F. A. CHURCH.

ROLLER COASTER RAILWAY.

APPLICATION FILED AUG. 19, 1921.

1,410,374.

Patented Mar. 21, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

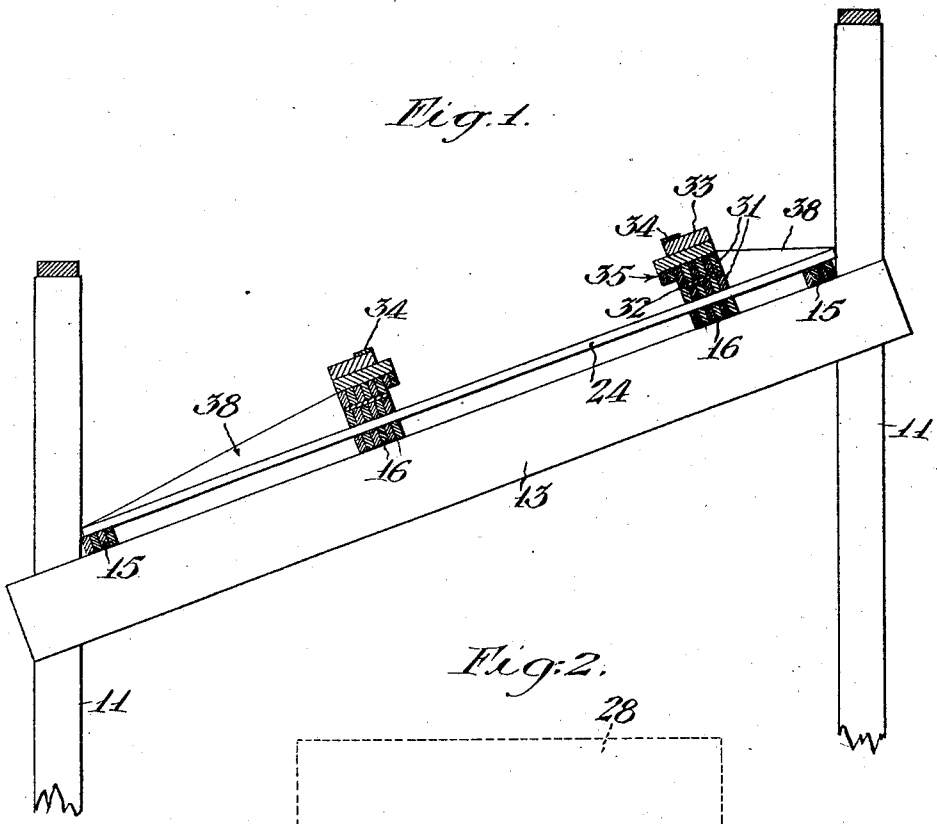
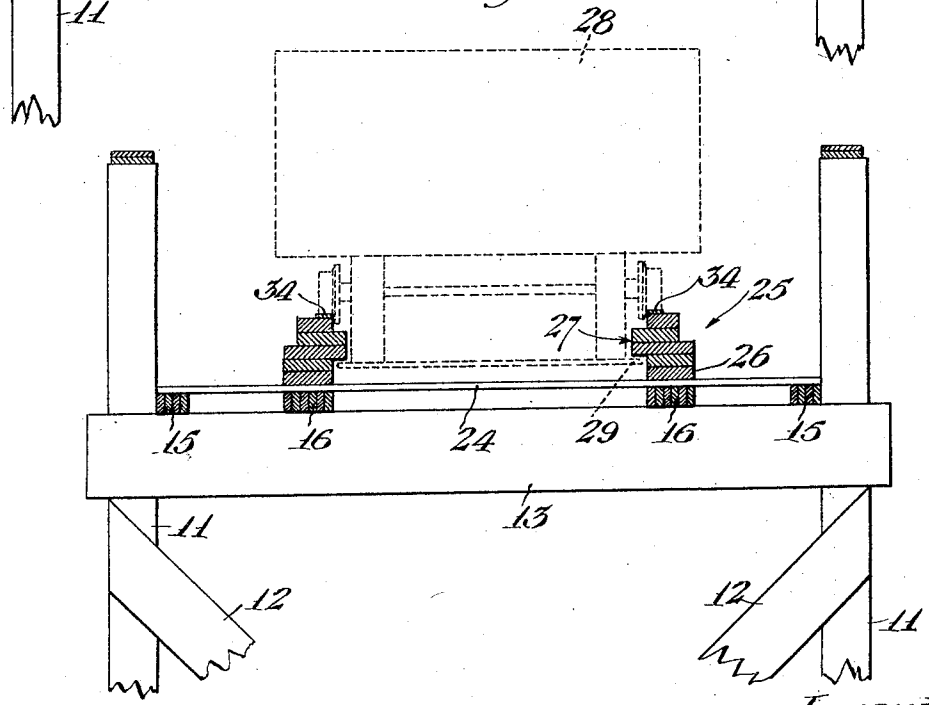


Fig. 2.



