

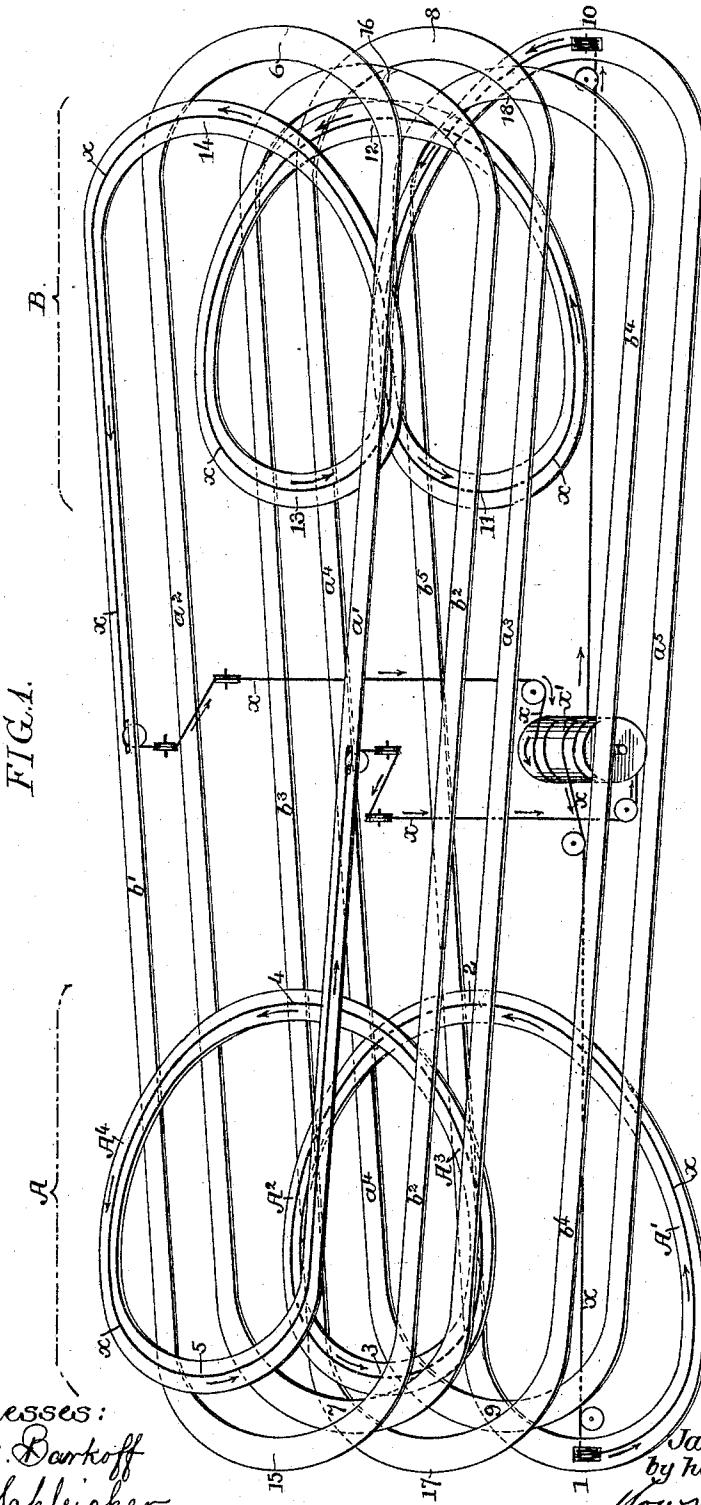
(No Model.)

3 Sheets—Sheet 1.

J. B. MAXWELL.  
GRAVITY RAILWAY.

No. 477,059.

Patented June 14, 1892.



Witnesses:

