(No Model.) 3 Sheets—Sheet 1.

S. P. STODDARD.

CAR TRUCK.

No. 399,580. Patented Mar. 12, 1889.

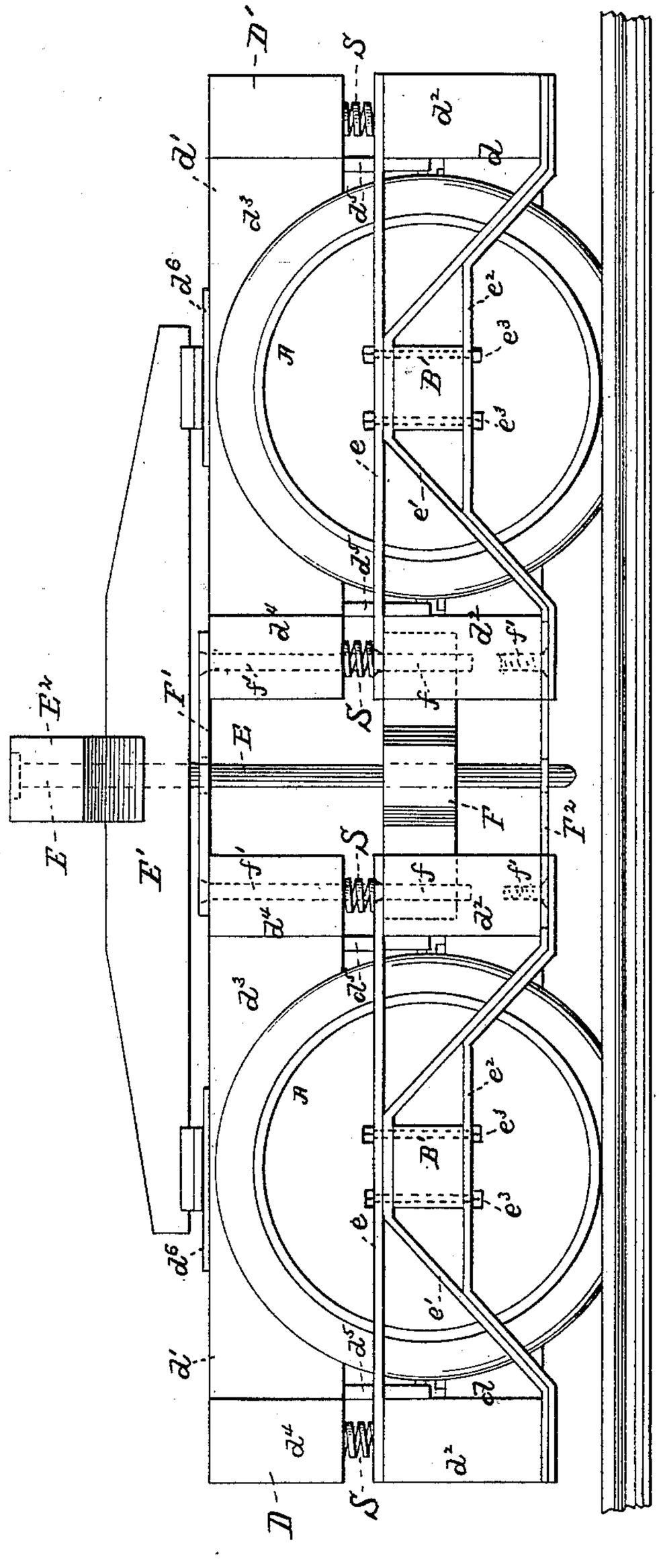

Fig. 1.

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Fig. 2.

