No. 777,497. PATENTED DEC. 13, 1904.

C. DE W. COOPER.

SCENIC RAILWAY.

APPLICATION FILED OCT. 19, 1904.

NO MODEL.

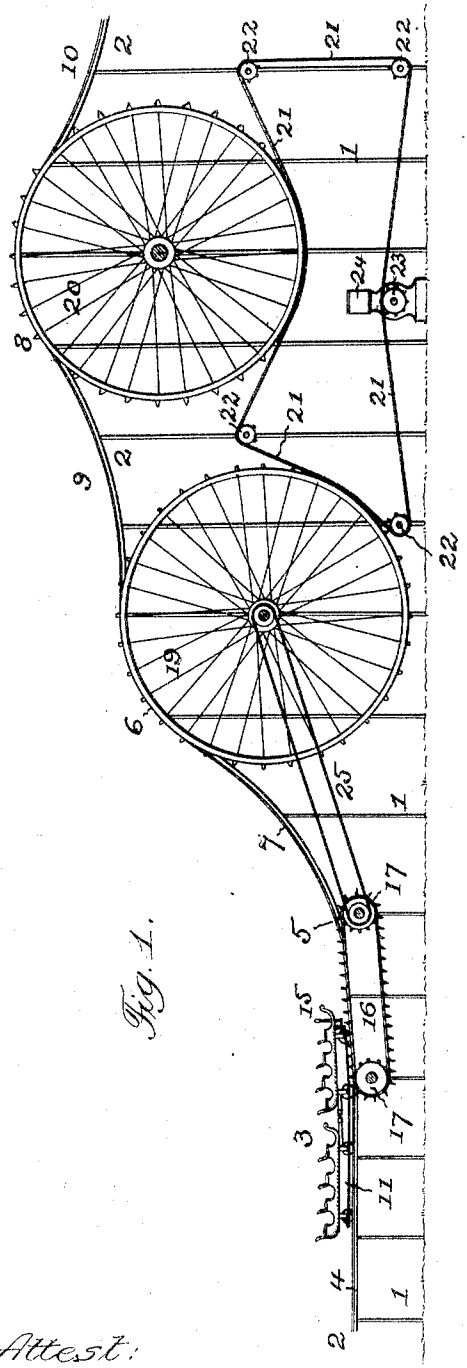

Fig. 1.

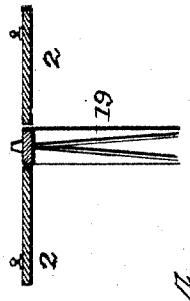

Fig. 3.

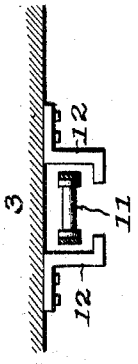

Fig. 4.

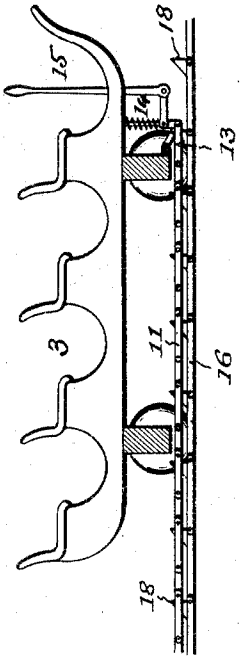

Fig. 2.

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UNITED STATES PATENT OFFICE.

CLINTON DE WITT COOPER, OF ST. LOUIS, MISSOURI.

SCENIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 777,497, dated December 13, 1904.

Application filed October 19, 1904. Serial No. 229,091. (No model.)

To all whom it may concern:

Be it known that I, CLINTON DE WITT COOPER, a citizen of the United States of America, and a resident of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Scenic Railways, of which the following is a specification.

This invention relates to that class of pleasure or scenic railways in which the train of cars are raised to an elevated position and descend by gravity along a circuitous and undulating course in returning to the starting-station; and the present improvement has for its object to provide a simple and efficient structural arrangement of parts by means of which the train of cars as it leaves the starting-station is elevated to a high altitude in a safe, expeditious, and positive manner, all as will hereinafter more fully appear and be more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a scenic railway, illustrating the present invention; Fig. 2, a detail longitudinal elevation of the train of cars employed in the present invention. Fig. 3 is a detail transverse section of the roadway and one of the elevating sprocket-wheels of the present invention. Fig. 4 is an enlarged detail transverse sectional elevation illustrating the connection between the truck of an intermediate car of the train and the chain connection by which said train is engaged by the operating mechanism.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 represents the trestle or framing which supports the elevated track or roadway of a scenic railway. Such trestle and track may be of any usual and suitable construction adapted to afford a firm and substantial support for the track and a safe and substantial way for the series or train of cars 3 usually employed in the present class of pleasure or scenic railways. The usual safety provisions to prevent accidental derailment of the cars will be provided; but as such provisions form no part of the present invention they are not shown or described.

The section of track structure shown in Fig. 1 of the drawings is that next adjacent to the starting-station and up which the train or series of cars 3 are positively carried to the point of highest altitude and from which point they descend by gravity and return finally to the starting-station. In the preferred form of the present invention such section of track structure is formed as follows:

4 is a level portion onto which the cars are pushed by the attendant from the starting-station.

