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F. A. CHURCH

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LAMINATED CONSTRUCTION FOR ROLLER COASTER TRACKS

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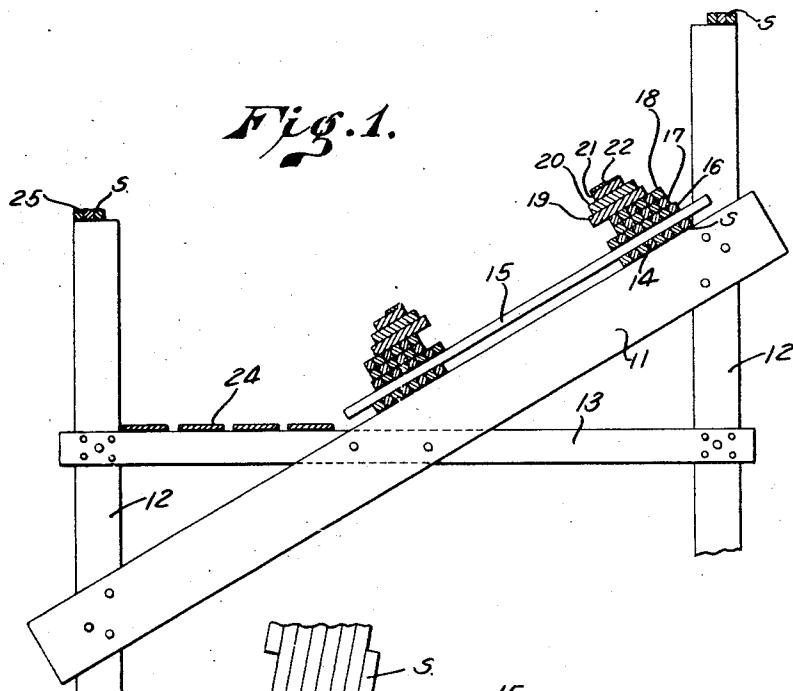
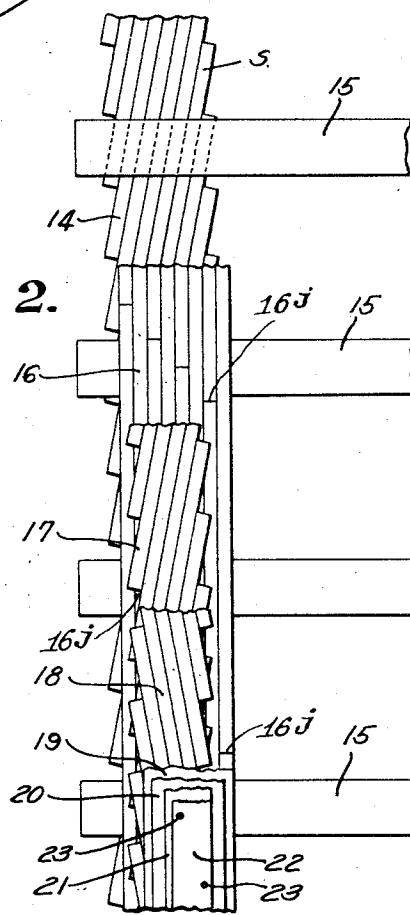


Fig. 2.



INVENTOR
FREDERICK A. CHURCH
By
Frank P. Graham
ATTORNEY

UNITED STATES PATENT OFFICE

FREDERICK A. CHURCH, OF VENICE, CALIFORNIA

LAMINATED CONSTRUCTION FOR ROLLER-COASTER TRACKS

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My present invention being referred to as a laminated track construction for roller coasters, it may be understood to be an object of this invention to provide an improvement upon, for example, tracks of that general type disclosed in my former patent numbered 1,410,374, granted March 21, 1922.

In the mentioned patent I disclose the employment of laminated track elements comprising relatively thin boards placed on edge and so disposed that no joints occur in the same cross-sectional plane. The mentioned patented construction has been found highly satisfactory, as affording a light, reliable and durable construction for its intended uses; but the breadth of the described boards, while permitting a lateral bending of the same, is naturally unfavorable to the flexing of the same in a vertical plane; and it is accordingly an object of my present invention to provide a track construction suitable for use in connection with roller coasters, but also capable of more general uses, which shall have all the advantages of the system described in my mentioned patent, but which shall be superior thereto in strength and especially in the facility with which it lends itself to the construction of curves in both horizontal and vertical planes.

It is a further object of my invention to provide a track construction favorable to the use on curved tracks and in a suitable assembly, of comparatively long strips of selected wood; and the strips referred to may be either lap-laminated or butt-laminated, as hereinafter described; but I prefer to employ the same in the building up of tracks embodying laminations of different types, such as lap laminations and laminations overlying one another in such manner that the grains of the strips therein extend in intersecting planes,—so that each layer may assist in holding an adjacent layer or layers together.

It is a further object of my present invention to provide a track organization in which

posts and connecting elements and ledger boards are disposed favorably to the provision of a walk for curved tracks, horizontal as seen in section, beside a curved and tilted track; and not only the elements of this track but also elements associated in the formation of rails, at the sides thereof, may be built up from laminated units substantially square in cross-sectional outline and sinuously bent in two planes substantially at right angles to 50 one another.