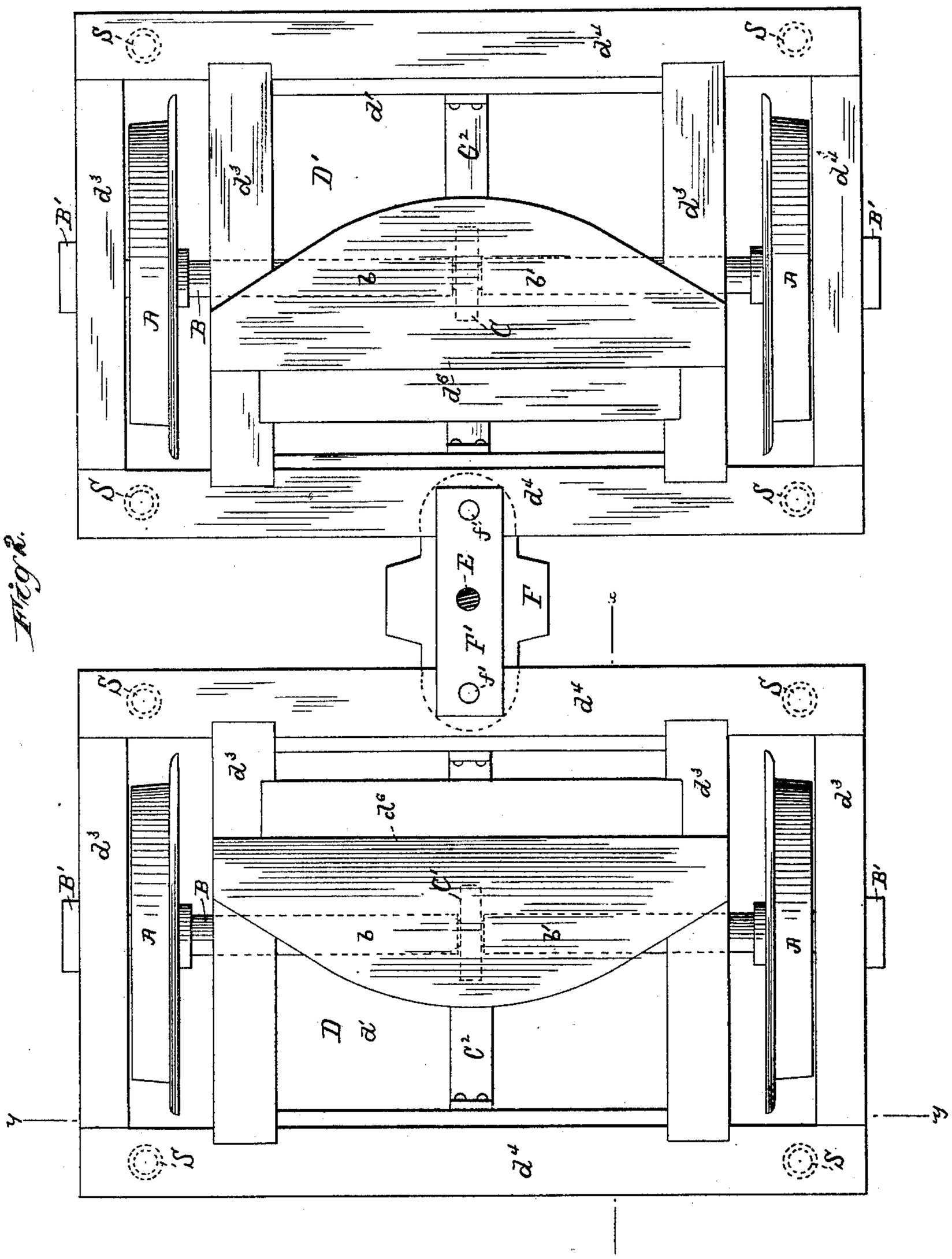

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Fig. 3.

