(No Model.) 2 Sheets—Sheet 1.

C. P. KRAMER.

INCLINE RAILWAY.

No. 315,640. Patented Apr. 14, 1885.

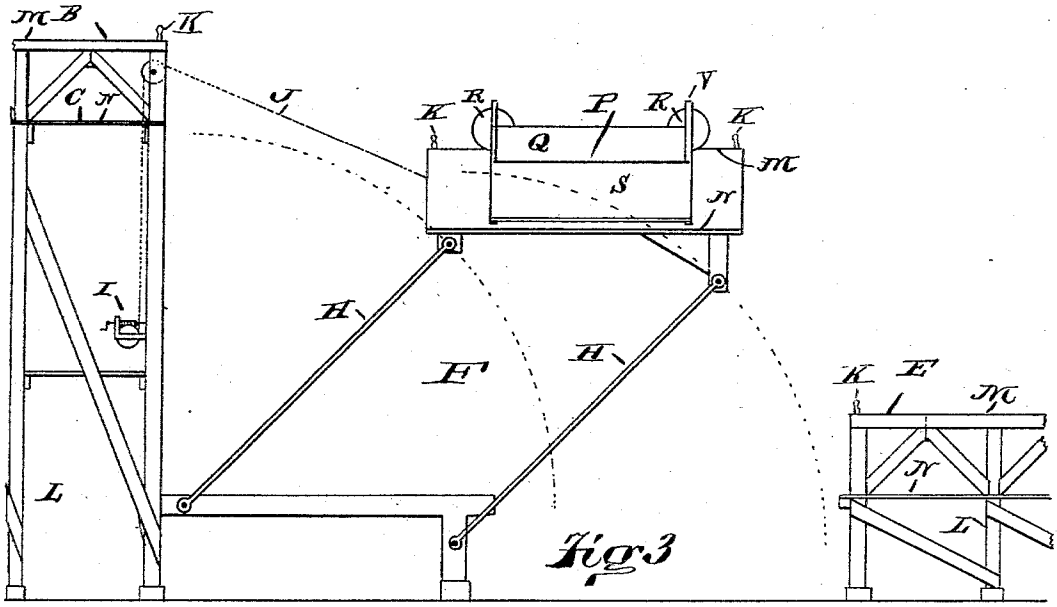

Fig 3

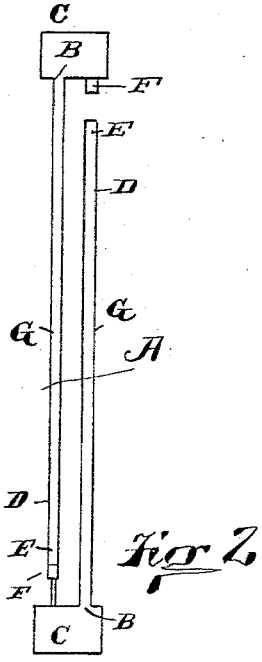

Fig 2.

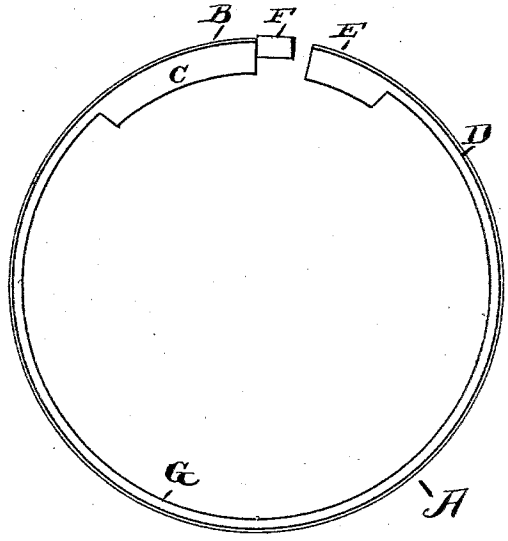

Fig 1

Witnesses:

John R. Woods

W. A. Seward.

Charles P. Kramer Inventor

by James N. See

Attorney

(No Model.) 2 Sheets—Sheet 2.

C. P. KRAMER.

INCLINE RAILWAY.

No. 315,640. Patented Apr. 14, 1885.