It is a further object of this invention to provide an organization in which not only a sub-track, disposed between ledger boards and ties, but also successive layers of a track 60 proper are built up from substantially square stock, suitable to be easily bent in any direction, in the laying of the same; and a preferred embodiment of my invention, as applied to the construction of a curve, may comprise a supporting structure including ledger boards intersecting horizontal connecting elements, the said connecting elements supporting a walk, and the said ledger boards supporting a sub-track comprising square units 70 lap-laminated and disposed beneath ties extending transversely thereof. In any case, the superimposed track proper may comprise a plurality of diversely-laminated layers carrying non-laminated track elements of any 75 usual or preferred character, as hereinafter described.

Other objects of my invention will appear from the following description of an advantageous embodiment thereof, taken in connection with the appended claims and the accompanying drawings, in which

Fig. 1 is a vertical section through a track organization illustrating my invention.

Fig. 2 is a diagrammatic plan view, showing no curvature, but illustrating, by the breaking away of successive layers, one advantageous arrangement of square lamination elements in superimposed courses.

As in the former embodiments of my in- 90

vention, any straight-away sections of track may be built up from boards or planks in any usual manner, and preferably in such manner as to provide means for holding a car both against falling and against rising during rapid advance; but, in the construction of the curves of my improved track, whether said curves are horizontal or vertical or both, and whether or not the said track is supported by means comprising inclined ledger boards 11, shown as extending at various levels and inclinations between posts 12 and as intersected by and secured to substantially horizontal connecting elements 13, said track may advantageously comprise, for example, a sub-track 14 built up entirely from long and straight-grained selected lamination elements, substantially square in cross section,—and therefore initially capable of being easily bent in any direction.

The strips or lamination elements S may be rigidly secured to the mentioned ledger boards and to one another, and also to ties 15, extending transversely thereof, by any suitable means, as by a skillful use of nails or screws; and above the ties 15, or their equivalents, I may secure, in a similar manner, a plurality of additional laminated courses 16, 17 and 18, formed of like elements, but preferably disposed at different angles,—the lowest of these last-mentioned courses being shown as butt-laminated, (that is, disposed parallel with the "run", joints 16' being internal, except in the case of the outside strips) and the superimposed courses being lap-laminated and oppositely inclined; and upon the composite laminated structure so built up I may superimpose shorter boards in (say) three layers or courses, 19, 20, and 21. These boards may be sawed, rather than bent, to any required curvature; and the lowermost of the mentioned board courses may comprise relatively broad "flange boards," adapted, in a known manner, to prevent cars from rising. To the uppermost course 21, which may be referred to as "wood rails", I may secure, as by means of staggered screws 23 (which may be of sufficient length to extend through more than one of the mentioned board courses) any suitable metallic or other rails 22.

Irrespective of the construction of my track, I may utilize the horizontal connecting elements 13 to support walk boards 24; and I may utilize the tops of the posts 12 to support rails 25, shown as also built from lamination elements regularly polygonal in cross-section.

The logical basis for calculations suitable to the spacing of lamination elements in a track, sub-track or the like having been fully indicated in my mentioned patent, I need not repeat the same here; and it will be understood that absolute dimensions are immaterial to my invention; but I may nevertheless mention that I have obtained highly satisfactory results, in practice, by the use of lamination

elements approximately 20 feet long and 1 1/8 inches square, using therewith 3" x 12" stock for ledger boards, 2" x 8" stock for tie boards, 1 1/8" x 11 1/2" stock for flange boards, and 1 1/8" x 7 1/2" stock for wood track boards. It will be appreciated that boards to which a curvature is given by sawing must be comparatively short and comparatively deficient in tensile strength; and that it is a primary object of my described use of lamination elements, of the character and in the manner described, to build up a structure having a rigidity and tensile strength suitable to its indicated use. Relying upon the described construction, I am enabled to build very sharp and irregular curves, sending cars thereover at rates of speed not otherwise safe or practicable.

Although I have herein described my invention in a preferred form, it should be understood that various features thereof might be independently employed, and also that numerous modifications might be made by those skilled in the art, without the slightest departure from the spirit and scope of my invention, as the same is indicated above and in the following claims.

I claim as my invention:

1. In a track organization of the general character described: a track-supporting structure; and a sub-track supported thereby comprising assembled lamination elements substantially square in cross-sectional outline.

2. In an organization of the general character described: a supporting structure; and a track thereabove comprising a plurality of lamination elements regularly polygonal in cross-sectional outline, and assembled in a plurality of substantially parallel planes.

3. An organization of the general character defined in claim 2 in which some of said lamination elements are lap-laminated.

4. An organization of the general character defined in claim 2 in which some of said lamination elements are butt-laminated.

5. An organization of the general character defined in claim 2 in which the grains of successive courses of said lamination elements are differently inclined.

6. A track comprising assembled lamination elements initially having substantially the same flexibility in all planes but organized into a substantially rigid structure by securing said elements to one another and to a support.

7. An organization of the character described comprising: upright posts; inclined ledger boards; connecting elements extending between said posts and intersecting said ledger boards; a track, built up from lamination elements, supported by said ledger boards; and a walk supported by said connecting elements.

8. An organization as defined in claim 7 in

which said posts are surmounted by rails also built up from lamination elements.

9. An organization of the general character defined in claim 7 in which the ledger boards support a sub-track comprising substantially square lamination elements lap-laminated, ties extending transversely thereof, and superimposed diversely-laminated courses thereabove.

10. In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 12th day of May, 1925.

FREDERICK A. CHURCH.

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