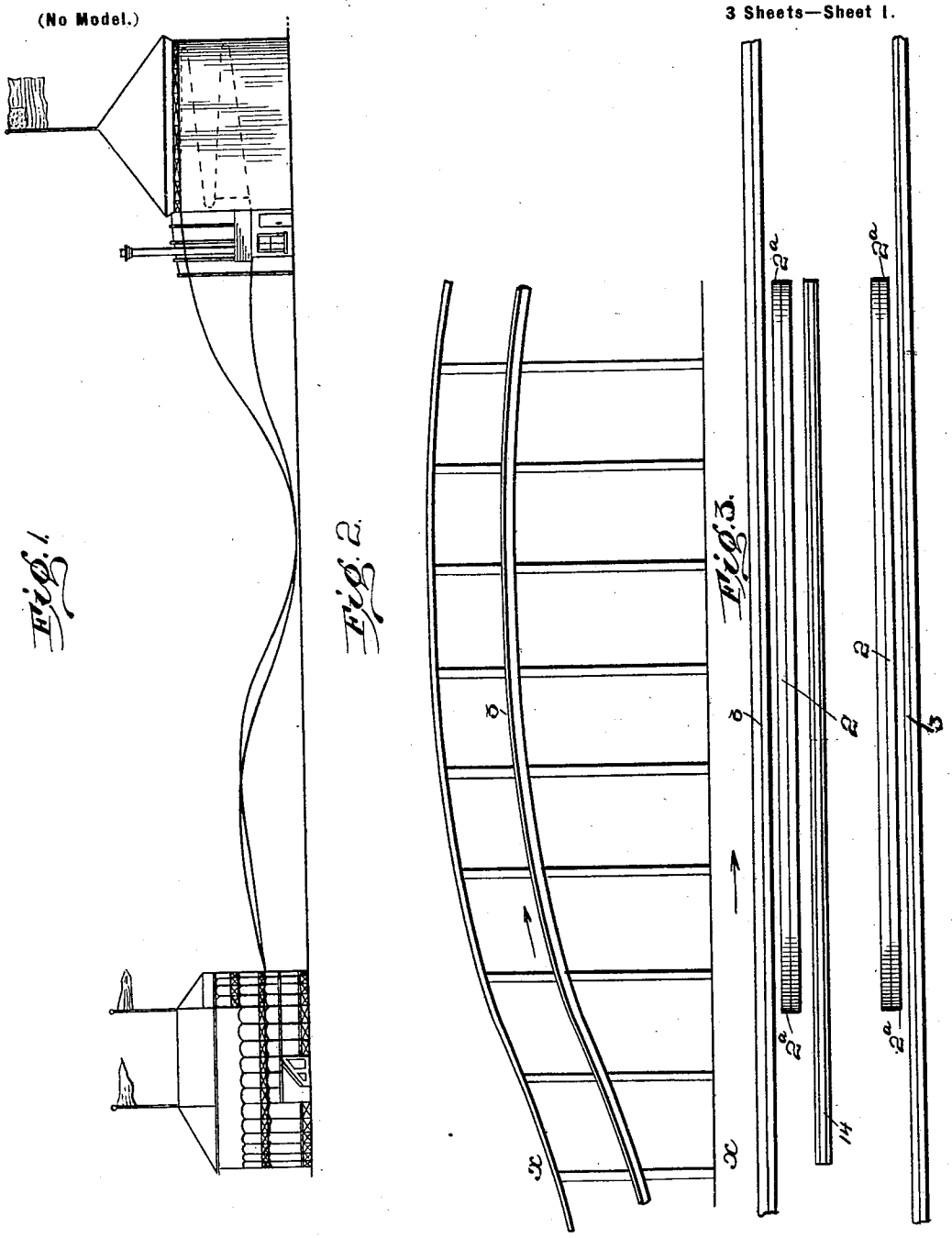
No. 665,764. Patented Jan. 8, 1901.

LA MARCUS A. THOMPSON.

GRAVITY OR PLEASURE RAILWAY.

(Application filed Apr. 24, 1900.)

(No Model.) 3 Sheets—Sheet 1.



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(No Model.) 3 Sheets—Sheet 2.

