R. BANOLAS.

Car-Truck.

No. 167,294. Patented Aug. 31, 1875.

Fig. 2

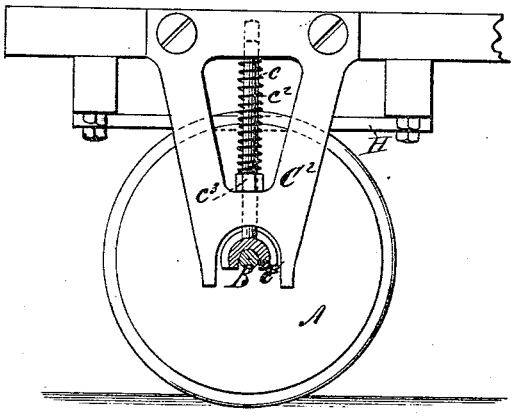


Fig. 3

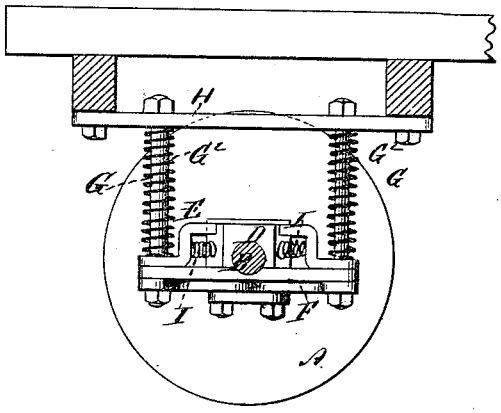


Fig. 1

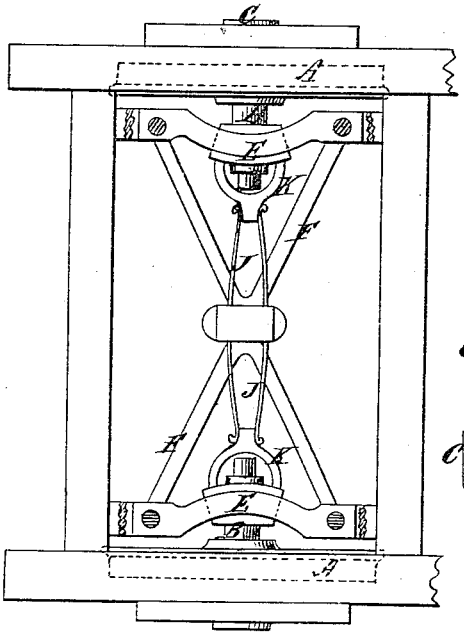
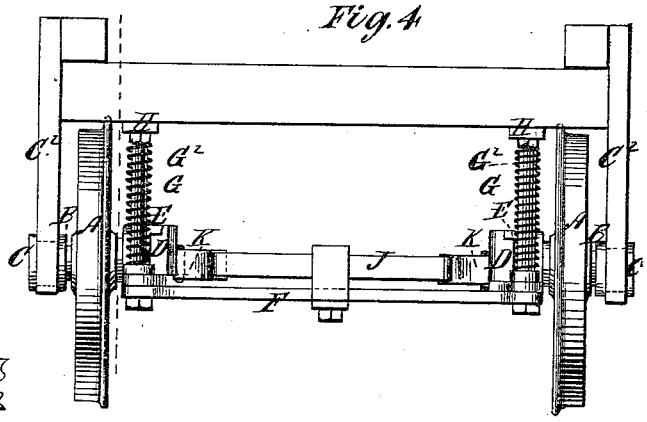


Fig. 4



Witnesses:
Fred. Haynes
Fred Fischer

R. Banolas
by his Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE.

RAMON BAÑOLAS, OF MADRID, SPAIN.

IMPROVEMENT IN CAR-TRUCKS.

Specification forming part of Letters Patent No. **167,294**, dated August 31, 1875; application filed June 11, 1875.

To all whom it may concern:

Be it known that I, RAMON BAÑOLAS, of Madrid, in the Kingdom of Spain, have invented certain Improvements in Axles for Railway-Cars and other Vehicles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, in which—

Figure 1 is a top view of a railway-car with my improvements attached. Fig. 2 is a side view of the same. Fig. 3 is a vertical section. Fig. 4 is an end view.

My invention relates to certain improvements which are designed more particularly for application to railway-cars, but may be readily applied to other vehicles. The invention consists in an improved mode of adapting each wheel to a separate and independent axle, and in a novel construction and arrangement of parts, whereby each axle is allowed a universal motion independent of the other, in order to enable the wheels to adapt themselves to different curves and irregularities of every description in the track or roadway upon which they travel, and to automatically resume their normal position after passing said curves or irregularities.

