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PATENTED FEB. 5, 1907.

W. H. STRICKLER.
 RUNNING GEAR FOR VEHICLES.

APPLICATION FILED JAN. 29, 1906.

2 SHEETS—SHEET 1.

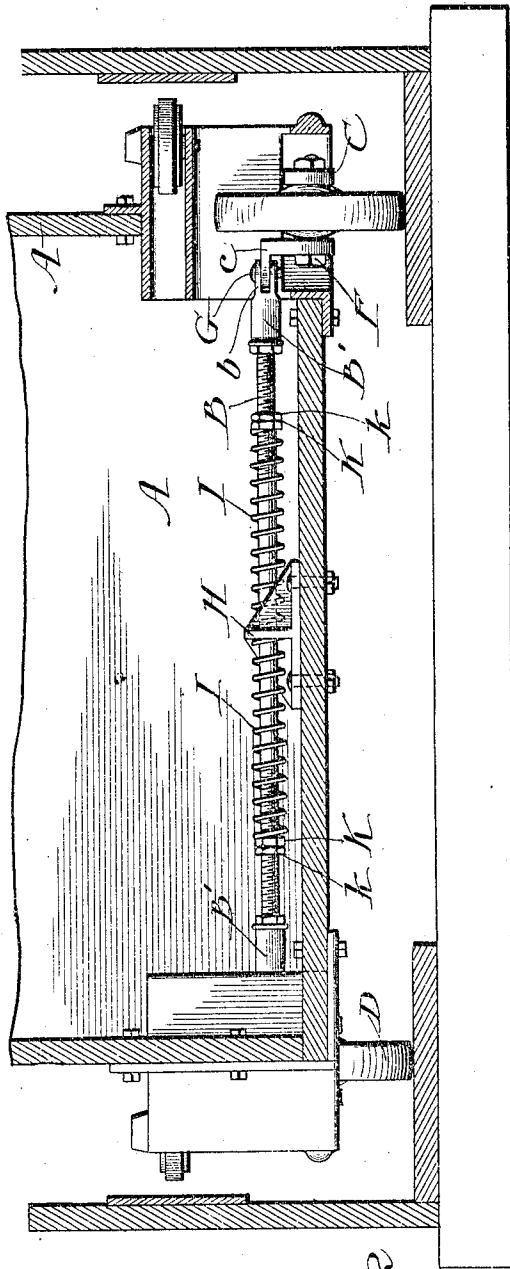


Fig. 2

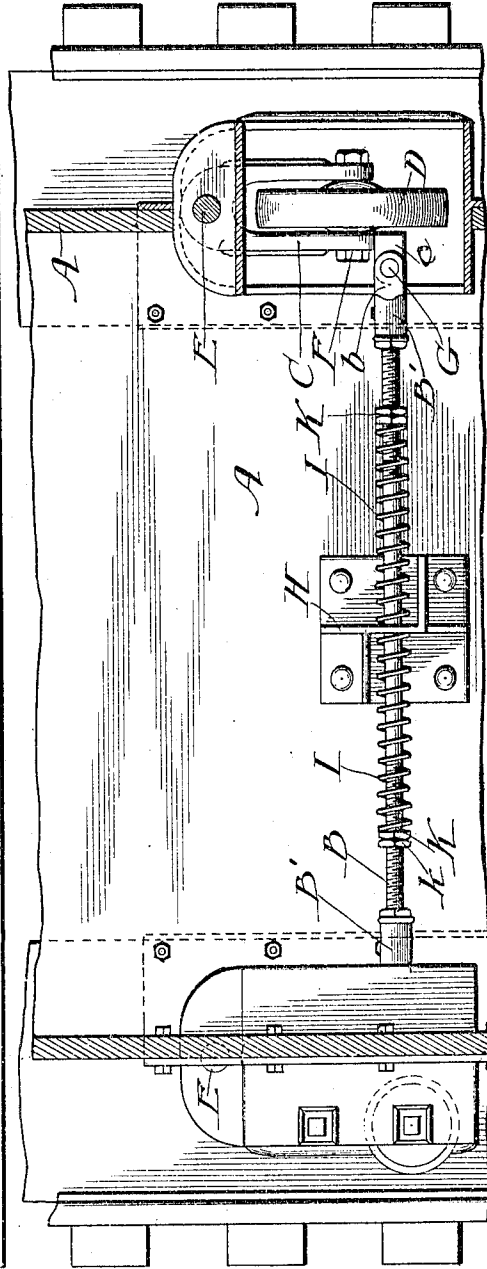


Fig. 1.