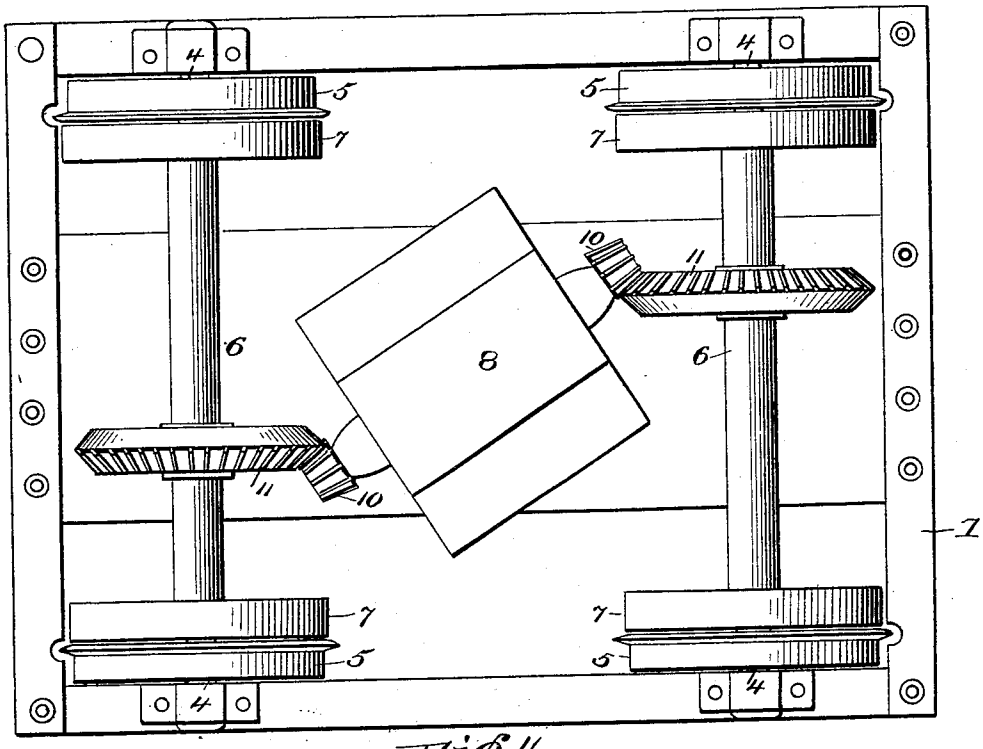

Fig. 4

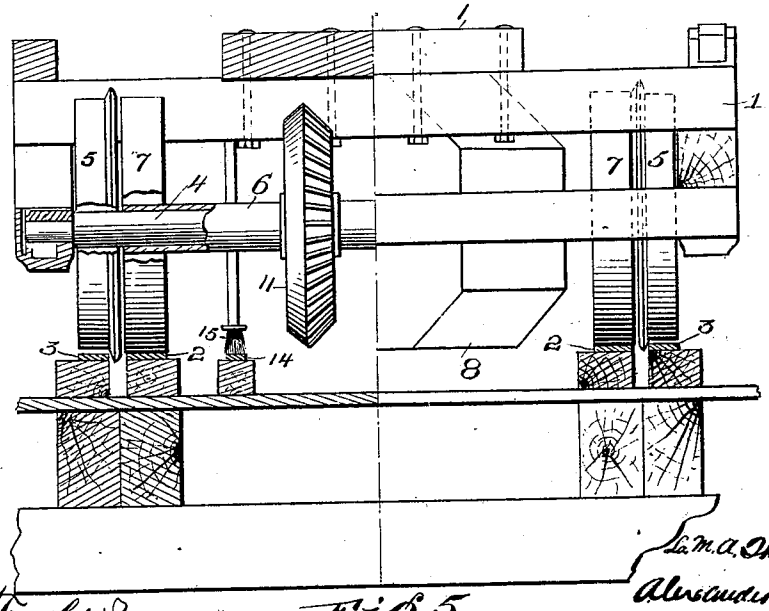

Fig. 5

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(No Model.) 3 Sheets—Sheet 3.

