June 23, 1953 H. C. BAIGENT 2,642,815

MODEL VEHICLE AND GUIDE RAIL THEREFOR

Filed May 8, 1951 2 Sheets-Sheet 1

FIG. 1.

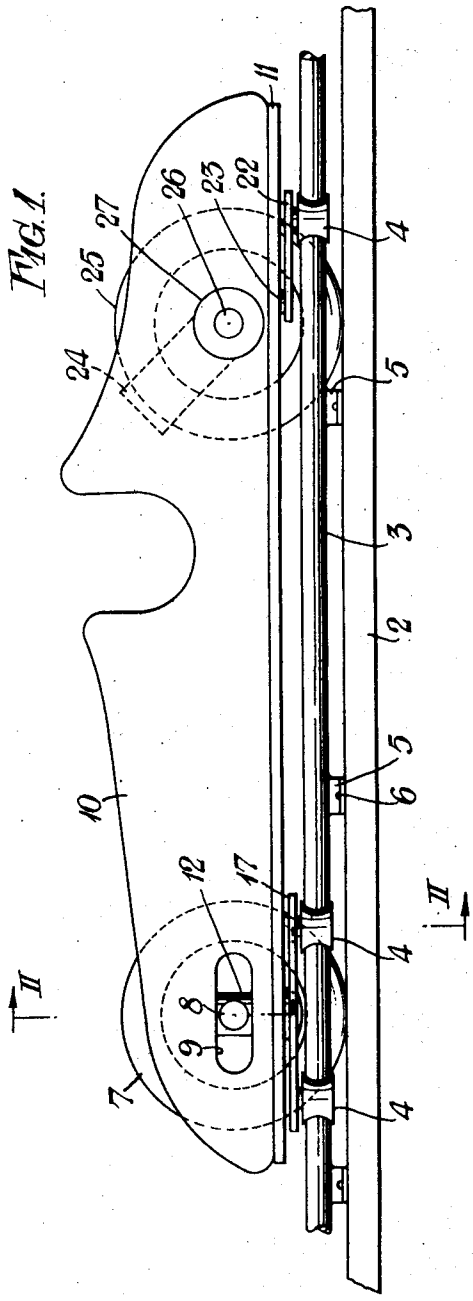
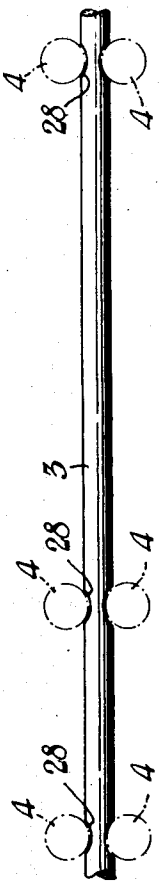


FIG. 4.



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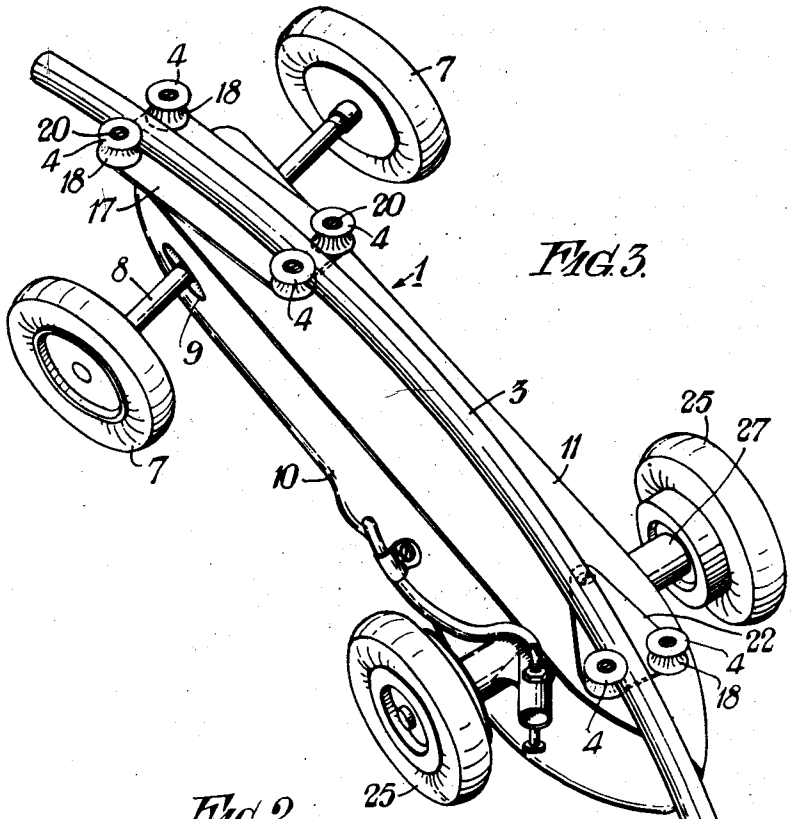
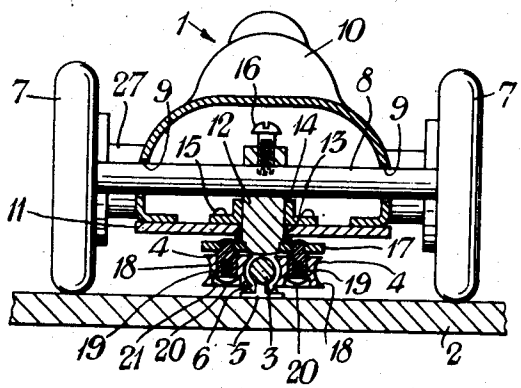