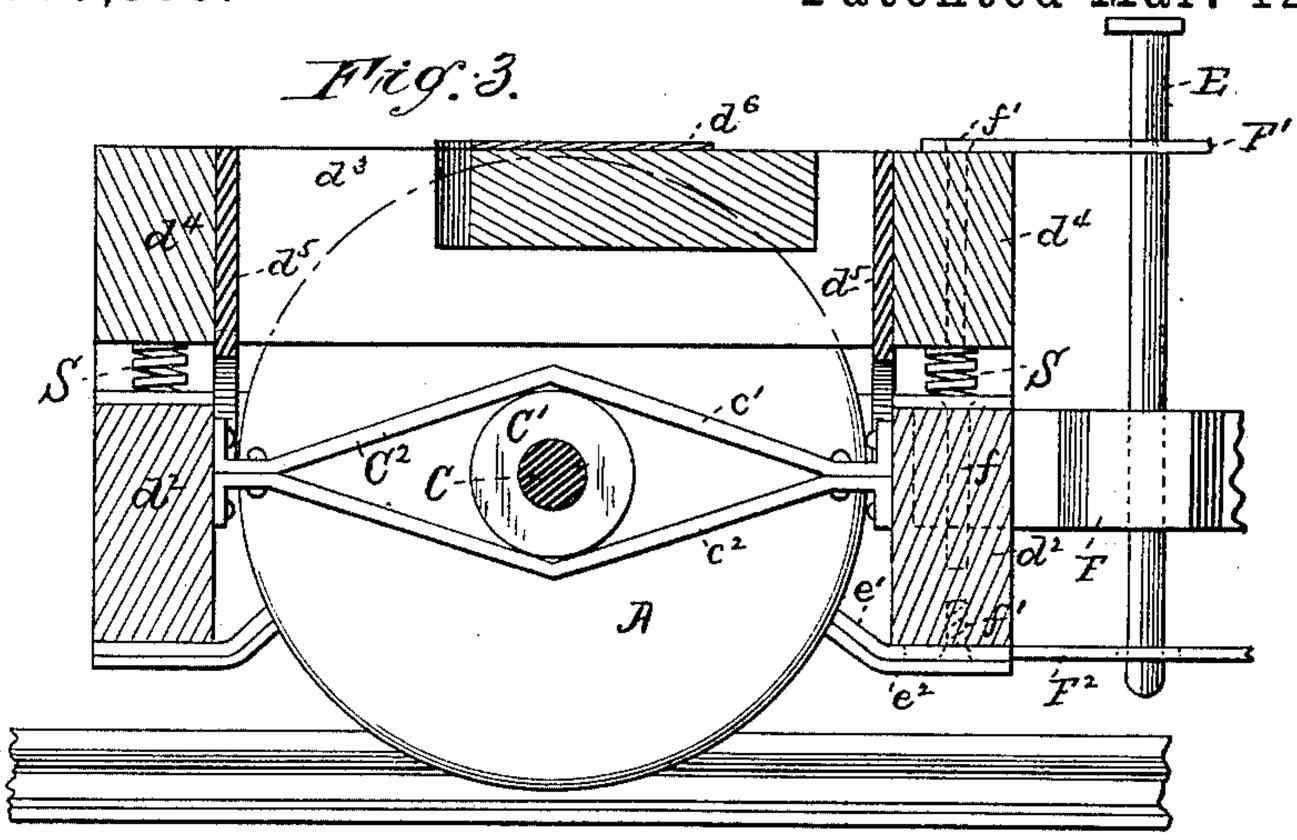


Fig. 4.