Inventor

Frederick A Church

by Graham and Harris

Attorneys.

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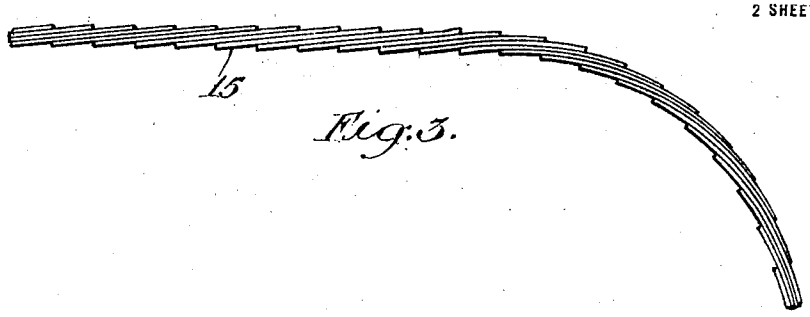


Fig. 3.

Fig. 4.

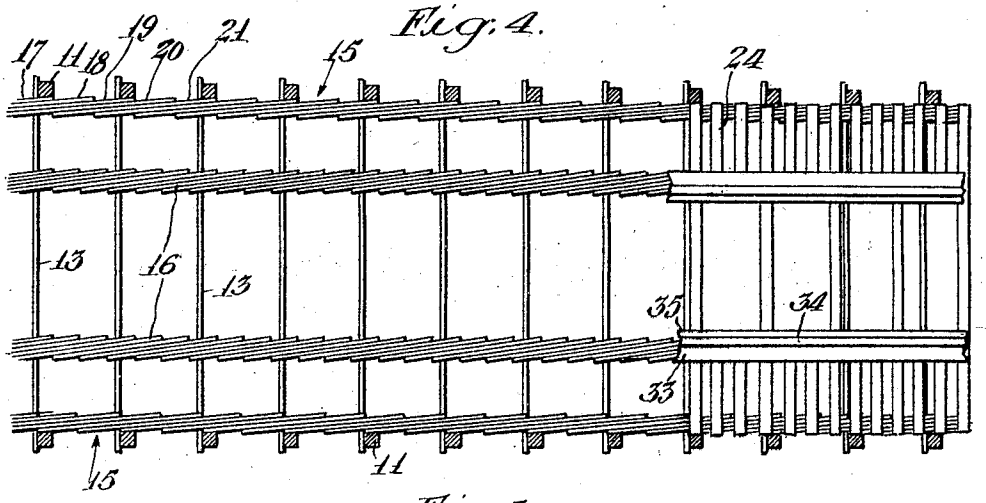
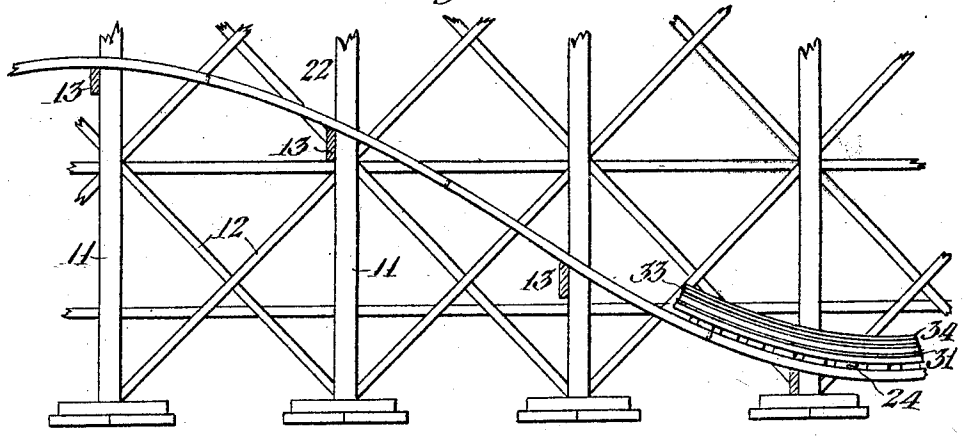


Fig. 5.