FIG. 3.

FIG. 2.



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MODEL VEHICLE AND GUIDE RAIL THEREFOR

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4 Claims. (Cl. 104—246)

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The present invention relates to model vehicles more particularly to self-propelled model racing cars, and to guide rails therefor.

It is commonly known to constrain a self-propelled model car to run in a circular path by affixing to it a wire or the like, one end of which is attached to a pivot forming the centre of said circular path. It is also known to achieve the same object by providing on one side of the car guide members for engaging an annular guide rail which is affixed to the track upon which the wheels of the car travel.

In the latter case, however, there has not been provided ready means for attaching or detaching the car to or from the rail, and in both cases it has been necessary to affix the car to the wire or mount it upon the rail before starting up the propulsive power of the car. It has also been necessary to bank up the track considerably since the wheels, which are normally set for travel in a straight line, are constrained to move along a circular path. Furthermore, with a circular track, it is not possible satisfactorily to race two or more cars side-by-side along the track at the same time, since their circular paths would be of unequal length.

The present invention has for an object to provide an improved model vehicle and guide rail therefor in which the means for attaching the vehicle to the rail includes means for steering the vehicle.

A further object of the invention is to provide a guide rail having means for readily and easily attaching or detaching the vehicle thereto without adjustment or resetting of the vehicle attachment means.

A still further object of the invention is to provide means for attaching the vehicle to the rail which means is adapted to permit the rear of the vehicle to swing laterally with respect to the rail thus permitting considerable freedom of movement of the car on the track upon which the car runs.

A still further object of the invention is to provide a model vehicle and guide rail therefor by means of which the vehicle may satisfactorily be run in a path other than circular and the circuit over which the vehicle travels may include sharp or double bends.

A yet still further object of the invention is to provide a guide rail for a self propelled model vehicle which permits angular displacement of the vehicle transversely to the longitudinal axis thereof whereby the vehicle is constrained to travel along a banked or unbanked track, and which is simple in construction and easily secured in position on permanent or portable sectional tracks. In the latter case the rail is such as to facilitate the laying of the track sections.

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Yet a still further object of the invention is to provide a self propelled model vehicle and guide rail therefor by means of which the progress of the vehicle along a track is such as to simulate to a high degree the movements of a full size vehicle.

These and other objects of the invention will be apparent from the following description of a preferred embodiment thereof in conjunction with the accompanying drawings. In the drawings:

Figure 1 is a side elevation of a self propelled model racing car, and guide rail therefor, the near side wheels of the car being omitted for clearness;

Figure 2 is a section taken along the line II—II of Figure 1;

Figure 3 is a perspective underneath view of the car and guide rail showing the manner in which the car is steered when travelling along a curved portion of the rail; and

Figure 4 is a plan view of a portion of the guide rail adapted for attaching and detaching the car therefrom.

