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J. A. MILLER

PLEASURE RAILWAY CONSTRUCTION

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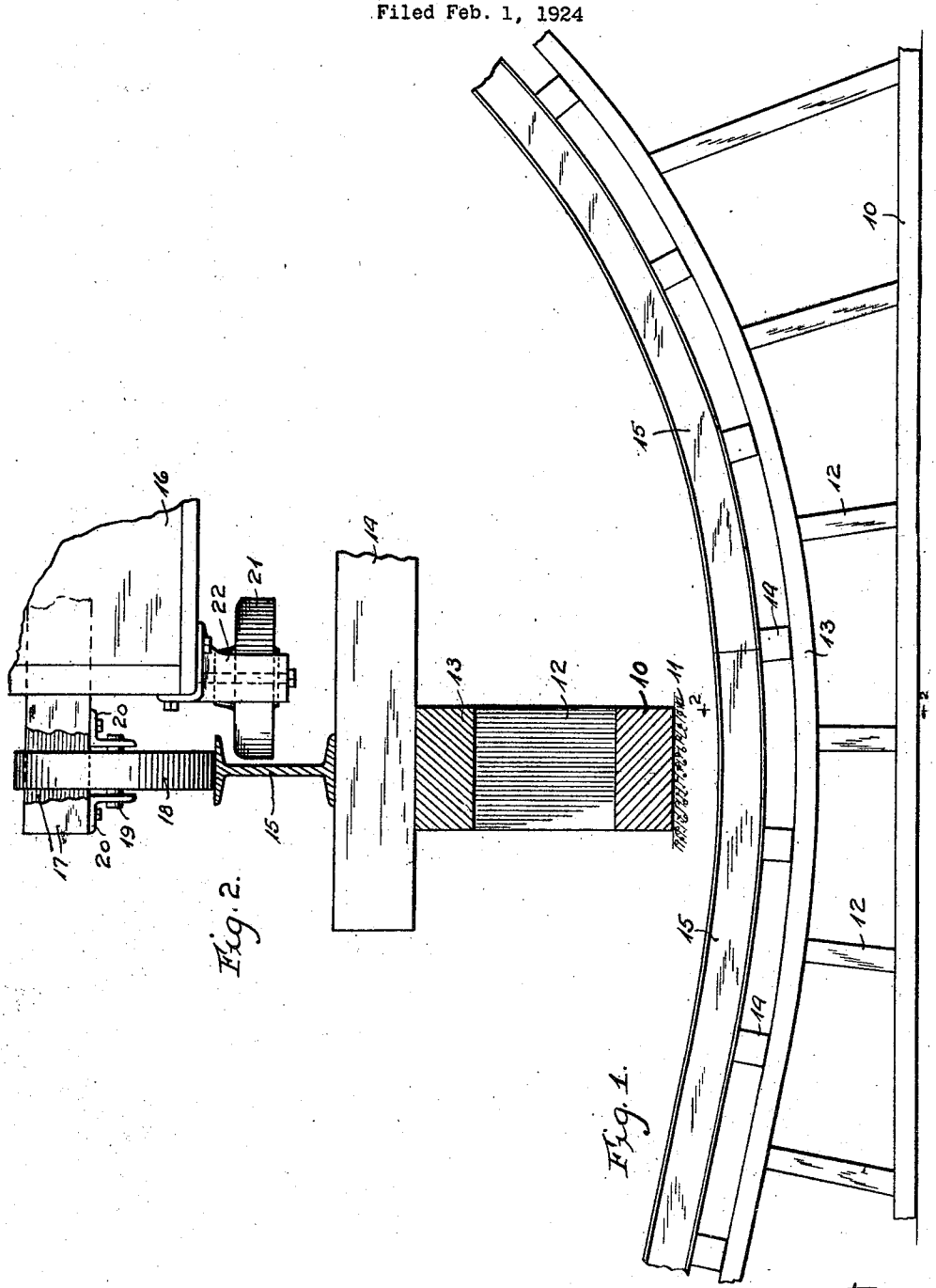

Fig. 2.

Fig. 1.

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PLEASURE-RAILWAY CONSTRUCTION.