Inventor

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Attorneys

UNITED STATES PATENT OFFICE.

FREDERICK A. CHURCH, OF VENICE, CALIFORNIA.

ROLLER-COASTER RAILWAY.

1,410,374. Specification of Letters Patent. Patented Mar. 21, 1922.

Application filed August 19, 1921. Serial No. 493,684.

To all whom it may concern:

Be it known that I, FREDERICK A. CHURCH, a citizen of the United States, residing at Venice, in the county of Los Angeles and State of California, have invented a new and useful Roller-Coaster Railway, of which the following is a specification.

My invention relates to roller coaster railway construction, being more particularly the track and supporting structure therefor.

Coaster railways are usually constructed with an endless track having straightaway portions, curves and dips which are accurately determined and constructed to withstand the strains of rapidly moving loads in the shape of the cars and passengers. The track as commonly laid, requires considerable skill and a great amount of skilled labor due to the difficulty of conforming the tracks to the supporting structure. The common forms of construction are also of such a character that a great amount of bracing is required, particularly at the curves where it is common to tie the track to a central pole.

It is the principal object of my invention to construct a track of the class described of simple form and construction which is of great strength, the track being of such a nature that it may be readily formed on the supporting structure and which may be rapidly laid with comparatively unskilled labor.

To attain these objects, I have found that by constructing a subtrack consisting of boards laid on edge and laminated to the extent of several thicknesses of boards, such laminations being formed of diagonally disposed overlapping boards, a track of maximum strength may be built.

It is well known that if a board is bent edgewise that it will twist or weave naturally due to the grain of the wood. On account of this characteristic of the board, it is not possible to so lay a board on edge and conform the same to the undulations of the dips in the track at the same time keeping the board in a straight line. I have found, however, that if these boards are laid diagonally even to the extent of the thickness of the several boards in its length, that I am able to easily conform the boards in such standing position to the undulations of the track, this feature being the essence of my invention.

A further important feature is that the boards forming the laminations are so arranged that no two breaks between the ends of boards come in the same cross sectional plane.

Fig. 1 is a cross sectional view of a track embodying a form of my invention, this view showing the track banked at a turn.

Fig. 2 shows a cross sectional view of the track as constructed on straightaways.

Fig. 3 is a plan view of a portion of the subtrack as constructed on a curve.

Fig. 4 is a plan view of a complete subtrack as constructed on a straightaway, a part of the complete track being shown, and

Fig. 5 is a side elevation of the railway shown in Fig. 4 and its supporting structure (enlarged scale).

The railway embodying my invention is constructed in the following manner:

The posts 11 with braces 12 are erected and ledger boards 13 secured to the posts, such ledger boards extending transversely between and connecting the posts 11. The ledger boards are arranged and positioned so as to spot the curves and lines of the track, that is, as shown in Fig. 1, the ledger board is tilted or set at an angle as would be used where the track is bent on a curve, whereas the ledger board shown in Fig. 2 is horizontal as used where the track is straight on in the dips. After the ledger boards have been properly placed, thereby spotting the line of the track, the subtrack is first laid on the ledger boards in the following manner:

This subtrack, as shown, is preferably made in four sections, two side sections 15 and two center sections 16. Each of these sections consists of a series of flat boards vertically arranged on their edges and firmly spiked to the ledger boards and, where convenient, to the posts 11. These sections are each constructed by first securing one board of the section to the ledger board, such board being diagonally disposed throughout its length approximately the thickness of the number of boards used in the track or lamination, that is, if four one inch boards are used, one end of the board will be offset four inches from the other end. After the first board has been secured, additional boards in the required thicknesses are added, one at a time, so that when the section is completed, it consists of a series of diagonally disposed overlapping boards. This illustration in Fig. 4 as in-

dicated in one of the side sections where the first board 17 is secured at one end to the post 11, the free end is sprung back the thickness of four boards and temporarily nailed. The next board 18 is nailed to the board 17, the front end of each succeeding board 19, 20, 21, etc. is spaced a distance equal to the length of the boards used, divided by the number of boards in width for instance,—if twenty foot boards are used and the track is to be equal in width to the thickness of four full boards, the spacing for each successive board would be twenty divided by four which would equal five feet. Any width of track may be constructed in this manner.