Referring to the drawings, a self propelled model racing car 1 is adapted to travel along a track 2 and is guided by a guide rail 3 which runs between spaced rollers 4 secured to the underside of the car in a manner to be hereinafter described. The guide rail 3 comprises a rod of circular cross section spaced from the track and secured thereto by means of brackets 5 secured as by welding for example at spaced intervals to the rod and to the track 2 by means of rivets or the like 6. Alternatively the rod may be secured to the track by screws, with spacing members surrounding the screws and interposed between the rod and the track.

The rail 3 and track 2 are preferably formed to define a closed figure of any desired shape to provide a circuit around which the car travels. In a modified construction of guide rail, the rail comprises a hollow split tube, formed as by drawing for example, the material on each side of the slit being extended outwardly to form a continuous flanged portion for supporting the rail upon the track.

The front wheels 7 of the car are rotatably supported upon an axle 8 which extends through slots 9 in each side of the body 10 of the car formed of sheet metal as by stamping for example and secured to a base 11.

The axle 8 passes through an aperture in the

upper end of a centrally disposed column 12 which extends through an aperture 13 in the base and is rotatably supported in an upstanding flanged bushing 14 secured to the base as by rivets 15. The axle is secured in the column 12 by means of a screw 16 screw-threaded longitudinally of the column and extending into a centrally disposed recess in the axle 8.

The axle 8 is thus free to swing horizontally about the axis of the column 12, the amount of swing being limited by the ends of the slots 9 which engage the axle when it reaches a predetermined angular position.

The lower portion of the column 12 extends into an aperture in a rectangular plate 17 upon which the rollers 4 are mounted, the end of the column being riveted over so that the plate is firmly secured thereto. The rollers 4 are formed with concave edge surfaces 18 which match the curvature of the guide rail surface and are rotatably mounted in pairs at each end of the plate 17, the rollers of each pair being spaced apart a distance sufficient to provide a clearance between the concave surface of the rollers and the guide rail 3 but insufficient to permit the guide rail to pass between the enlarged ends of the rollers. Each roller 4 is rotatably supported upon a spindle 19 riveted at one end in the plate 17 and having a screw 20 at its other end, which screw engages in a recess 21 formed in one end face of the roller to maintain the roller in position on the spindle.

It will be apparent that, as the car progresses along a curved portion of the track and guide rail as shown in Figure 3 the plate 17 will be swung about its pivot thereby rotating the column 12 and causing a corresponding swing of the front axle 8 to steer the car in the desired direction.

The rear portion of the car is engaged upon the guide rail 3 by a further pair of rollers 4 mounted upon a triangular shaped plate 22 pivoted at its apex to the base of the car thus permitting lateral swing of the rear portion of the car within the limits of movement of the plate 22 and thereby adding to the realism of the performance of the model.

The rollers are mounted upon the plate 22 in a manner similar to that described with reference to the plate 17. The plate 22 is secured at its apex to a column 23 which is rotatably supported in a bushing secured to the base of the car and extending upwardly within the body thereof.

The car may be powered by any suitable means such as for example a model internal combustion engine 24 shown in broken line in Figure 1, the rear wheels 25 being secured to a shaft 26 rotating within a rear axle 27.

In order to permit the car to be attached to or detached from the guide rail, the rail is formed at convenient points in its circuit with arcuate recesses 28 (Figure 4) on each side of the rail and spaced apart at distances along the rail equal to the distances between the three pairs of rollers on the car. The radius of curvature of the recesses 28 is slightly larger than the maximum radius of the rollers 4 (shown in chain dotted line) and the recesses are of sufficient depth to allow the rail to pass freely between the ends of the rollers when they are positioned coincident with the recesses 28 as shown in Figure 4.

It will be apparent, that if the car be placed upon the rail at one of said convenient points, and allowed to travel along the track, the front axle will be pivoted in accordance with any bend in the rail, and the car steered accordingly. Further, the rear of the car is also guided by the rail, but by reason of the pivoted rear plate, it is allowed freedom to swing in the aforedescribed manner.

By the use of the car and rail of the present invention, it is possible to employ almost any shape of circuit, including sharp or double bends whether banked or not. It is further possible to start up the power unit of the car before mounting it upon the rail, and by providing two or more parallel rails, to race two or more cars side-by-side, thus adding greatly to the enjoyment of the pastime. By including means for the ready attachment and detachment of the cars to and from the rail, the invention also provides for races of long duration, or endurance races, since the cars can be readily removed from the rail at prepared positions for re-fueling or refitting and replaced during the race.