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To all whom it may concern:

Be it known that I, JOHN A. MILLER, a citizen of the United States, and a resident of Homewood, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pleasure-Railway Constructions, of which the following is a specification.

My invention relates to pleasure railway structures, particularly to improved track construction therefor.

In pleasure railway structures to which my invention relates heavily loaded passenger cars travel very rapidly over abrupt summits and dips and around sharp curves, and provision must be made to eliminate jarring and to make riding of the cars over the track flexible, yielding, and easy. In pleasure railway structures, the track is supported on trestlework built to give the necessary summits, dips and curves, and a usual practice has been to lay cross ties on this trestlework and then laminated wooden stringers on which yielding flexible rails, usually in the form of flat bars are laid, the stringers being secured on the cross ties and the rails on top of the stringers. In order to get the desired sensation the abruptness of the dips, summits and curves has been greatly increased and consequently greater care must be taken in the track construction to obtain the desired flexibility and safety. The flat rails which have been used are not as rigid as the stringers on which they are laid and the rails would have a tendency to buckle and curl up at the ends, there being so little available surface for welding the rails together at the ends. It has become very desirable to use more rigid rails, preferably in the form of steel beams with vertical webs as for example I-beams. Such beams are sufficiently rigid to be secured directly to the cross ties and to be engaged on their tops by the wheels of the vehicles traveling over the track. Such beam structures also afford the necessary rail surfaces for safety appliances such as safety wheels or rollers. However, while such beams are sufficiently rigid in themselves to be directly secured to the cross ties and to support the load traveling thereon, they are not sufficiently yielding to give the required flexibility, resiliency and ease of riding. In the old arrangement where the laminated flexible wooden stringers are interposed between the ties and the flexible flat rails the required flexibility and resiliency is provided, and some provision must be made in connection with the rigid steel beams to restore the proper flexibility to the track structure as a whole. This I accomplish by improved flexible and yieldable supporting structures for the ties, the arrangement being such that the beam rails will maintain their rigidity to properly support the load but the rail structure together with the ties may as a whole give sufficiently vertically to afford the required smooth, easy and jarless riding of the cars. In my improved construction posts forming part of the supporting trestle work are bridged at their tops by flexible preferably wooden track beams which are free to flex between the posts, and the ties rest on said track beams intermediate the posts so that when a load travels over the rails secured to the ties the rail structure as a whole may yield vertically due to this flexibility of the track beams between the posts.

As the beam rails afford sufficient surface at their ends they can be readily welded together end to end to thus form a continuous smooth track which in itself is rigid but which as a whole may yield vertically on account of the flexible supporting track beams referred to.

On the accompanying drawing my improved construction and arrangement is clearly shown. On the drawing,

Fig. 1 is a side elevational view of a section of a pleasure railway structure, and

Fig. 2 is an enlarged sectional view on plane 2—2, Fig. 1 showing in rear view the corner of a car and the engagement of the car supporting wheels and safety rollers with the rail beams.

The trestle or supporting structure for the track is shown as comprising sill beams 10 which follow the profile of the ground and rest preferably on a concrete foundation 11. Resting on the foundation sills are the uprights 12 in the form of wooden or steel posts or structural work, and these uprights support and are bridged at their tops by the track beams 13 preferably of wood and either in single pieces or of laminated construction so as to be elastic and yieldable vertically, the beams being engaged only by the upper ends of the uprights and entirely free in between so that they may bow when under load. The spacing between the uprights will of course depend upon the

strength of the track beams and the degree of flexibility desired. Two rail beams are provided for each track and they are bridged by transversely extending ties 14 which may be of wood or of metal, and these ties are located preferably midway between the uprights 12 so as to take full advantage of the flexibility of the stretches of track beams between uprights, as clearly shown in Fig. 1.

The uprights 12 are of varying lengths to support the track beams 13 at the vertical curvature or elevation which is desired for the rails, and on the ties are secured the rails 15. In accordance with my invention these rails are preferably in the form of steel beams with a rigid standing web so that the rails will not of themselves yield vertically and can therefore be secured directly to the cross ties 14. I have shown the rails in the form of I-beams, although other forms of commercial beams may be used depending upon the car construction to be used on the structure. Light weight beams can be readily rolled in bending machines on the job to the desired vertical or lateral curvature, while those of heavier weight can readily be rolled in the mill to the desired curvature before delivery on a job. As the beams afford ample area at their ends they can be readily welded securely together so as to form a continuous smooth track particularly at abrupt summits and dips and at sharp curves, thus reducing chances for derailment to a minimum.