Alex. Barkoff  
A. Schleicher

*Inventor:  
Jacob B. Maxwell  
by his Attorneys  
Howson & Howson*

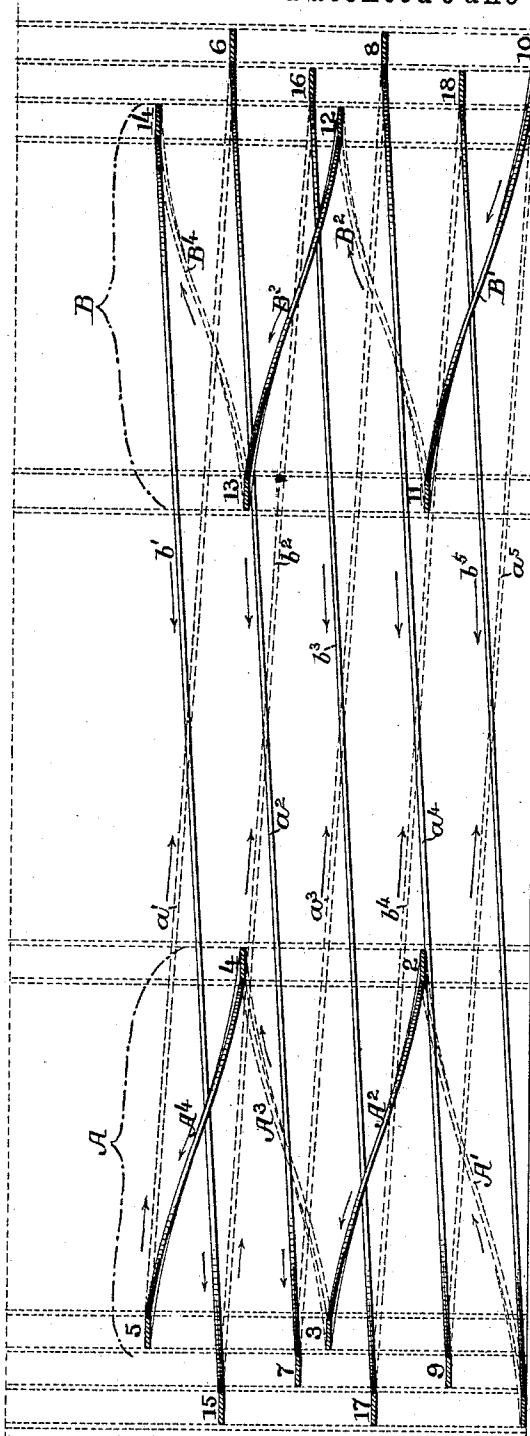
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Patented June 14, 1892.



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(No Model.)

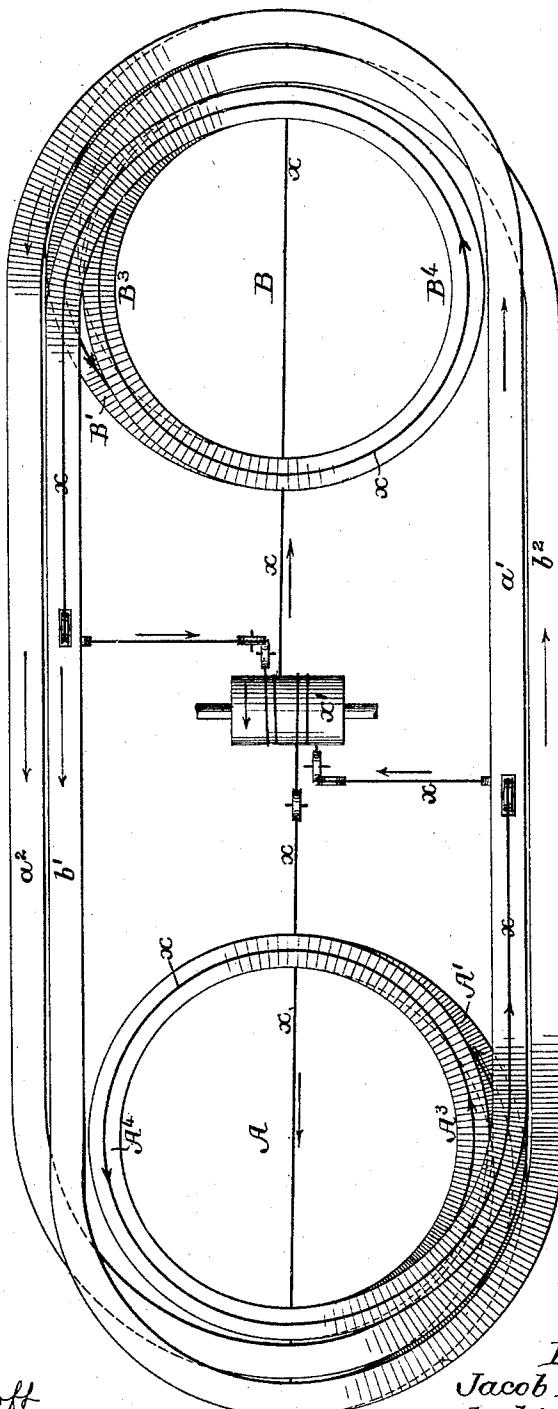
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FIG. 3.



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# UNITED STATES PATENT OFFICE.

JACOB B. MAXWELL, OF MIDDLETOWN, DELAWARE.

## GRAVITY-RAILWAY.

SPECIFICATION forming part of Letters Patent No. 477,059, dated June 14, 1892.

Application filed January 25, 1892. Serial No. 419,183. (No model.)

To all whom it may concern:

Be it known that I, JACOB B. MAXWELL, a citizen of the United States, and a resident of Middletown, New Castle county, Delaware, 5 have invented certain Improvements in Gravity-Railways, of which the following is a specification.

The object of my invention is to provide in a gravity-railway requiring but one set of attendants a longer run than in such railways as usually constructed, and also to provide adjoining tracks on which the cars or coaches travel in the same direction, the apparent racing of the cars adding to the attractiveness 15 and excitement of the ride. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective diagram illustrating a gravity-railway in accordance with my invention. Fig. 2 is a longitudinal section of the structure, the near side of each track, and the posts of the vertical supporting structure being represented by dotted lines; and Fig. 25 3 is a diagram in plan, illustrating the character of the track and hoisting devices.