The invention is not limited to the particular construction described, and many modifications thereof are possible within the scope of the appended claims. For example, if it is intended that the car shall run upon an unbanked track only, the guide rail may be of a cross-section other than circular, and the vertical walls of the rollers notched or recessed to correspond.

What I claim is:

1. A racing car for use upon a track having a guide rail of circular cross-section secured thereto for constraining the car to move along a predetermined path, comprising a body, front and rear axles mounted thereon, track engaging wheels on said axles for supporting the body upon the track, an upright support rotatably mounted upon said body above said rail and secured at its upper end to said front axle intermediate its wheels, a horizontally arranged plate positioned beneath said body and secured to the lower end of said support, a pair of rollers journaled upon and depending from said plate, adapted to engage opposite sides of the rail, a second horizontally arranged plate lying below said body and pivotally secured thereto at a point towards the rear of said car upon an axis at right angles to said track, and a pair of rail engaging rollers journaled upon and depending from said second plate and spaced longitudinally of its pivot to permit the body to swing tranversely of the rail, the walls of said rollers being hollowed out and the axes of the rollers of each pair being laterally spaced so that said walls embrace the rail permitting the rail to pass freely therebetween longitudinally of the car.

2. A racing car for use upon a track having a guide rail of circular cross-section secured thereto for constraining the car to move along a predetermined path, comprising a body, front and rear axles mounted thereon, track engaging wheels on said axles for supporting the body upon the track, an upright support rotatably mounted upon said body above said rail and secured at its upper end to said front axle intermediate its wheels, a horizontally arranged plate positioned beneath said body and secured to the lower end of said support, two longitudinally spaced pairs of rollers journaled upon and depending from opposite ends of said plate, adapted to engage opposite sides of the rail at two points along its length, a second horizontally arranged plate lying below said body and pivotally secured thereto at a point towards the rear of said car upon an axis at right angles to said track, and a pair of rail engaging rollers journaled upon and depend-

ing from said second plate and spaced longitudinally of its pivot to permit the body to swing transversely of the rail, the walls of said rollers being hollowed out and the axes of the rollers of each pair being laterally spaced so that said walls embrace the rail permitting the rail to pass freely therebetween longitudinally of the car.

3. A racing car for use upon a track having a guide rail of circular cross-section secured thereto for constraining the car to move along a predetermined path, comprising a body, front and rear axles mounted thereon, track engaging wheels on said axles for supporting the body upon the track, an upright support rotatably mounted upon said body above said rail and secured at its upper end to said front axle intermediate its wheels, a horizontally arranged plate positioned beneath said body and secured to the lower end of said support, a pair of rollers journaled upon and depending from said plate, adapted to engage opposite sides of the rail, a second horizontally arranged plate lying below said body and pivotally secured thereto at a point towards the rear of said car upon an axis at right angles to said track, and a pair of rail engaging rollers journaled upon and depending from said second plate and spaced longitudinally of its pivot to permit the body to swing transversely of the rail, the walls of said rollers being hollowed out and the axes of the rollers of each pair being laterally spaced so that said walls embrace the rail permitting the rail to pass freely therebetween longitudinally of the car, said body having a pair of opposed elongated slots in the sides thereof to loosely receive said front axle to permit and limit swinging movements thereof.

4. A racing car for use upon a track having a guide rail of circular cross-section secured thereto for constraining the car to move along a predetermined path, comprising a body, front and rear axles mounted thereon, track engaging

wheels on said axles for supporting the body upon the track, an upright support rotatably mounted upon said body above said rail and secured at its upper end to said front axle intermediate its wheels, a horizontally arranged plate positioned beneath said body and secured to the lower end of said support, a pair of rollers journaled upon and depending from said plate, adapted to engage opposite sides of the rail, a second horizontally arranged plate lying below said body and pivotally secured thereto at a point towards the rear of said car upon an axis at right angles to said track, and a pair of rail engaging rollers journaled upon and depending from said second plate and spaced longitudinally of its pivot to permit the body to swing transversely of the rail, the walls of said rollers being hollowed out and the axes of the rollers of each pair being laterally spaced so that said walls embrace the rail permitting the rail to pass freely therebetween longitudinally of the car, said rail having formed therein at pre-determined points along its length, and upon corresponding opposite sides thereof, concave recesses of greater radii than said rollers, adapted to permit the rail to pass from between said rollers at said points for disengaging said car therefrom.

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