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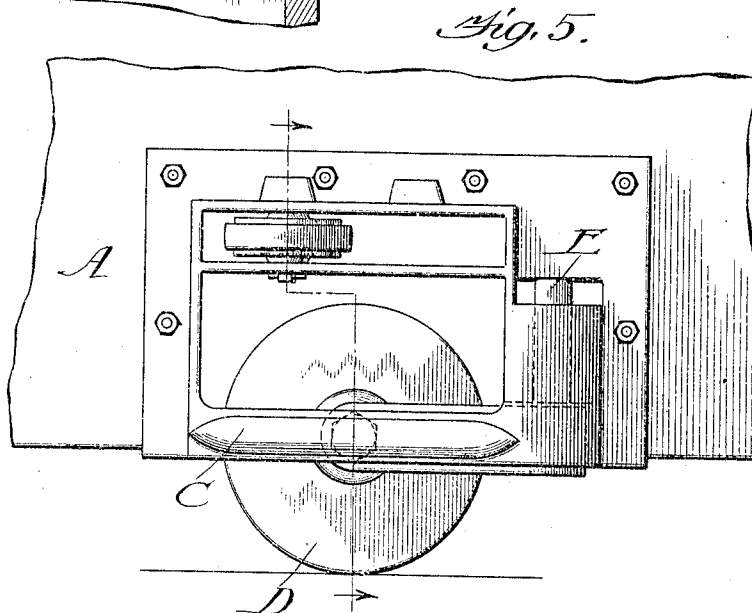
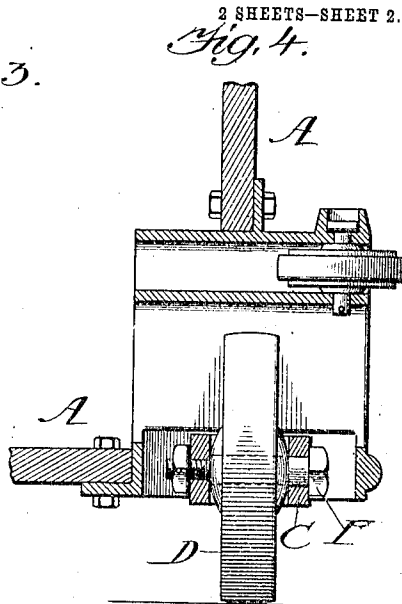
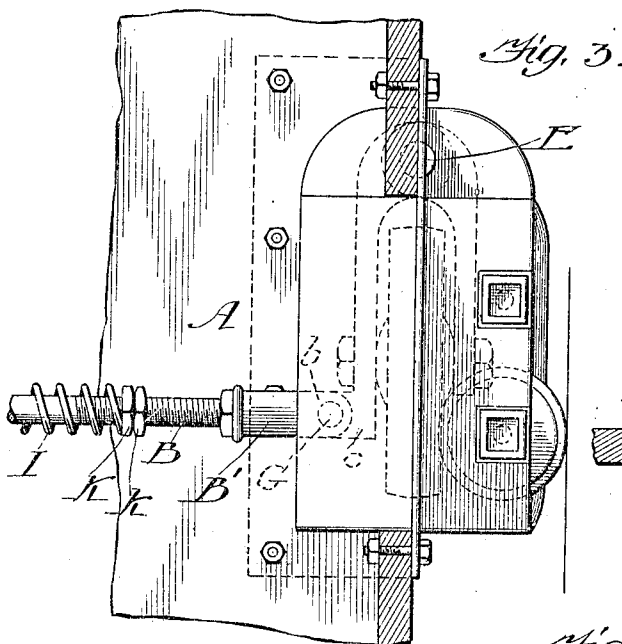
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RUNNING GEAR FOR VEHICLES.

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3 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM H. STRICKLER, OF CHICAGO, ILLINOIS, ASSIGNOR TO FEDERAL CONSTRUCTION COMPANY.

RUNNING-GEAR FOR VEHICLES.

No. 843,420.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed January 29, 1906. Serial No. 298,470.

To all whom it may concern:

Be it known that I, WILLIAM H. STRICKLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Running-Gears for Vehicles, of which the following is a specification.