The rails in the form of standard steel beams adequately afford the necessary engaging surfaces for safety abutments or rollers on the cars whose supporting wheels run along the top of the beams. In Fig. 2 the car construction shown comprises the body 16 supported on the cross beams 17. The vehicle supporting wheels 18 have their axles 19 supported in angle bars 20 secured to adjacent cross beams and these wheels engage with the top of the rail beams 15 here shown in the form of I-beams. Associated with each vehicle wheel is a safety roller 21 positioned horizontally and journaled in a bearing frame 22 rigidly secured to the car body. By engaging with their cylindrical surfaces against the web of the rail beams these safety rollers limit the lateral displacement of the vehicle, and by engaging with their upper corners against the under side of the top web of the rail beams the rollers limit the vertical displacement of the vehicle, these safety rollers while permitting limited lateral and vertical play of the vehicle, serving to keep the vehicle to the rails particularly at the abrupt summits and dips and around lateral curves, such leeway graduating and easing the travel of the vehicle over and around the curves and making the riding smoother and at the same time more sensational but entirely safe.

In order to maintain the popularity of pleasure railways they must be sensational and to meet the demands the summits, dips and curves have been made very abrupt, but my improved structure permits such riding with entire safety and with the greatest degree of comfort to the passengers. The track structure comprising the strong rigid rails in the form of standard beams provides continuous smooth and unjointed wheel surfaces and strong confining walls for the safety abutments or rollers. While the track structure is of itself thus strong and rigid, it is yieldable and cushioning as a whole on account of the engagement of the rail supporting ties with the flexible track beams 13 intermediate the supporting uprights 12. As a heavily loaded car or train travels over the track structure the load is transmitted to the tie beams, and to the track beams 13 between uprights, and the track beams will flex and yield and thus gradually take up and cushion the impact and load, particularly when the cars reach the bottom of a steep incline and upgrade. In other words, the same flexibility, cushioning effect, and easy riding are afforded by my structure comprising the stiff rigid rails as was afforded by the old structures in which flat rails are secured on flexible laminated wooden stringers. My improved structure requires less material and less installation expense and depreciation is considerably lessened. The rigid continuous and smooth rails considerably reduce the wear and tear of the vehicles thus reducing the cost of repairs and maintenance.

I do not desire to be limited to the exact construction and arrangement shown and described, as changes and modifications can be made which would still come within the scope of the invention.

I claim as follows:

1. In pleasure railway constructions, the combination of rigid supporting uprights spaced apart, a flexible rail beam resting on the top of and bridging between said uprights, cross ties engaging with said track beams intermediate said uprights, and rigid rail beams secured to said ties, said track beams flexing between said uprights to yield under load on said rails to thereby cushion the travel of cars over said rails.

2. In pleasure railway constructions, the combination of a vertically flexible track beam, vertical supports engaging at intervals with said track beam but said beam being free between said supports to flex vertically, ties resting on said beam intermediate its supporting points, and a rail secured on said ties.

3. In pleasure railway construction, the

combination of a track structure comprising tie beams and rails in the form of rigid steel beams secured thereon, track beams supporting said ties, and upright supports for said track beams engaging therewith intermediate said ties, said rails being rigid in themselves but said track beams being vertically yieldable below said ties whereby said track structure may as a whole yield vertically during travel of loads on said rails.

4. In pleasure railway construction, the combination of a rigid supporting structure comprising spaced apart uprights, an intermediate supporting structure supported on said uprights and bridging therebetween, and a track structure comprising cross ties and rails directly secured thereon, said rails being in the form of steel beams with rigid standing webs, said ties engaging with said intermediate supporting structure intermediate said uprights and said intermediate supporting structure being vertically flexible whereby to yield to permit bodily vertical give of said track structure during travel of loads thereover.

In witness whereof, I hereunto subscribe my name this 25th day of January, A. D., 1924.

JOHN A. MILLER.