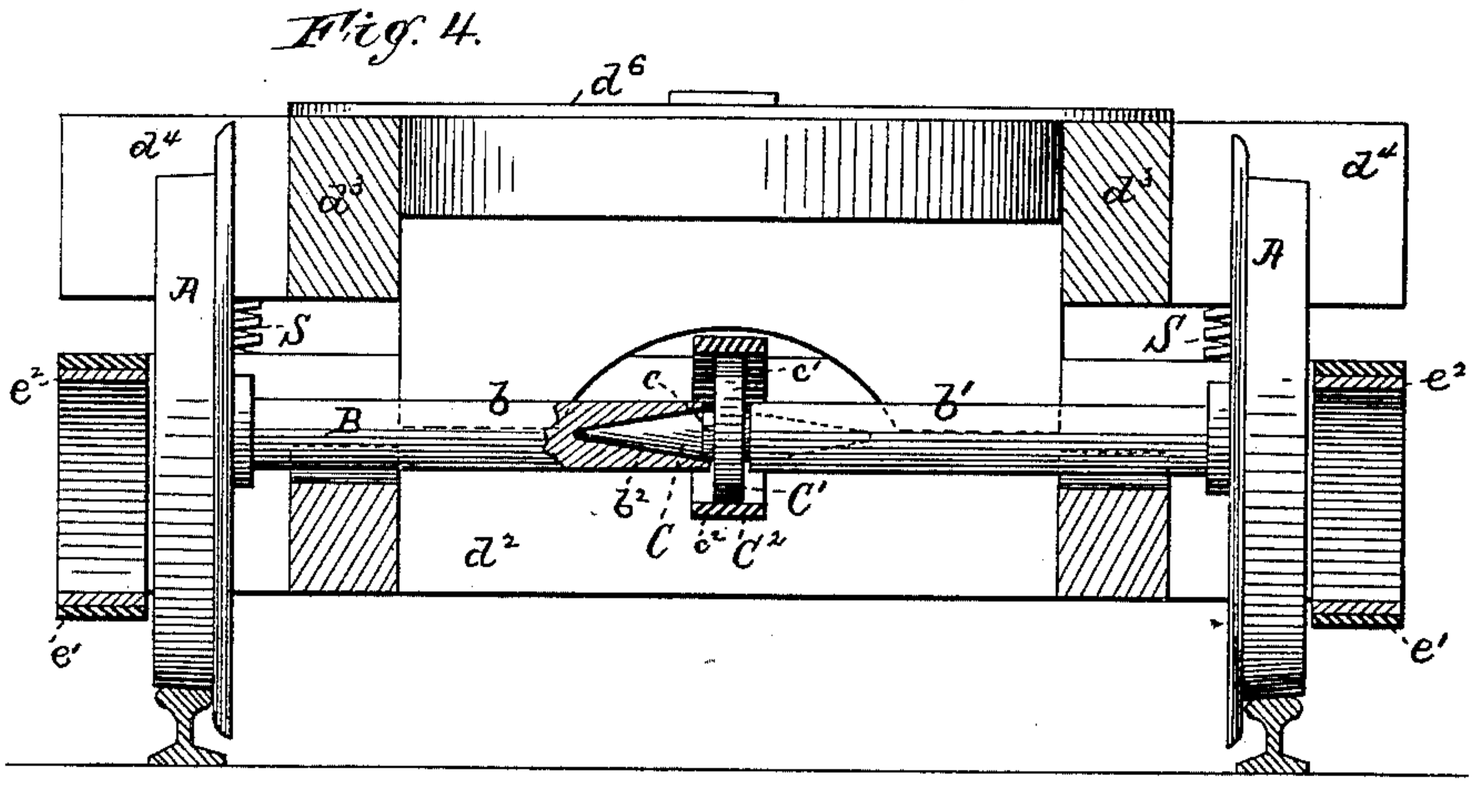
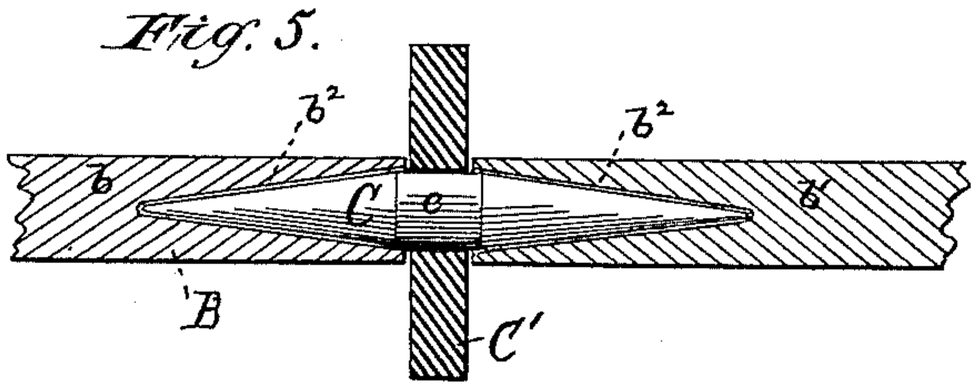


Fig. 5.



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UNITED STATES PATENT OFFICE.

SOLOMON P. STODDARD, OF BROOKVILLE, INDIANA.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 399,580, dated March 12, 1889.

Application filed August 21, 1888. Serial No. 283,322. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON P. STODDARD, of Brookville, county of Franklin, State of Indiana, a citizen of the United States, have invented certain new and useful Improvements in Car-Trucks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a truck for railway-cars; and my invention consists in a car-truck containing the devices and constructed in the manner hereinafter particularly described, and as more at length recited in the claims.

Figure 1 is a side elevation of a car-truck containing my invention. Fig. 2 is a plan of the truck. Fig. 3 is a longitudinal vertical section of one of the hereinafter-described sections of the truck taken on line *x x*, Fig. 2. Fig. 4 is a lateral vertical section of the same taken on line *y y*, Fig. 2; and Fig. 5 is a longitudinal section of the body or central portion of the bisected axle in detail.

The principal object of my invention is to provide a car-truck in which the two wheels on each axle thereof will be capable of independent motion at each end of said axle, and in which the several pairs of wheels on their respective axles may be capable of position and movement relatively to the car itself independently of each other, whereby the truck will be enabled to traverse sharp railway-curves or those having short radii, and with the development of the minimum of friction between the wheels and rails.

At A are shown the wheels of the truck. These wheels are mounted fixedly upon the axles in pairs in the usual manner. The axles B have the customary journals at their ends (not shown) having bearings in the usual boxes, B′.

