Nov. 22, 1938. H. W. HANNA 2,137,839

AMUSEMENT DEVICES

Filed Dec. 13, 1937

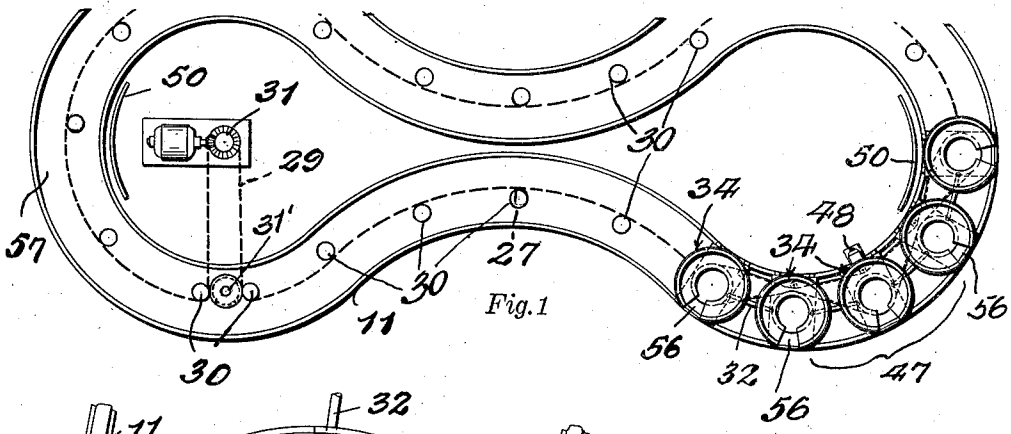

Fig.1

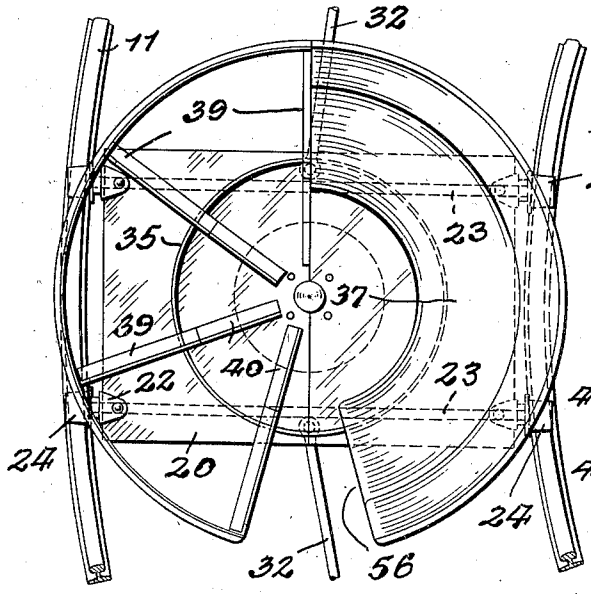

Fig.2.

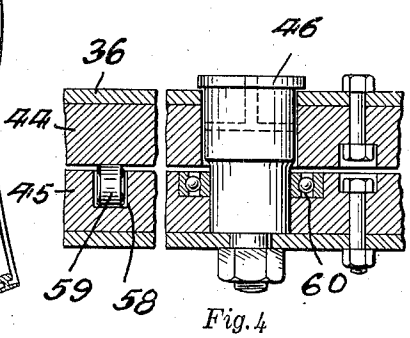

Fig.4

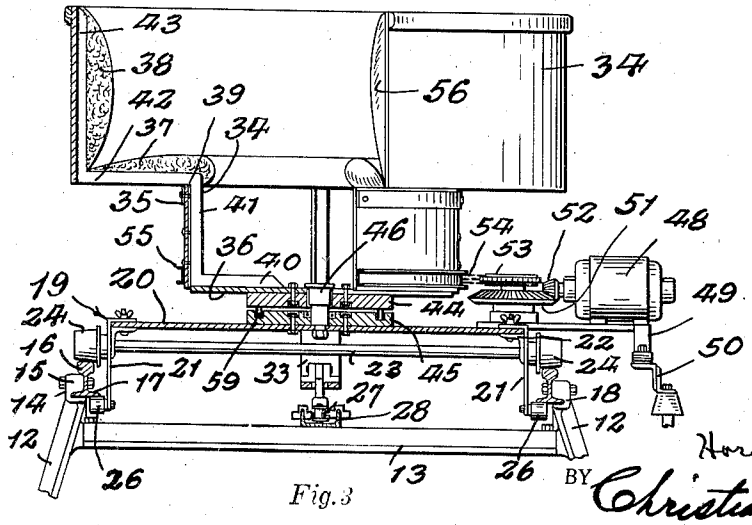

Fig.3

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AMUSEMENT DEVICE

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Application December 13, 1937, Serial No. 179,564

3 Claims. (Cl. 104—75)

This invention relates to amusement devices suitable for erecting in amusement parks for the enjoyment of those who desire to be moved with others beside them swiftly and erratically. It is also an aim to provide in combination the advantages of a scenic railway and a gyratory conveyance, with certain novel features contributing materially to the element of surprise and uncertainty as to the movements of the conveyance.