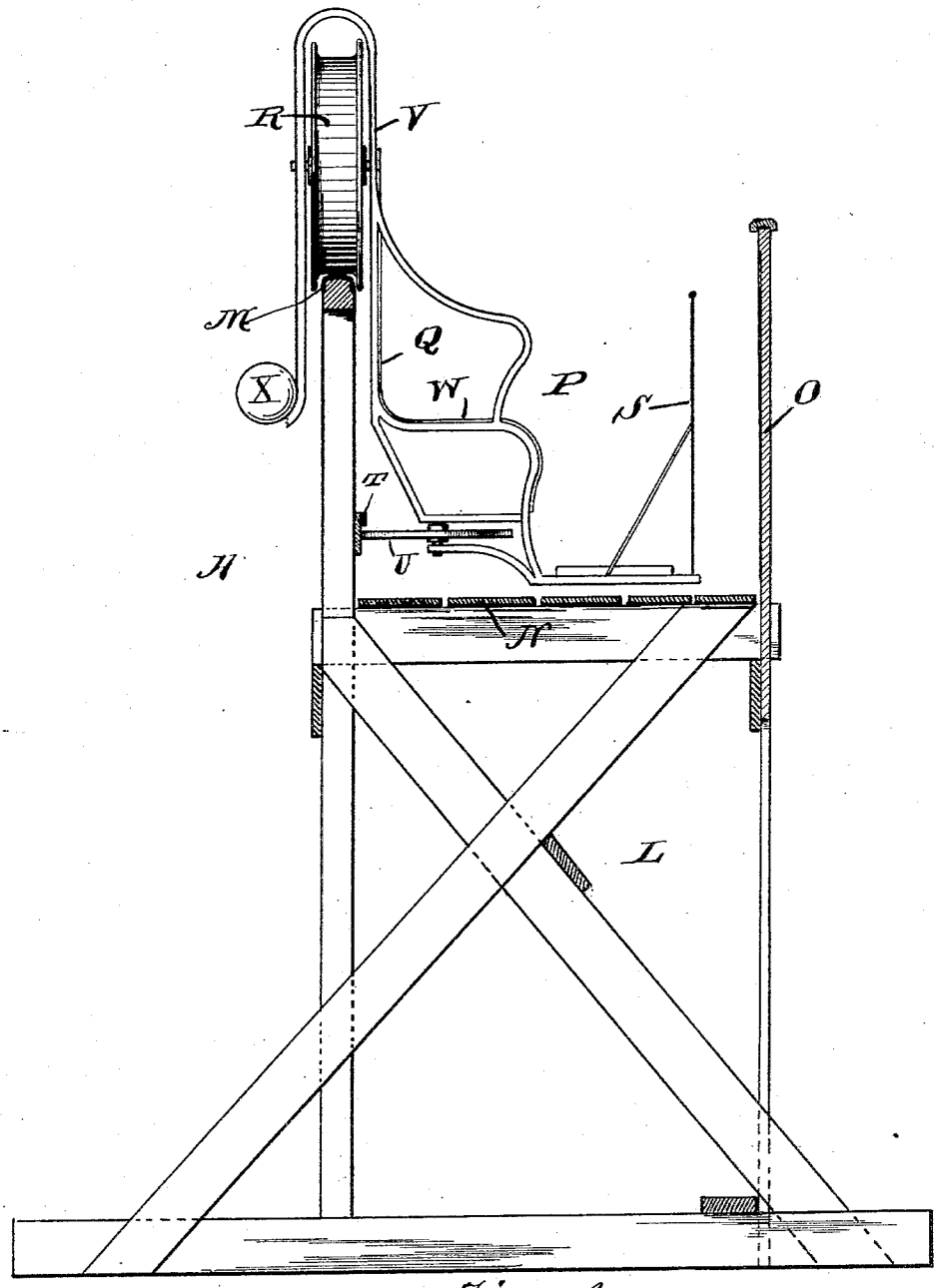

Fig. 1.

Witnesses:
John Richards
W. A. Seward

Charles P. Kramer Inventor
by James W. See
Attorney

UNITED STATES PATENT OFFICE.

CHARLES P. KRAMER, OF HAMILTON, OHIO, ASSIGNOR OF ONE-THIRD TO JAMES E. CAMPBELL, OF SAME PLACE.

INCLINE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 315,640, dated April 14, 1885.

Application filed January 29, 1885. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. KRAMER, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Incline Railways used for Pleasure Purposes, and often designated as "roller coasters," of which the following is a specification.