Fig. 6

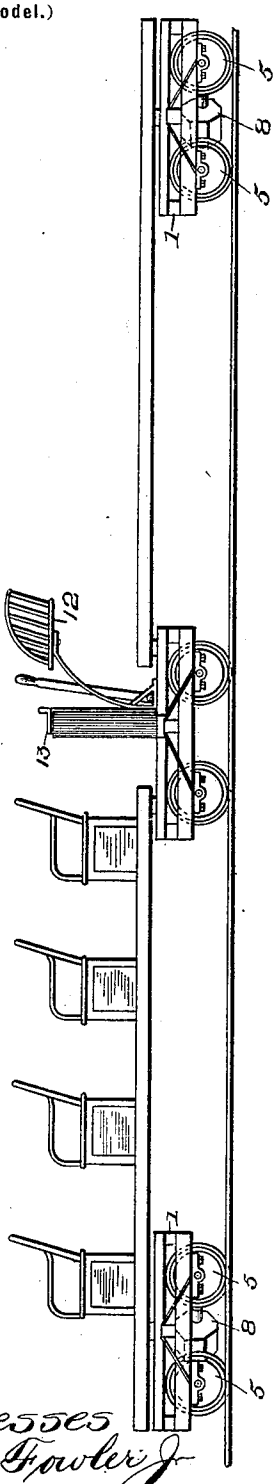


Fig. 8

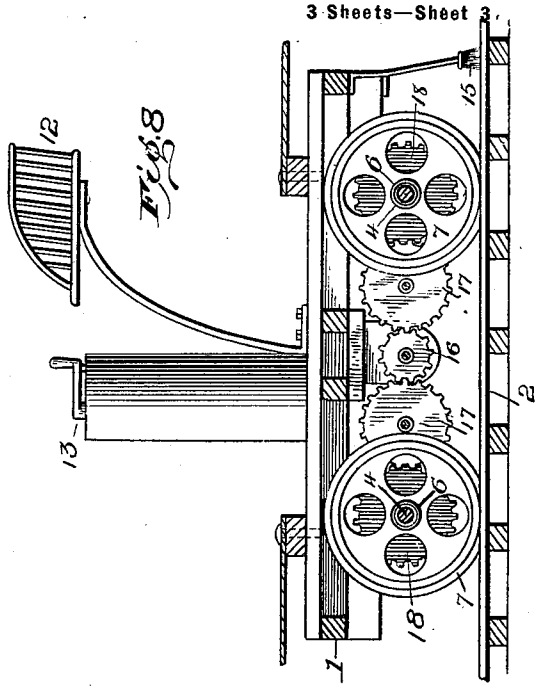
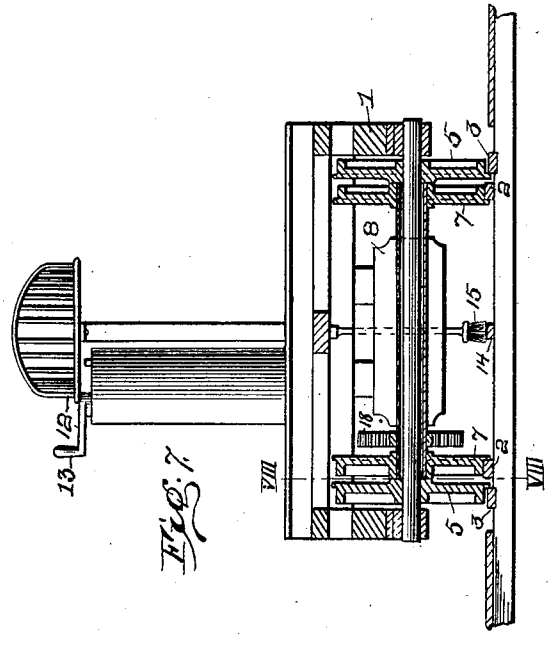


Fig. 7



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UNITED STATES PATENT OFFICE.

LA MARCUS A. THOMPSON, OF CHICAGO, ILLINOIS.

GRAVITY OR PLEASURE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 665,764, dated January 8, 1901.

Application filed April 24, 1900. Serial No. 14,148. (No model.)

To all whom it may concern:

Be it known that I, LA MARCUS A. THOMPSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gravity or Pleasure Railways; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates generally to what are designated as "gravity-railways" and to appliances used in the operation of the same, and more particularly to the special kind of such roads known as "pleasure" or "scenic" railways. Such railways are constructed in undulatory courses—that is, with ascending and descending gradients—and the cars operated thereon have heretofore been propelled by gravity on the downgrades and on the upgrades (where the momentum acquired on the descending grade is insufficient to carry them up and over the succeeding grade) by a cable which through suitable devices picks up the cars at the proper points. It has also been attempted to operate such roads by the combined forces of electricity and gravity, but heretofore unsuccessfully. My invention is designed to obviate the use of such cables, for which purpose I employ electric or other motors mounted on the car-trucks. Such manner of operation renders necessary the employment of a special character of truck and track, which form the subject-matter of the present invention.