The gravity-railway shown in the drawings comprises two spiral tracks on which the cars or coaches are raised to the highest point and 30 two gravity-runs on which the cars or coaches descend, each gravity-run extending from the highest point of one lifting-spiral to the base or lowest point of the other lifting-spiral.

In the drawings the successive half-turns 35 or convolutions of one spiral track A are represented by the letters A', A<sup>2</sup>, A<sup>3</sup>, and A<sup>4</sup>, and the like half-turns or convolutions of the other spiral track B by the letters B', B<sup>2</sup>, B<sup>3</sup>, and B<sup>4</sup>, the successive sections of the gravity-track 40 from the top of the spiral A to the base of the spiral B being represented by the letters a', a<sup>2</sup>, a<sup>3</sup>, a<sup>4</sup>, and a<sup>5</sup>, while the successive sections of the gravity-track leading from the top of the spiral B to the base of the spiral A are 45 represented by the letters b', b<sup>2</sup>, b<sup>3</sup>, b<sup>4</sup>, and b<sup>5</sup>, the spirals being located inside of the gravity-tracks at the ends of the structure.

The point indicated by the numeral 1 is the starting-point of the track where the station 50 and attendants are located, and the course taken by the car or coach in traversing the

railway is indicated by the numerals from 1 to 18 and is as follows: The car first ascends the spiral A, passing successively the points 1, 2, 3, 4, and 5, the latter being at the highest 55 point of the spiral. The car then descends the track a' to the point 6, thence passes along the track a<sup>2</sup> to the point 7, thence along the track a<sup>3</sup> to the point 8, thence along the track a<sup>4</sup> to the point 9, and thence along 60 the track a<sup>5</sup> to the point 10, which is at the base of the spiral B, up which the car is drawn, passing successively the points 11, 12, 13, and 14, the latter being at the highest point of the spiral from which the car passes by gravity 65 along the track b' to the point 15, thence along the track b<sup>2</sup> to the point 16, thence along the track b<sup>3</sup> to the point 17, thence along the track b<sup>4</sup> to the point 18, and thence along the track b<sup>5</sup> to the starting-point 1. The two sets of 70 gravity-tracks are in different vertical and horizontal planes; but the corresponding runs of the different tracks are sufficiently close to each other to provide an element of excitement caused by the racing of the cars along 75 such runs, the cars traversing in the same direction on both runs, as will be understood on noting the arrows indicating the course taken by the cars on the tracks a' b<sup>2</sup>, a<sup>3</sup> b<sup>4</sup>, b' a<sup>2</sup>, and b<sup>3</sup> a<sup>4</sup>. Each of the spirals is provided 80 with a hoisting-cable x, which cables may be operated independently of each other or by the same operating mechanism, the latter construction being shown in the drawings, in which x' represents a winding-drum operated 85 by any suitable power mechanism and receiving both of the cables, each cable passing from the drum to the base of its respective spiral, thence up along said spiral, and thence back to the drum, suitable pulleys or sheaves serving 90 to properly direct or guide each cable.

It should be understood that each car is provided with a suitable automatic cable-gripping device, so that when it reaches the base of the spiral B its momentum will carry it 95 onto the cable traversing said spiral, to which cable it will be automatically clutched and by which it will be raised to the top of the spiral and then released so as to traverse the second gravity-run, no attendants at the base of the 100 second spiral being required.

Although I prefer to employ the spiral lifts

at each end of the structure, straight lifts or lifts having but a single curve might be substituted therefor without departing from the essential feature of my invention, the spiral lifts being preferred, however, because of the greater length of ride thereby insured and because the cars can be raised without causing them to assume an objectionable steep angle.

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

1. A gravity-railway having a continuous track comprising two oblong gravity-runs and 15 two lifts, one at one end of the oblong structure and the other at the other end of the same, each of said lifts extending from the bottom of one gravity-run to the top of the other, substantially as specified.

20 2. A gravity-railway having two oblong gravity-runs and two spiral lifts, one at one end of the oblong structure and the other at the other end of the same, each of said spiral lifts being provided with a traction-cable and 25 each extending from the bottom of one gravity-run to the top of the other, substantially as specified.

3. A gravity-railway consisting of two spiral portions, each having a lifting-cable, and two gravity-runs each extending from the top of one spiral to the base of the other, said spirals being contained within the gravity-runs at the ends of the same, substantially as set forth.

4. A gravity-railway having two cable-lifts and two gravity-runs, each of said gravity-runs 35 extending from the top of one lift to the base of the other, the tracks of one of said gravity-runs being in different horizontal and vertical planes from those of the other, substantially as specified.

5. A gravity-railway having two cable-lifts and two gravity-runs, each of said gravity-runs 45 extending from the top of one lift to the base of the other, and the tracks of one of said gravity-runs being in a different vertical plane from those of the other gravity-run, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JACOB B. MAXWELL.

Witnesses:

WALTER S. LETHERBURY,  
CYRUS TOTMAN.