The present improvement will be understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a plan of an inclined railway with its circuit-track arranged in the form of a circle; Fig. 2, a plan of a track whose circuit is formed by two parallel tracks connected at their ends by transfers; Fig. 3, a side elevation of an elevator for lifting the seat-car from the low level to the high level; and Fig. 4, a transverse section of the track structure, showing the seat-car in position.

In Fig. 1 of the drawings, A represents an inclined railway with its circuit-track arranged in the form of a circle; B, the highest point of the track; C, the starting-platform at that point; D, the lowest point of the track; E, the terminal point of the track, some distance beyond and somewhat higher than the point D; F, an elevator for transferring the cars from the terminal point E to the starting-level B, and G that portion of the track included between the highest point, B, and the lowest point, D, the same being upon a continuous decline.

In the operation of this arrangement the seat-car, with its passengers, is started at the point B, runs down the decline G, and ascends by momentum the incline from D to E, at which point the passengers alight. The car is then run onto the elevator F and lifted to the starting-point, ready for another trip.

In Fig. 3 is shown the elevator at a midpoint of lift, B representing the highest point of the track; C, the platform thereat; E, the terminal point of the track; F, the elevator; H, pairs of radius-rods pivoted to fixed points at one end and to the elevator-section of track at their other ends; I, a winding-gear; J, a chain or rope by which the winding-gear operates upon the elevator; K, removable stops for preventing the car overrunning; L, the trestle-work of the track structure; M, the track-rail; N, the floor upon the track structure below the rail; P, the car; Q, the seat-back of the car; R, the car-wheels; S, the dash-board or fender of the car, and V the hangers of the car. The elevator being down, the car is run from the track portion E onto it, and the stops K placed to prevent the car leaving the elevator and to prevent other cars running off the track portion E. The winding-gear I is then operated and the elevator raised to the high level B, when the stops are removed and the car run off of the elevator, ready for a new descent upon the decline of the track, after which the elevator is lowered, &c.

In Fig. 4 the track structure is shown in transverse section, with the car in position. There is but a single rail, M, crowning the structure, and below the level of this rail the floor N is disposed, the same being provided, if desired, with the inner bulwark, O. The seat-car P is suspended from its wheels by the hangers V, W being the seat of the car, and Q the back of the seat, the same serving to connect the hangers together. This system of construction permits the use of car-wheel R of almost unlimited size, resulting in peculiar ease of running and a freedom from liability to derail. The seat-car may be double, one being upon either side of the rail.

T is a guard and relief rail located below the rail M, and U represents one or more wheels, of large size, engaging this rail and journaled upon a vertical axis below the seat. In cases where the track is in the form of a circle, and the car runs within the circle, centrifugal force has a tendency to throw the car transversely backward, and the wheel U is intended to prevent any rubbing contacts due to such centrifugal effect. Such wheel is not needed in cases where the car runs upon the exterior of a circular track, or where transverse tendencies of the car are compensated for by the counterbalance-weight X, or by a second seat placed back to back with the first one.

In Fig. 2 is illustrated a circuit-road formed of two parallel tracks, A, oppositely declining from B to D. In this arrangement there are

two starting-platforms, C, and the down trip is made from one to the other, the tracks declining in opposite directions, and each being provided at its terminal with an elevator, F, by which the cars are lifted from the terminal to the starting point, the cars being transferred, after lifting, transversely to the starting-point.

I claim as my invention—

1. In an inclined railway, the combination, with contiguous track portions E and B upon different levels, of an elevator-section of track adapted to receive a car, radius-bars H, linking such elevator-section to a firm base, and a winding-gear, I, or its equivalent, for lifting the elevator-section from the lower level to the higher level, substantially as and for the purpose set forth.

2. In an inclined railway, a trestle structure surmounted by a rail, a seat-car suspended from wheels adapted to run upon such rail, and a floor, N, supported by the trestle structure at a point below the bottom level of the car, substantially as set forth.

3. In an inclined railway, the trestle structure surmounted by a rail and provided with a floor below the rail-level, and a seat-car provided with wheels engaging the rail and having its seat disposed below the level of the rail, substantially as set forth.

4. A trestle structure provided with a rail at its top and with a rail upon its side below the level of said top rail, and a seat-car provided with wheels above the seat-level to engage the top rail, and with one or more wheels below its seat-level to engage the side rail, substantially as and for the purpose set forth.

CHARLES P. KRAMER.

Witnesses:
J. W. SEE,
W. A. SEWARD.