It is an important aim to present a device of the character described in which cars may be caused to move the passengers through a meandering course by the use of extremely simple operative connections and car mountings. It is a particular aim to enable the use of a simple rotary mounting for the car proper in which the patrons are carried, and a simple drive for rotating the car without the liability of producing dizziness, and in fact, without actually moving the patrons in a circular path, due to the novel components of motion produced in my apparatus.

Additional objects, advantages and features of invention reside in the construction, arrangement and combination of parts involved in the embodiment of my invention, as will appear from the following description and accompanying drawing, wherein

Figure 1 is a plan of a complete railway embodying my invention.

Figure 2 is a plan of a car unit with parts removed.

Figure 3 is an elevation of one of the units partly in section, and showing the track in section.

Figure 4 is an enlarged fragmentary section of the mounting of one of the cars on its truck.

There is illustrated a track frame-work 10 extending over a suitable sinuous course, which in the present instance is similar to the figure 8 but may be varied in plan as desired. It supports a track consisting of two parallel rails 11 throughout the course. Any usual station structures, not shown, may be provided where convenient, in accordance with approved practices.

It is an advantage of the invention that I am able to use an ordinary railway rail of standard proportions with a novel manner of mounting and coordination with a carriage and wheel mounting. The frame-work 10 includes a suitable number of truss members 12 connected by cross members 13 in rigid mutual relation. The truss members extend above the cross members as shown and have bracket fittings 14 thereon, each having a block part 15 so shaped at the inner side so that its upper part will wedge between the head 16 and flange 17 of the rail at one side, a groove 18 being formed in the block to receive the flange and its lower side being adapted to support the base of the rail.

A bolt is engaged through the block and stem of the rail whereby the latter is held snugly to the bracket in rigid relation to the frame-work.

On the track there are mounted a number of trucks 19, each consisting of a normally planiform rectangular body plate 20, parallel to the plane of the rails, formed of resilient steel sheet approximately ¼ inch thick. At each corner of this plate there are provided leg elements 21 including clamp portions 22 in which the edge portions of the plate 20 are removably secured. Mounted in these legs there are two axles 23, carrying top wheels 24 at their outer ends outwardly of the brackets and resting on the heads of the rails, while at the lower ends of the legs there are mounted wiper rollers 26 engaging against the under sides of the inner foot flanges of the rails.

The trucks are moved on the track by means of an endless chain 27 operated in a grooved guide 28 located centrally of the track, the guide having suitably spaced pulleys 30 cooperable with the chain for guidance of the chain. A driving device 31, which may include any suitable power means, is provided, from which there is extended a chain 29 which is operatively connected with a sprocket 31', the latter being in driving engagement with the chain 27.

The trucks are connected in a train of a suitable number of trucks connected by link couplings 32 suitably pivoted on the plates 20. One or more of the trucks may be connected to the chain 27 by means of a connection such as shown at 33.

On each truck there is mounted a circular car body 34, consisting of a central circular pit 35 including a floor plate 36, and an outwardly extended nearly annular seat 37, substantially C-shaped and concentric with the pit, the inner edge of the seat being approximately at the upper boundary of the pit. A back 38 is provided at the outer edge of the seat consisting of a plate or wall linearly coextensive with the seat, and completing the upper part of the body. Suitable cushioning may be provided on the seat and back. As a convenient framing for the car body, a series of frame pieces 39 are provided, substantially W-shaped, each including a short arm 40 secured to the floor plate 36, a vertical stud 41 to the outer side of which the wall of

the pit is attached, a horizontal arm **42** upon which the seat is built, and a vertical arm **43** carrying the outer wall of the back **38**.

On the under side of the floor there is secured a concentric turntable plate **44**, while upon the plate **20** there is secured a similar plate **45**. A stud shaft **46** is fixed in the latter plate and engaged revolubly through the plate **44**, being provided with a retaining flange at its upper part to retain the car body from lifting away from the truck.

While any convenient or practicable number of cars may be connected in a train, and more than one train may be installed on the track, in the present instance, one train **47** is shown, consisting of five cars. On the bed plate **20** of the middle car a laterally extended horizontal bracket plate is mounted fixedly, having an electric motor **48** mounted on its outer part, and carrying a wiper arm **49** making contact with a third rail conductor **50** spaced suitably from the track. There are shown in the present instance, two of the third rails of short length, located at longitudinally spaced parts of the track at the inner sides of the curves at the ends of the figure 8 circuit, so that the motor will be energized for short periods during the travel of the train around the course. More or fewer of the rails **50** may be provided, if desired. Inwardly of the motor **48** on the truck there is mounted a large bevel gear **51** on a vertical axis, and meshed with this gear there is a pinion **52** carried by the shaft of the motor **48**. The gear **51** carries a horizontal sprocket **53** with which there is engaged an endless chain **54** in opposite directions therefrom to the end cars of the train where it passes around the pits of these cars in channel pieces **55** fixed on the walls of the pits, and thence is extended tortuously between the pits of the remaining cars travelling in a channel **55** on each pit. It is so arranged that it will rotate the mutually adjacent cars in opposite directions when the motor **48** is energized. The channel is shown as without teeth, and it may be of the familiar V-channel type so that the chain will engage with sufficient friction to turn the cars properly. It is contemplated to control the motor **48** as well as the motor of unit **31** from a central control station, and to vary the operation of the cars on the trucks by intermittently reversing the polarity of the current supplied through the rails, so that each car will not be always rotated in the same direction.