By arranging the boards, as just described, it is a simple matter to conform the boards to the dips, as indicated at 22 in Fig. 5. After the two side sections and center sections of the sub-track have been so constructed and nailed to the supporting structure, these sections are secured into a unitary structure by means of tie boards 24 which are nailed securely to the sub-track, such tie boards extending transversely of the track and arranged with respect to each other in any convenient distance thereby also forming a working platform for completing the track, as shown in Fig. 2.

The track proper, as indicated at 25, may be constructed of several courses of planks 26 placed one above the other and firmly nailed to each other and to the tie board and subtrack. As shown in Fig. 2, two courses of such planks extend inwardly forming a flange or rail 27 which is used for preventing the car, indicated in dotted lines, from jumping the track, such car 28 having an extension 29 on each side which engages under the flange 27.

On curves, I have found that by constructing the track proper with boards 31 in the same manner as the subtrack, arranged vertically on edge, that a track of greater strength is provided, as shown, two courses of such vertically arranged boards are used, a plate 32 being inserted between the two courses and the top of the track being finished with flat planks or boards 33 laid horizontally, such track also having an inwardly extending guide or flange 35 for preventing the car from jumping the track. The tracks are provided with a metal band or strip 34 which forms a wearing surface engaged by the wheels of the car.

On curves, I have found that it is desirable to brace the track proper and, for this purpose, use blocks, as indicated at 38, which are firmly nailed or secured to the tie boards and track. I have found that by constructing the subtrack, as above described, that I obtain a structure of maximum strength and great rigidity and that by tying the sections of the subtrack together, I not only obtain this desired result, but the tie boards afford a supporting structure upon which the workmen may rigidly complete the building of the track.

It will be understood that by building up sections of subtrack, as heretofore described, that it is only necessary to handle one board at a time which can be readily done by workmen from the ledger boards and posts of the structure, being a great advantage over the common form of building the track wherein heavy planks have been commonly used.

It will be understood that the proportions of the boards forming the subtrack as shown in Figs. 3 and 4 are greatly exaggerated to illustrate the diagonal disposition of such boards.

I claim as my invention:

1. In a coaster railway: a supporting structure; ledger boards secured to said structure and a track on said ledger boards consisting of a series of diagonally disposed overlapping boards fixed to each other.

2. In a coaster railway: a supporting structure; ledger boards arranged transversely in said structure and a series of track sections on said ledger boards each consisting of a plurality of diagonally disposed overlapping boards on edge and fixed to each other.

3. In a coaster railway: a supporting structure; ledger boards arranged transversely in said structure; a subtrack on said ledger boards consisting of a plurality of diagonally disposed overlapping boards arranged on edge and fixed to each other; a series of tie boards on said subtrack secured thereto; and a track proper on said tie boards.

4. In a coaster railway: a supporting structure; ledger boards arranged transversely in said structure; a subtrack on said ledger boards consisting of a series of track sections each consisting of a plurality of diagonally disposed overlapping boards arranged on edge and fixed to each other; a series of tie boards on said subtrack secured thereto; and a track proper on said tie boards.

5. In a coaster railway: vertically arranged supporting posts; transversely arranged ledger boards between said posts; a subtrack on said ledger boards; transversely arranged tie boards on said subtrack; and a car track on said tie boards.

6. In a coaster railway: vertically arranged supporting posts; transversely arranged ledger boards between said posts; a subtrack on said ledger boards; transversely arranged tie boards on said subtrack; and a car track on said tie boards, said subtrack consisting of a plurality of diagonally disposed overlapping boards arranged on edge and fixed to each other.

7. In a coaster railway: vertically arranged supporting posts; transversely arranged ledger boards between said posts; a subtrack on said ledger boards; transversely arranged tie boards on said subtrack; and a car track on said tie boards, said subtrack consisting of a plurality of diagonally disposed overlapping boards arranged on edge and fixed to each other; said car track consisting of a plurality of courses, the lower course formed of a plurality of diagonally disposed overlapping boards arranged on edge and fixed to each other, the upper course consisting of a series of planks laid flat and secured to the lower course.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 12 day of Aug., 1921.

FREDERICK A. CHURCH.