In carrying out my invention each axle is bisected or divided about midway its length into the two separate sections *b* and *b′*, each of which sections thus carries a wheel, as described. At the opposed inner ends of the sections thus constituted I form in each section *b* and *b′* the conical recess b^2, extending into the axle-body longitudinally thereof and with the apex of the cone located at the mechanical longitudinal axis of the axle.

C is a bearing-piece or mandrel having the general form of a double cone, basicly united and desirably with a cylindrical central portion or body, *c*, between said conical ends. The respective conical ends of this mandrel C are adapted to fit into the conical recesses in the respective axle-sections *b b′*, as shown plainly in Fig. 5.

C′ is a collar or disk loosely journaled upon the central portion or body of the mandrel C and interposed thereon between the recessed ends of the axle-sections.

The described bisected axle, having its sections united and given bearings at their inner or opposed ends, is, by means of the conical mandrel and the collar C′, enabled to have each of its sections, with the wheel carried by it, revolved independently of the other section, and also to have its two sections revolved simultaneously and in unison; and the form of the bearings provided by the conical mandrel C, working in the corresponding conical recesses in the ends of the axle-sections, enables the said sections when they revolve independently of each other to do so with the development of a minimum of friction upon the mandrel-bearings. In traversing a railway curve, therefore, the wheels treading the outer and inner rails will revolve independently of each other, and thus the wheels treading the outer rail will be enabled to revolve more rapidly and to traverse the greater circle of the outer rail without interference or hinderance by the wheels treading the inner rail, and when the truck is traversing a straight track the axle-sections will be induced to revolve in unison, as is of course desirable, by the friction of the opposed ends of the sections on the collar C′, the conical bearings of the sections, which bearings may be somewhat loose for this purpose, offering the minimum resistance to this tendency or inducement to the simultaneous revolution of the sections on a straight track, as aforesaid. A bearing-frame, C^2, may be desirably provided for the collar C′, consisting of bars *c′* c^2, secured to the truck-timbers, as shown, and extending longitudinally of the truck above and below the axle, and bent or formed, as shown, to give four bearing or contact points for the periphery of the said collar.

In incorporating my described bisected axle in a truck structure I find it desirable to mount each axle in a separate and distinct frame or section of the truck, as hereinafter set forth, and then to couple these several sections together. In the drawings a truck is shown composed of two such sections; and I find it furthermore preferable to construct each of said individual sections in two main portions—namely, an upper and a lower portion—the latter of which carries the axle-boxes and the former of which is imposed upon said lower portion, having springs interposed between the portions, as hereinafter set forth, the upper portion thus having vertical play upon the lower portion and being adapted to receive the drafting-bars, which in turn support the transom-bar of the car-body.

In the drawings the truck structure is shown composed of the two sections D and D′, in each of which a single axle and its pair of wheels are mounted. Each of these sections is composed of a lower portion, *d*, and an upper portion, *d′*. At d^2 are shown the transverse timbers of the lower portion of each truck-section. These said timbers are united longitudinally of the truck by the brace-bars *e*, reaching from one to the other on the upper side, and by an arch-bar composed of the two coincident trusses *e′* and e^2, which reach from one to the other on the under side. The first of these trusses, *e′*, extends upwardly to and is bolted to the brace-bar *e*, while the other truss, e^2, coincides with the first in its course until it reaches the line of the under side of the axle-box, where it extends across to the other end of the truck, as shown. By this form and arrangement of the trusses of the arch-bar a seat or support is constituted for the axle-box between the horizontal portions of the coincident trusses and a novel and strengthening as well as economical feature is given to the truck. Bolts e^3 secure the crowns of the trusses and the brace-bar together, as shown.

At d^3 are shown the longitudinal timbers, and at d^4 the transverse timbers, of the upper portion of the truck. Upon the inner side of the transverse timbers are provided plates or flanges d^5, adapted to reach down and play loosely inside the similar timbers of the lower portion of the truck; and springs S are interposed between the upper and lower frames, being seated, as shown, in recesses in the frames. By means of this division of the truck horizontally into two sections—an upper and a lower—I am enabled to provide a large surface, over which springs may be placed, the number being increased at pleasure, thus giving a truck possessing increased resiliency under the car. The upper portion of the truck is given a vertical play on the lower or wheeled portion, and is guided in such play and prevented from lateral displacement by the flange-plates d^5, working inside the transverse timbers of the lower portion.