While I have shown and described a specific single embodiment of the invention, I do not regard the invention as limited thereto, and various changes in the construction may be made within the scope of the invention as set forth in the appended claims.

In the operation of the device as described, the cars are preferably arranged so that the interruptions or openings **56** in the C-shaped seats and backs will all be presented toward one side of the track when the train is at a predetermined loading station. Passengers may then step from the ground or from a loading platform to the plate **20**, and from the latter into the pit, the legs and feet passing through the openings **56** of the seats, and backs of the cars. The ends of the backs **38** afford a ready rest or grip for the hands of the passengers as they step into the cars, and liability of misstep thus minimized. Egress of the passengers is the reverse of that for entering, and is similarly facilitated and made safe by the construction described.

All passengers being aboard, the central control operator now initiates operation of the motor unit **31** by which the chain **27** is moved through its orbit and the train drawn along the track. In traversing the curves **57** of each end of the circuit, considerable centrifugal force is developed in the mass of the car and its load, and this mass being all above the plate **20**, the plate will be flexed to a certain extent, and the car will sway toward the outer side of the track. The car construction being rigid, this sway will all be on an axis running longitudinally of the track and adjacent the plate **20**. In addition, when the third rail contact is made at the points indicated, the cars will be given a sudden rotation, producing an additional element of centrifugal force, which, however, will only be manifest momentarily owing to the fact that at one part of this rotation the centrifugal force is neutralized by the force generated by translative movement of the car in a curved orbit. In consequence, the passengers are given a series of swings in a horizontal direction the intervals of said neutralization being sufficient to permit restoration of blood pressure and circulation balance or normal condition, so that no dizziness is developed among the passengers.

The sensations produced are particularly exhilarating, and at the turns of the track at the ends of the loops of the circuit, the passengers are intrigued by the appearance of an upset when the cars sway outward and the bodies of the passengers are swung in the same direction. The momentum of the car bodies and their loads will cause them to rotate for a time after the energization of the motor **48** ceases. The speed of the train on the track may approximate a rate of six to eight miles per hour to operate safely with the construction described and for the production of the desired effects. To reduce friction of rotation of the car body the lower plate **45** is formed with a concentric annular groove or channel **58** in its upper side, concentric with the pin **46**, and the plate **44** is supported by rolls **59** of a diameter slightly greater than the depth of the groove **58** and engaging the lower planiform face of the plate **45**. Additional anti-friction bearings may be provided as required in the apparatus, in accordance with approved bearing practices, for instance, as at **60** between the stud and the relatively rotating part through which it is engaged.

It should be noted that the motor **48** is mounted adjacent the inner side of the track, so that in normal use it will be opposite the place of ingress and egress of passengers. The chain **54** passes the outer side of the sprocket **53**, and runs laterally therefrom to the sides of the pits of the endmost cars, passing around the outer sides of these—that is, the sides toward the ends of the train, and thence diagonally inwardly on the train between the end cars and the next adjacent ones, passing around the inner sides of these and thence outwardly and around the pit of the central car. In this way the chain is kept well within the flanges of the channels **55**, so that no guards are necessary to prevent patrons from soiling their clothes or getting garments caught under the chain.

I claim:—

1. In a device of the character described, a track, a train mounted to travel thereon, means to move the train on the track, said train comprising a plurality of cars each consisting of a truck on the track and a body mounted revolu-

bly to rotate on a vertical axis and to rock transversely, a motor mounted on one of the trucks, and a tortuous chain operative connection between the motor and the cars, whereby the bodies of adjacent cars are rotated in opposite directions.

2. In a device of the character described, a track, a train mounted to travel thereon, means to move the train on the track, said train comprising a plurality of cars, each consisting of a truck on the track and a body mounted revolubly on the truck to rotate on a vertical axis, each body having a concentric channel member adjacent its base, an electric motor on one of the cars, said motor having a driven gear, a gear on the truck in mesh with the first named gear, a sprocket driven by the last named gear, a chain disposed in driving engagement with the channel members of the bodies, said chain being trained about the sprocket, third rail devices intermittently spaced around the track and said motor having means for contacting the third rail devices as the train moves therepast, whereby to rotate said body members.

3. In a device of the character described, a track, a train mounted to travel thereon, means to move the train on the track, said train comprising a plurality of cars each consisting of a truck on the track and a body mounted revolubly on the truck to rotate on a vertical axis and including a concentric element, an electric motor on one of the cars, operative connections between the motor and the concentric elements for effecting rotation of the bodies, and means to energize the motor intermittently including third rail devices at the curves of the track.

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