5 is an inclined portion forming a continuation of the level portion aforesaid and up which the cars are positively moved by an endless carrier hereinafter more fully described.

6 is a convex portion raised above the inclined portion aforesaid with its lower end connected to the upper end of such inclined portion by an intermediate concave extension 7 of one or the other portion.

8 is a secondary convex portion raised above the convex portion 6 aforesaid and connected thereto by an intermediate concave portion 9 at one end and at the other end to higher portion 10 of an ordinary scenic-railway structure.

11 is a section of chain extended beneath the series of cars 3 constituting a train and with its respective ends attached to the trucks of the forward and rear cars of the train. Such chain-section is supported adjacent to the roadway by a series of hanger-stirrups 12 on the trucks of the various cars, so as to be in proper position for operative engagement with the operating endless carrier and sprocket-wheels hereinafter described.

In the preferred construction, as illustrated in Fig. 2 of the drawings, the forward link 13 of such chain-section projects forward of the foremost car-truck and the forward end of such links is yieldingly held in proper position by a spring 14 so that in reaching an engagement with the teeth or sprockets of the operating connections hereinafter described such link may easily ride over and engage the first tooth or sprocket met with in effecting the aforesaid engagement.

15 is a hand-lever connected to the free end of the link 13 aforesaid and adapted to afford the operator control over said link in its normal movement.

16 is the endless carrier above referred to and consisting of an endless chain carried

upon a pair of chain-wheels 17 with its upper portion in a plane parallel with the surface of the inclined portion 5 of the roadway and passing through a central slot in the same. Such endless carrier is provided with a series of teeth or pawls adapted for engagement with the chain-section 11 aforesaid to afford a very strong and effective operative engagement between said endless carrier and the passing train of cars. The teeth or pawls 18 are preferably pivoted to the endless carrier, so that in cases where the series of passing cars have greater speed or momentum than the endless carrier such pawls will tilt down out of the way and not offer any impediment to the passage of the cars, while, on the other hand, should the speed of the cars be less than that of the endless carrier such pawls are adapted to positively engage the chain-section 11 of the cars to impart the required momentum to the same.

19 is a sprocket-wheel of a radius equal to the radius of the convex portion 6 of the roadway. Such sprocket-wheel is journaled on the roadway-trestle or other support in a manner to bring its periphery on a common plane with the convex portion 6 of the roadway with its sprocketed rim projecting through a central slot in said roadway, as illustrated in Fig. 3 of the drawings.

20 is a secondary sprocket-wheel of a radius equal to that of the secondary convex portion 8 of the roadway. Such sprocket-wheel is also journaled on the roadway-trestle or other support in a manner to bring its periphery on a common plane with said convex portion 8 of the roadway and with its sprocketed rim projecting through a central slot in said portion of the roadway.

Uniform motion will be imparted to the endless carrier 16 and to the sprocket-wheels 19 and 20 from a suitable engine or motor by any usual and suitable intermediate connections. In the present drawings the intermediate connections shown for effecting such movements are as follows:

21 is an endless driving belt or chain passing around suitable supporting-sheaves 22 and engaging the sprocket-teeth of the sprocket-wheels 10 and 20, as well as a sprocket-wheel 23 on the driving-shaft of the engine 24 to afford a simple, strong, and effective driving connection between said engine and both sprocket-wheels.

25 is an endless belt or chain connection between pulleys carried by the shafts of the sprocket-wheel 19 and one of the chain-wheels 17 of the endless carrier 16 and adapted to impose simultaneous and uniform movements on said parts.

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

1. In a scenic railway, the combination of a track structure formed with a raised convex portion, a sprocket-wheel having a radius similar to said convex portion, the rim of said wheel projecting through a slot in said convex portion, means for imparting motion to said sprocket-wheel, a train of cars, and a chain-section carried underneath the same and adapted for engagement with the sprocket-teeth of the sprocket-wheel aforesaid, substantially as set forth.

2. In a scenic railway, the combination of a track structure formed with a series of convex portions united together by intermediate concave portions, sprocket-wheels individual to said convex portions and having a like radius, the rims of said wheels projecting through slots in said convex portions, means for imparting motion to said sprocket-wheels, a train of cars, and a chain-section carried underneath the same and adapted for engagement with the sprocket-teeth of the sprocket-wheels aforesaid, substantially as set forth.

3. In a scenic railway, the combination of a track structure formed with an inclined portion and a raised convex portion, an endless carrier the upper portion of which has movement in a slot in the surface of said inclined portion, a pair of wheels carrying said endless carrier, a sprocket-wheel having a radius similar to the convex portion aforesaid, means for imparting motion to said endless carrier and sprocket-wheel, a train of cars, and a chain-section carried underneath the same and adapted for engagement with the endless carrier and sprocket-wheels aforesaid, substantially as set forth.