In carrying out my invention, I attach each of the wheels A to a short axle, B, the ends of which are journaled in bearings C D. The exterior bearing C is pivoted so as to allow the interior bearing D to slide horizontally in a slotted bar or frame, E, forming an arc of a circle drawn from the point where the bearing C is pivoted. By this arrangement each wheel is enabled, in going around a curve, to yield to the pressure of the rail against the flange, and automatically assume such a position that the prolongation of its axle would strike the center of the arc described by the travel of the wheel. When thus arranged the wheels run with the same facility when traveling around a curve as when traveling on a straight track, and there is no slipping or binding, such as exists under the ordinary construction. The various parts may be of any suitable construction. The accompanying drawing shows one mode which may be advantageously adopted. The exterior axle-bearing C is arranged in the bifurcated lower portion of a hanger, C^2, attached to the frame or body of the car. Through this hanger passes a rod, *c*, the lower end of which bears against the bearing C, and forms a pivot for the same. In the hanger C^2 is an opening, whereby seats are provided for a coiled spring, c^2, surrounding the rod *c*, and for a nut, c^3, which engages with a thread on the rod *c*. The upper end of the rod works freely in a hole in the upper part of the hanger, and its position when at rest is determined by the position of the nut on the rod. The upper end of the spring c^2 bears against the upper portion of the hanger, and its lower end bears against the nut c^3, and has a tendency to keep the rod pressed downward with the nut c^3, bearing against the lower seat in the hanger. This arrangement imparts a degree of elasticity to the bearing C, and allows it to rise and fall, and thus avoid the shock and jar occasioned by uneven surfaces in the track or roadway. The rod *c* may be lowered or raised, and thereby made to press more or less forcibly upon the bearing C by adjusting the nut c^3 higher or lower on the rod *c*. The interior bearing D is arranged in a horizontally-slotted bar or frame, E, which may be made either in one piece of metal or in two pieces attached together, as shown. The two frames E of each pair of wheels are connected by a cross-brace, F, the ends of which are attached to the ends of the frames. Through each of the corners formed by the junction of the braces with the frames passes a rod, G, having a screw-thread and nut at each end, or a head at one end and a nut at the other. The upper end of each rod G passes through and works freely in a hole in a bar, H, running longitudinally of the car. The upper head or nut of the rod G is placed above the bar H, and the lower head or nut below the cross-brace F. Each nut is surrounded by a spring, G^2, the ends of which bear against the bar H and frame E, respectively; and the pressure of the spring and the position of the bearing D are regulated by adjusting the nut or nuts on the rod G. By this arrangement a degree of elasticity is imparted to the bearing D, and it is enabled to rise and fall in the same manner as described in regard to the exterior bearing C. By this arrangement of the two bearings they may

rise and fall simultaneously, or each may rise and fall independently of the other. Each of the interior bearings D is provided with two springs, I, opposite each other, working in the slot in the frame E. The inner ends of the springs have their seats in the bearing D, and their outer ends bear against the ends of the slot.

When the car is passing around a curve the springs I yield sufficiently to allow the necessary deviation of the wheel in the direction of the arc E; and immediately upon reaching a straight portion of the track the springs restore the wheel to its original position. This result is further facilitated by means of two semi-elliptical springs J J, arranged above the cross-brace F, and having their ends bearing against semicircular projections K on the bearing D.

By the construction and arrangement of parts herein above described each axle is allowed a universal motion independent of the other, and the wheels are enabled to adapt themselves to curves and irregularities, and to automatically resume their proper positions after passing said irregularities. By it, also, the car is enabled to travel upon very sharp curves with greater facility than under the old construction, and a greater number of pairs of wheels may be applied to each car. If desired, the interior bearing may be pivoted and the exterior one arranged to slide, and the springs (excepting the semi-elliptical springs J J) may be of rubber or other suitable material.

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

1. The combination, with the axle B and bearings C D, of the rod c and spring c^2, and the rods G and springs G^2, whereby vertical motion is allowed to the bearings, either simultaneously or independently of each other, substantially as herein described.

2. The combination, with the wheel A and axle B, of the exterior bearing C and hanger C^2, the interior bearing D, and slotted bar or frame E, and the springs I I and J J, all arranged as herein shown and described, whereby the wheel is enabled to adapt itself to different curves, and automatically resume its position after passing the same, substantially as set forth.

RAMON BAÑOLAS.

Witnesses:

ANTON CHARLISS,

J. V. CÉVIN.