In that class of gravity-railroads used in amusement-parks for pleasure purposes, sometimes called "roller-coasters," safety of operation is of the utmost importance, and next to that is noiselessness and smoothness of operation. Freedom from jolts, jars, and unexpected bumps contributes largely to the commercial success of an enterprise of this character; and the object of the present invention is to provide a running-gear for a car particularly adapted to a road of this class and which shall make the running of the car as smooth as possible and eliminate as far as possible liability to accidents.

In the class of railroads referred to it is sometimes the practice to use metal tracks and flanged wheels. The present invention does not belong to that class. In another class the track is made of plain flat boards, the carrying-wheels of the car are mounted caster fashion, and on the "outside" of the roadway, or the side to which the car tends by reason of centrifugal force, there is a guard-rail which is engaged by wheels or rollers on the side of the body of the car. Ease, comfort, and pleasure are of course promoted by lessening the jarring and bumping of the car against this guard-rail, and this is the object of the present invention.

I have discovered that the desired result can be accomplished by holding the car, especially at the curves (although not necessarily on a straight stretch of track) against the outer guard-rail, and to this end I set and hold (preferably yieldingly) the wheels of the car, so that it always tends to the outer guard-rail. As suggested, they are held yieldingly. This is to allow them to follow the curvatures of the track, the yielding element being a spring or system of springs whereby they are normally held parallel and in the direction of a normal straight-away track with a slight tangential tendency, the yielding element being introduced for the purpose of allowing them to automatically follow the curves of the track. They are

mounted caster fashion, and the two wheels of each pair are connected by spring-controlled mechanism, which holds them normally to positions for a straight-away course with a tendency to carry the car to the outer guard-rail, but still allows the caster-wheels to swing in order to follow the curvature of the track.

Bearing in mind, therefore, that my invention is not limited to minutia, I declare it to consist of a railway of the gravity type in which the car is provided with caster-wheels and spring mechanism for preventing the random movement of the wheels under any circumstances and for controlling, as far as it is possible to do so automatically, the trend or shear or direction of the wheels with relation to the direction of travel, or, in other words, to the track, that the car will be prevented from "wabbling" from side to side and bumping against first one then the other of the guard-rails.

To these ends the invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawings, which are made a part of this specification, and in which—

Figure 1 is a plan of two caster-wheels of a car and their connecting mechanism embodying the invention. Fig. 2 is an elevation thereof viewed from the rear. Fig. 3 is an enlarged plan view of one of the wheels and its accessories. Fig. 4 is an enlarged section thereof. Fig. 5 is an enlarged side elevation of one of the yokes or caster-frames.

In the drawings I do not show either the track or the car construction in full. These are things that are well and fully understood by those skilled in the art and their full illustration is not necessary to a complete understanding of this invention. It is known in the art that the track considered in plan view may have many sinuosities and that considered in horizontal view its ups and downs are many and decidedly varied in degree of ascent and descent. This much given, it is decidedly advantageous to eliminate noise, shocks, and jars. To these ends I have devised mechanism so constructed that jolts, bumps, and jars are eliminated to what I consider a maximum extent.

Bear in mind that the invention of the present application may be applied to a "gravity-railroad," a "roller-coaster," or to

any other kind or type of vehicle that is started from an elevation and follows its course by force of gravity, the car itself being supported by wheels of the caster type. As before intimated, the object of the present invention is to eliminate from this class of railroads the objectionable noise, bump, jars, and jolts resulting from the impact of the car with the curved side or outside guard-rail, especially in turning curves. I have discovered that these results can be accomplished by holding the caster-wheels in definite though yielding relations to the track and, if desired, by giving them a shear or trend toward the outer rail, and this is done by connecting them and providing a properly-adjusted spring or a plurality of springs reacting against the body of the car for yieldingly holding them to their proper lines of travel.

In the drawings I have shown only two wheels of the cars, one on each side, and have shown no part of the car proper, excepting a fragment A of the car, which is shown simply to show the relation thereto of the rod B, which connects the yokes C, by which the caster-wheels D are carried.