I shall now describe my invention, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a scenic or pleasure railway, showing merely its undulatory courses. Fig. 2 is a side view of a portion of one of the ascending gradients of such railway. Fig. 3 is a plan view of the same. Fig. 4 is a bottom plan view of my improved motor-truck. Fig. 5 is a partial side elevation and section of the same. Fig. 6 is a view of a train of cars and their trucks, showing the manner of connecting up the same. Fig. 7 is a side view of a modified form of truck and track. Fig. 8 is a cross-section on the line VIII VIII of Fig. 7.

Like symbols of reference indicate like parts in each of the views.

In the drawings in Fig. 1 is represented in outline a gravity or pleasure railway formed of undulatory courses composed of ascending and descending gradients of varying inclination, the number and length of which may be varied at will. The momentum of the car or train acquired in descending some of the gradients will be sufficient, as will be readily understood, to carry the car or train up and over the brow of a following ascending gradient of either a less pitch or shorter in length. At some portions of the courses, however, the ascending gradient is of such an inclination and length that the momentum acquired on the preceding descending gradient will not effect this result. On such gradients my invention comes into play. At these portions of the courses the track is formed double, there being a non-continuous or interrupted course of rails 2 constructed inside the continuous or ordinary rails 3 of the track in Figs. 3 and 5, both lines of rails being of the same height. The rails 2 are provided at the ends with inclined portions 2^a. The outer rails 3 will be hereinafter designated as the "gravity-rails" and the inner rails 2 as the "motor-rails." My improved truck 1 for running on such form of track is constructed as follows: At each end the truck is mounted on the usual axle 4, carrying rigidly secured thereon the wheels 5 for running on the gravity-rails 3, these wheels being hereinafter designated as the "gravity-wheels." Mounted in suitable bearings and surrounding the axle 4 are sleeves or tubular axles 6, at each of the ends of which is fixedly secured a wheel 7, which wheels are hereinafter called the "motor-wheels." Secured to the car-truck 1 and diagonally of the same is the motor 8, being in the illustration shown as an electric motor, although it will be understood that other forms of motor and other motive forces may be employed. On each end of the power-shaft 9 of the motor is mounted a bevel-pinion 10, meshing with a bevel-pinion 11 on each of the tubular axles 6. The motors are put in operation by the operator at the seat 12 by means of the controller 13, power being taken from the current-rail 14 by means of the brush 15. It will be noticed by ref-

erence to Fig. 3 that the current-rail 14 extends at one end some distance beyond the motor-rails 2.

The operation of my improved railway is as follows: By reason of the motor-rails 2 and current-rail 14 being only at certain portions of the track it will be seen that, excepting at these portions, the trucks are always riding on the gravity-wheels 5 and gravity-rails 3, the motor-wheels 7 in consequence being idle and not revolving. Let us suppose, however, that after descending a grade by gravity the train has reached the point X, where it is desired to put into play the motor. By reason of the extension of the current-rail 14 beyond the motor-rails 2 and the proper manipulation of the controller 13 current passes to the motor, causing the motor-wheels to begin to revolve and to acquire some speed before they reach the motor-rails 2, onto and from which they pass without jar because of the inclined ends 2^a of the rails, which permit the cars to imperceptibly assume the different heights occasioned by the difference in diameter of the wheels 5 and 7. When the motor-wheels are riding on the motor-rails, the gravity-wheels being of less diameter than the motor-wheels will, the rails being of the same height, be raised from their rails, transferring the entire weight of the car to the motor-wheels and giving them a greater frictional hold on their rails than if the gravity-wheels were riding at the same time on the gravity-rails. Thus it will be seen that only at the places where needed are the motor and the motor-wheels in operation, at all other portions of the courses being idle and inoperative, thus obviating the friction, wear, noise, and breaking effect which follow even the idle motion of such parts.