As hereinbefore stated, I prefer to construct the completed truck with two or more, preferably two, of these described individual single-axle sections, as illustrated in the drawings. These sections D and D′ are united by a coupling, and the king-bolt E is given a seat in such coupling midway of the sections. The drafting-bars E′ are pivoted on the truck by said king-bolt and reach longitudinally of the united sections of the truck, with their ends having the usual bearings upon fifth-wheel or platform plates d^6, one on the upper portion of each section, and extending laterally of the section over the line of the axle thereof. The downward thrust of the drafting-bars, due to the weight of the car, is thus felt wholly upon and borne entirely by the truck-sections at a point or line directly over each axle. Above the drafting-bars and pivoted thereon by the king-bolt is the transom bar E^2, which supports the car-body in the usual manner.

The coupling for the truck-sections, which I have devised and preferably employ, consists in a coupler bar or block, F, the ends of which have play in recesses in the adjacent transverse timbers of the truck-sections, wherein they are pivoted by coupling-pins or bolts *f*, while auxiliary coupling-plates F′ and F^2 desirably connect the upper side of the upper section and the under side of the lower section on the adjacent transverse timbers thereof, said plates being pivoted to said timbers by pins or bolts *f′*, as shown. The king-bolt E is pivotally seated in the said coupling bars or plates by means of vertical apertures in the several plates coincident to each other and through which the king-bolt extends, as shown.

The bisected axle and its conical mandrel-bearings at the bisection may be employed in any railway-car truck; but I find it desirable, in order to secure the best results, to construct the sectional truck I have described and to incorporate the described bisected axle therein.

It is evident that by means of the car-truck I have described as a complete structure railway curves which are abrupt, short, or, in other words, of short radii, may be traversed with the development of a minimum of friction between the wheels and the rails, and consequently with an avoidance of unpleasant and destructive oscillation of the car-body carried by the truck, and therefore with a minimum of wear upon the operative parts. The wheels of the truck will each have an independent and individual movement over the track, and to each axle in its truck-section may be secured an independent movement with its said truck-section under the car-body.

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

1. In a railway-car truck, an axle having a wheel fixed on each end thereof and bisected midway its length, with a conical recess in each of the opposed inner ends of the thus constituted sections thereof, a mandrel having conical ends fitted into said recesses in

the axle-sections and giving bearings therefor, and a collar or disk loosely journaled on said mandrel between said opposed inner ends of said axle-sections, substantially as and for the purpose specified.

2. In a railway-car truck, an axle having a wheel fixed on each end thereof and bisected midway its length, with a conical recess in each of the opposed inner ends of the thus constituted sections thereof, a mandrel having conical ends fitted into said recesses in the axle-sections and giving bearings therefor, and a collar or disk loosely journaled on said mandrel between said opposed inner ends of said axle-sections, together with a frame carried by the truck-timbers and fitted loosely upon and giving bearing to said collar or disk, substantially as and for the purpose set forth.

3. A car-truck composed of a frame constituting a lower section thereof, in which the wheel axle or axles are journaled, a frame constituting an upper section thereof upon which the drafting-bars rest and have play, and springs seated between the opposed faces or timbers of said upper and lower section-frames, substantially as and for the purpose specified.

4. In a car-truck, the combination of a frame in which the wheel axle or axles are journaled and constituting a lower section of the truck, with a frame which is imposed upon the lower section and upon which the drafting-bars rest and have play, springs seated between the timbers of the said upper and lower truck-sections, and flanges on the upper section which reach into and have play in the lower section, substantially as and for the purpose specified.

5. In a car-truck, the combination, with the transverse timbers thereof, of arch-bars composed of a brace-bar extending longitudinally of the truck from the forward to the rearward timbers on the upper side thereof, a truss extending similarly between said timbers from the under side thereof and bent intermediate its ends to reach upwardly to said brace-bar, and a truss extending similarly of the truck and below and in contact with said first truss and bent to reach upwardly to a less height than said first truss, together with axle-boxes seated between the crowns of said trusses and bolts passing through and uniting said brace-bar, trusses, and boxes, substantially as and for the purpose specified.

6. A car-truck composed of separate and independent sections, in each of which is journaled a bisected axle having a wheel fixed on the outer end of each section of said axle, and a conical-ended mandrel-bearing for the correspondingly-recessed opposed inner ends of said axle-sections, together with a collar journaled loosely upon said mandrel between said opposed ends of said axle-sections, a coupling between and pivotally uniting said truck-sections, a king-bolt seated in said coupling, and drafting-bars pivoted on said king-bolt, with its ends reaching to and resting upon each truck-section, substantially as and for the purpose set forth.

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