Each of these yokes consists of a part, preferably a casting, of substantially U shape, which is mounted to swing in a horizontal plane, being supported by a vertical stud-shaft E, that is suitably supported by the car-body. The details in the mounting of this shaft are immaterial to the present invention, as they will readily suggest themselves to any one skilled in the art. Suffice it to say that the yoke consists of a part of substantially U shape, the arms of which are disposed horizontally, and near their ends are perforated horizontally for the passage of a heavy bolt, pin, or shaft F, upon which the caster-wheel D (one on each side) is mounted to revolve. At its forward end the yoke carries the vertical stud, pin, or shaft E, already referred to, which is mounted and secured in a suitable bearing in or upon the bottom of the car, so that the yoke "trails" after the manner of a caster.

The inner arm of each of the yokes C has an intumed horizontal ear *c*, which is pierced vertically for the passage of a pin, bolt, or similar device G, which device passes also through the correspondingly-perforated ears *b* on the end of a fitting B', united by screw-threads or other suitable means to the end of the connecting-rod B. This is the connecting-rod hereinbefore referred to which connects the yokes of the caster-wheels on opposite sides of the car in pairs. So far as the generic aspect of the invention is concerned its details of construction are not material, as I believe myself to be the first to connect the caster-wheels of a car by means of a rod or equivalent device and combine therewith means substantially such as herein described

for holding or tending to hold the caster-wheels to a given course or line of travel whether this be exactly parallel with the supporting track-rails or outward or against the outside guard-rail.

As shown, the rod B passes through a bracket H, which is rigidly secured to the car, and upon each side of this bracket the rod is surrounded by a coiled spring I, each of which springs exerts its pressure in one direction against the car-body through the medium of the bracket H and in the other direction against the caster-wheels through the medium of the rod B, &c. To this end the rod is threaded, and upon its threaded portions are mounted adjustable nuts K, with suitable lock-nuts *k* for holding them to their adjustment for taking the thrust of the springs.

It is manifest that with the springs adjusted to exactly equal tensions the caster-wheels will be held to parallelism, so that they will follow a straight track. In practice, however, it transpires that they will not only follow a straight track, but will yield to a curved track without any jolt incident to caster-wheel cars unequipped with spring controllers or equalizers. It is also manifest that by putting the two springs I under unequal tension, using therefor the nuts K, the caster-wheels may be sheared off or given a direction out of parallelism with the track. This will of course tend to guide the car in a corresponding direction, and the rails being flat and the wheels without flanges centrifugal force will do the rest. The car will take to the outer guard-rail on all curves and will hug it, with the result that the crossing or bumping back and forth is avoided. While this is strictly true on curves, it may or may not be true on a straight track; but let it be borne in mind that in the class of railways to which this invention belongs the straight track is usually a sharp declivity or incline, so steep that the car is bound to run straight, and no amount of shear or lateral deflection of the caster-wheels would make any appreciable difference.

It is the elimination of bumps and unpleasant lateral jolts that the invention is aimed at.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the class described the combination with the body of the car and its supporting-wheels, said supporting-wheels including a pair of caster-wheels—of means for yieldingly holding said wheels parallel, substantially as described.

2. In a device of the class described, the combination with the body of the car and its supporting-wheels, said supporting-wheels, including a pair of caster-wheels, of means for yieldingly holding said wheels parallel and at an angle to the track, substantially as described.

3. In a device of the class described, the combination with the body of the car and its supporting-wheels, including a pair of caster-wheels, of rigid means connecting the caster-wheels and yielding means for holding the wheels in any desired position and with relation to the track, substantially as described.

4. In a device of the class described, the combination with the body of the car and its supporting-wheels, including a pair of caster-wheels, of a rigid connection between said wheels whereby they are held parallel and spring mechanism interposed between said connection and the body of the car for yieldingly holding the wheels in the desired position with relation to the track, substantially as described.

5. In a device of the class described, the combination with the body of the car and its supporting-wheels, including a pair of caster-wheels, of a rigid connection between said wheels, a pair of springs each engaging said connection at one of its ends, and a part carried by the car-body and engaged by said

springs at their other ends, substantially as described.

6. In a device of the class described, the combination with a car-body and the supporting-wheels, including a pair of caster-wheels, of means including a rod, connecting said caster-wheels, a spring engaging said rod, and the car-body for yieldingly holding said wheels in the desired positions relatively to the track, and means for adjusting the tension of said spring, substantially as described.

7. In a device of the class described, the combination with the car-body of a pair of yokes secured thereto and adapted to swing horizontally, supporting-wheels for said yokes, a rod connecting said yokes, and a yielding device engaging the rod and the car-body for holding the rod in the desired position, substantially as described.

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