of the wheel before its car is released for the sudden downward dip. In track circuit T^4, and by the dotted lines in track circuit T^5 the cars are shown supported in the corners of the circuits with their trucks behind the obstructional elevations, and a car will not start its downward dip until its circuits has been carried high enough to incline the obstruction sufficiently to permit the trucks to travel thereover. The released cars will then take suddenly a rapid downward dip and will shuttle back and forth a while on the rail sections 16. When a track circuit passes the upper part of the wheel its suspended car will again travel toward the wheel circumference and hang from the advancing corner of the circuit to be lowered down toward the platform. To balance the cars and make them more stable for loading and unloading purposes they are provided with wheels 29 for engaging with the platform and for supporting the cars thereon so that the outer concentric sides of the track circuit may readily travel past the supporting trucks of the cars.

I do not desire to be limited to the exact construction, arrangement and operation shown and described as modifications are possible which will still come within the scope of the invention.

I claim as follows:

1. In an amusement structure of the class described, the combination of a wheel rotatable continuously on its horizontal axis, a plurality of local track circuits supported from said wheel adjacent to the circumference thereof, the outer sides of said local track circuits being parallel with the wheel circumference, trucks for riding each track circuit and a car suspended therefrom, and a platform for receiving a car when at the lowest point of the wheel and for supporting the car at rest while the outer side of its associated track circuit is traveling over the platform, engagement of the inner sides of the track circuits with the trucks causing the respective cars to be carried bodily with the wheel.

2. In an amusement structure of the class described, the combination of a wheel mounted to rotate on its horizontal axis, a plurality of local track circuits supported on said wheel adjacent to its periphery, each track circuit comprising an outer side and an inner side, trucks for riding each track circuit and a car suspended therefrom, said trucks engaging in the trailing ends of said circuits while the respective cars are being carried upwardly with the wheel, said trucks entering on the inner sides of the circuits when such circuits approach the top of the wheel, the force of gravity then tending to

cause the trucks and supported cars to travel downwardly along the inner sides of the circuits, and means for holding back such travel of the trucks until the circuits are near the top of the wheel whereby the downward movement of the cars will be more sudden and sensational.

3. In an amusement structure of the class described, the combination of a wheel rotatable on its horizontal axis, a plurality of local closed track circuits supported on the wheel adjacent to its periphery, trucks for riding each circuit and a car suspended therefrom whereby each car will travel around its local circuit while being bodily carried by said wheel, means associated with each circuit for holding the respective cars against inward travel on said circuit while being carried upwardly and for releasing the car when its circuit approaches the top of the wheel whereby said car will then travel suddenly inwardly along its track circuit.

4. In an amusement structure of the class described, the combination of a wheel rotatable on its horizontal axis, a plurality of closed local track circuits spaced around said wheel, trucks for riding each circuit and a car suspended therefrom, said circuits being positioned to cause the respective cars to gradually travel on said circuits toward the center of the wheel as the circuits are being carried upwardly with the wheel, and means at each circuit for holding back such inward travel of the car until the circuit is well toward the top of the wheel whereby the car will then suddenly travel inwardly with greater sensational effect.

5. In an amusement structure of the class described, the combination of a wheel rotatable on its horizontal axis, a plurality of local track circuits supported on said wheel, said track circuits being of elliptical shape with their outer sides adjacent to their wheel periphery, trucks riding each circuit and a car suspended therefrom, said trucks tending to travel inwardly and downwardly along the inner side of the track circuits when said circuits approach the top of the wheel, and means associated with each circuit for delaying such downward travel of its trucks until the inner side of such circuit is abruptly inclined whereby the trucks and cars suspended therefrom will then move downwardly more suddenly and with greater sensational effect.

6. In an amusement structure of the class described, the combination of a wheel rotatable on its horizontal axis, a plurality of local track circuits on said wheel, cars supported on said track circuits and tending to travel around said circuits while being bodily carried around with said wheel, and means for periodically obstructing the travel of said cars on said circuits and for then releasing them for accelerated travel thereon.

7. In an amusement structure of the class described, the combination of a continuously rotating wheel, a plurality of local track circuits on said wheel, cars supported on said circuits to travel said circuits while being bodily carried around by the said wheel, means for periodically permitting each car to come to rest, and means for periodically obstructing the travel of each car on its local circuit and for then releasing it for accelerated travel thereon.

8. In an amusement structure of the class described, the combination of a continuously rotating wheel, a plurality of oblong closed track circuits supported on said wheel adjacent to the circumference thereof, the outer sides of each track circuit being parallel with the wheel circumference, a truck for each track circuit and a car supported therefrom, each truck traveling around its circuit while being bodily carried with the wheel, each car when supported from the wheel below its axis being at rest while the outer side of the track circuit is traveling through the vertical axial frame of the wheel, and a platform parallel with said wheel circumference for supporting cars when at rest.

9. In an amusement structure of the class described, the combination of a continuously rotating wheel, a plurality of local track circuits on said wheel, cars supported on said circuits to travel said circuits while being bodily carried around by said wheel, and an obstruction in each local track circuit adjacent to the wheel periphery for restraining travel of a car downwardly on the track circuits until each track circuit approaches the top of the wheel.

In witness whereof, I hereunto subscribe my name this 3rd day of November A. D., 1924.

JOHN A. MILLER.