4. In a scenic railway, the combination of a track structure formed with an inclined portion and a series of convex portions united together by an intermediate concave portion, an endless carrier the upper portion of which has movement in a slot in the surface of said inclined portion, a pair of wheels carrying said endless carrier, sprocket-wheels individual to said convex portions and having a like radius, the rims of said wheels projecting through slots in said convex portions, means for imparting motion to said endless carrier and sprocket-wheels, a train of cars, and a chain-section carried underneath the same and adapted for engagement with the endless carrier and sprocket-wheels aforesaid, substantially as set forth.

5. In a scenic railway, the combination of a track structure formed with an inclined portion and a raised convex portion, an endless carrier the upper portion of which has movement in a slot in the surface of said inclined portion, a series of pawls pivotally connected to said endless carrier, a pair of wheels carrying said endless carrier, a sprocket-wheel having a radius similar to the convex portion aforesaid, means for imparting motion to said carrier and sprocket-wheel, a train of cars, and a chain-section carried underneath the same and adapted for engagement with the

endless carrier and sprocket-wheel aforesaid, substantially as set forth.

6. In a scenic railway, the combination of a track structure formed with an inclined portion and a series of convex portions united together by intermediate concave portions, an endless carrier the upper portion of which has movement in a slot in the surface of said inclined portion, a series of pawls pivotally connected to said endless carrier, a pair of wheels carrying said endless carrier, sprocket-wheels individual to said convex portions and having a like radius, the rims of said wheels projecting through slots in said convex portions, means for imparting motion to the endless carrier and sprocket-wheels aforesaid, a train of cars, and a chain-section carried underneath the same and adapted for engagement with the endless carrier and sprocket-wheels aforesaid, substantially as set forth.

7. In a scenic railway, the combination of a track structure formed with a raised convex portion, a sprocket-wheel having a radius similar to said convex portion, the rim of said wheel projecting through a slot in said convex portion, means for imparting motion to said sprocket-wheel, a train of cars, a chain-section secured to the trucks of the forward and rear cars of said trains and adapted for engagement with the sprocket-teeth of said sprocket-wheel, and a series of supporting-stirrups on the intermediate car-trucks for supporting said chain-section, substantially as set forth.

8. In a scenic railway, the combination of a track structure formed with a series of convex portions united together by intermediate concave portions, sprocket-wheels individual to said convex portions and having a like radius, the rims of said wheels projecting through slots in said convex portions, means for imparting motion to said sprocket-wheels, a train of cars, a chain-section secured to the trucks of the forward and rear cars of said train and adapted for engagement with the sprocket-teeth of said sprocket-wheels, and a series of supporting-stirrups on the intermediate car-trucks for supporting said chain-section, substantially as set forth.

9. In a scenic railway, the combination of a track structure formed with an inclined portion and a raised convex portion, an endless carrier the upper portion of which has movement in a slot in the surface of said inclined portion, a pair of wheels carrying said endless carrier, a sprocket-wheel having a radius similar to the convex portion aforesaid, means for imparting motion to said endless carrier and sprocket-wheel, a train of cars, a chain-section secured to the trucks of the forward and rear cars of said train and adapted for engagement with the sprocket-teeth of said sprocket-wheel, and a series of supporting-stirrups on the intermediate car-trucks for supporting said chain-section, substantially as set forth.

10. In a scenic railway, the combination of a track structure formed with a raised convex portion, a sprocket-wheel having a radius similar to said convex portion, the rim of said wheel projecting through a slot in said convex portion, means for imparting motion to said sprocket-wheel, a train of cars, a chain-section secured to the trucks of the forward and rear cars of said train and adapted for engagement with the sprocket-teeth of said sprocket-wheel, the forward link of said chain projecting forward of the truck, a vertical spring connected to the forward end of said link, and a series of supporting-stirrups on the intermediate car-trucks for supporting said chain-section, substantially as set forth.

11. In a scenic railway, the combination of a track structure formed with a series of convex portions united together by intermediate concave portions, sprocket-wheels individual to said convex portions and having a like radius, the rims of said wheels projecting through slots in said convex portions, means for imparting motion to said sprocket-wheels, a train of cars, a chain-section secured to the trucks of the forward and rear cars of said train and adapted for engagement with the sprocket-teeth of said sprocket-wheels, the forward link of said chain projecting forward of the truck, a vertical spring connected to the forward end of said link, and a series of supporting-stirrups on the intermediate car-trucks for supporting said chain-section, substantially as set forth.

12. In a scenic railway, the combination of a track structure formed with an inclined portion and a raised convex portion, an endless carrier the upper portion of which has movement in a slot in the surface of said inclined portion, a pair of wheels carrying said endless carrier, a sprocket-wheel having a radius similar to the convex portion aforesaid, means for imparting motion to said endless carrier and sprocket-wheel, a train of cars, a chain-section secured to the trucks of the forward and rear cars of said train and adapted for engagement with the sprocket-teeth of said sprocket-wheel, the forward link of said chain projecting forward of the truck, a vertical spring connected to the forward end of said link, and a series of supporting-stirrups on the intermediate car-trucks for supporting said chain-section, substantially as set forth.

Signed at St. Louis, Missouri, this 15th day of October, 1904.

CLINTON DE WITT COOPER.

Witnesses:
CHARLES H. RYAN,
WM. H. HAHN.