One advantage of mounting the motor diagonally of the truck is that it permits of a sufficiently powerful motor to be used and at the same time keeps the wheel-base of the truck within the desired limits for successful and efficient operation. Another advantage is that it dispenses with the idler-gears which would otherwise be necessary to communicate power to the tubular axles 6 and which are shown in the form of truck illustrated in Figs. 7 and 8, wherein the motor is mounted transversely of the truck, the gear-wheels 16 on the motor-shaft meshing with the intermediate idler-wheels 17, which in turn gear into the cog-wheels 18 on the axles 6. In this construction instead of forming the wheels 7 slightly larger in diameter than the wheels 5 for the purpose of raising the gravity-wheels off the gravity-rails while the motor-wheels are on the motor-rails the same purpose is accomplished by elevating the motor-rails 2 slightly above the gravity-rails 3.

It will be understood that the cars and trucks are to be properly equipped with the necessary electrical apparatus that the gravity and motor rails are to be properly bonded, insulated, and grounded, and that the current-rails shall have proper connections with the source of electrical energy, so that the proper operation of the mechanism hereinbefore described may be effected. Such things being matters well known to the skilled artisan, it has not been thought necessary to enter into a detailed description of the same. It will also be understood that the current-rail may be dispensed with and the electrical energy for operating the motors be derived from storage-reservoirs on the cars.

The advantages of my invention will be appreciated by those skilled in the art, many objectionable features incident to prior forms of these railways being obviated by its use.

Modifications may be made in the various parts without departing from the spirit of the invention or sacrificing any of its advantages, since

What I claim is—

1. A railway-truck having two sets of wheels adapted to revolve independently of each other, one set being adapted to run on one line of rails, and the other set being adapted to be propelled on another line of rails by a motor, mounted on said truck.

2. A railway-car truck having an axle with wheels mounted thereon and adapted to run on one line of rails; a tubular sleeve loosely mounted around said axle; and wheels fixedly mounted on said tubular sleeve, and adapted to run on another line of rails.

3. A railway-car truck having an axle with wheels mounted thereon and adapted to run on one line of rails; a tubular sleeve loosely mounted around said axle; wheels fixedly mounted on said tubular sleeve; and a motor for rotating said last-named wheels.

4. A railway-truck having two sets of wheels adapted to revolve independently of each other, one set being adapted to run on one line of rails; and the other set being adapted to be propelled by a motor mounted on said truck on another line of rails; said last set of wheels being of greater diameter than the first-named set.

5. The combination with a railway-truck having two sets of wheels of different gage and adapted to revolve independently of each other, one set being propelled by an electric motor mounted on said truck; of a railway-track having continuous rails of one gage and non-continuous or interrupted rails of the other gage, the non-continuous rails forming a portion of the electric circuit for said motor.

6. The combination with a railway-truck having two sets of wheels of different gage and different diameters adapted to revolve independently of each other, one set being propelled by an electric motor mounted on said truck; of a railway-track having continuous rails of one gage and non-continuous or interrupted rails of the other gage, said interrupted or non-continuous rails being provided with inclined ends and forming a portion of the electric circuit for said motor.

7. The combination with a railway-truck having two sets of wheels of different gage adapted to revolve independently of each other; of a railway-track having continuous rails of one gage and non-continuous or interrupted rails of the other gage having their rail-bearing surfaces in a higher plane than the continuous rails and forming a portion of the electric circuit for said motor.

8. In a pleasure-railway having undulatory courses, the combination of continous rails laid upon said courses, and non-continuous or interrupted rails of a different gage laid upon ascending gradients of said courses and forming a portion of an electric circuit; and a truck adapted to travel on said rails, having a set of wheels for the continuous rails and a set of wheels for the non-continuous rails, the latter wheels being driven by power derived from an electric motor mounted on the truck, said two sets of wheels being adapted to revolve independently of each other.

9. In a pleasure-railway having undulatory courses, the combination of continuous rails laid upon said courses, and non-continuous or interrupted rails of different gage from the continuous rails laid upon ascending gradients of said courses; and a truck adapted to travel on said rails, having a set of wheels mounted on the axle for the continuous rails; a tubular sleeve loosely mounted around said axle; and wheels fixedly mounted on said tubular sleeve for the non-continuous rails, the latter wheels being driven by power.

In testimony whereof I affix my signature in presence of two witnesses.

LA MARCUS A. THOMPSON.

Witnesses:
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W. B. CORWIN.