

No. 627,899.

Patented June 27, 1899.

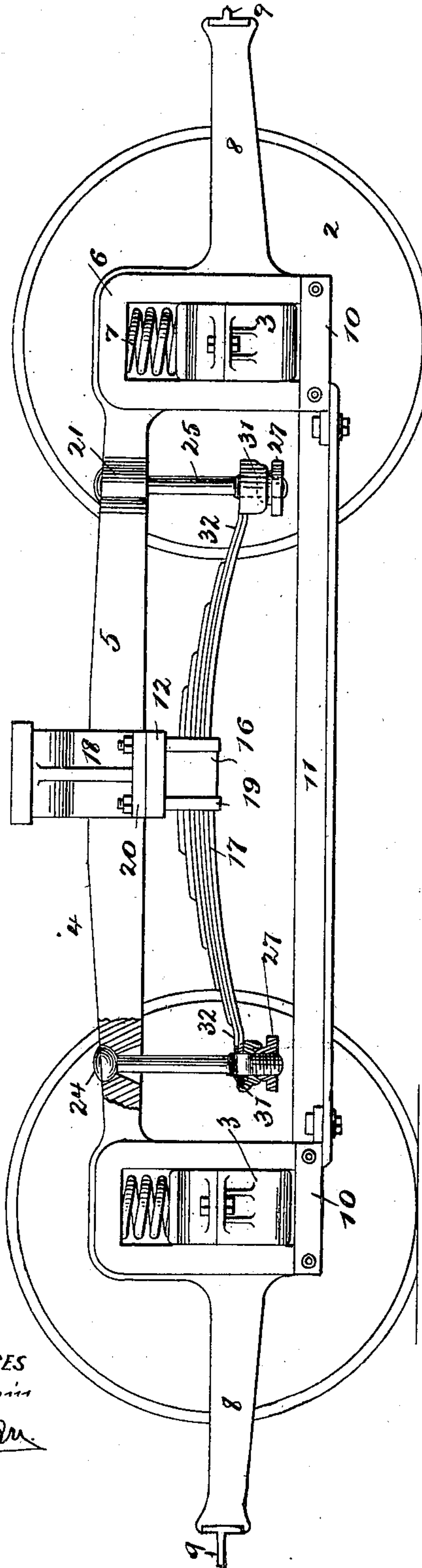
G. M. BRILL.  
CAR TRUCK.

(Application filed Nov. 9, 1897.)

(No Model.)

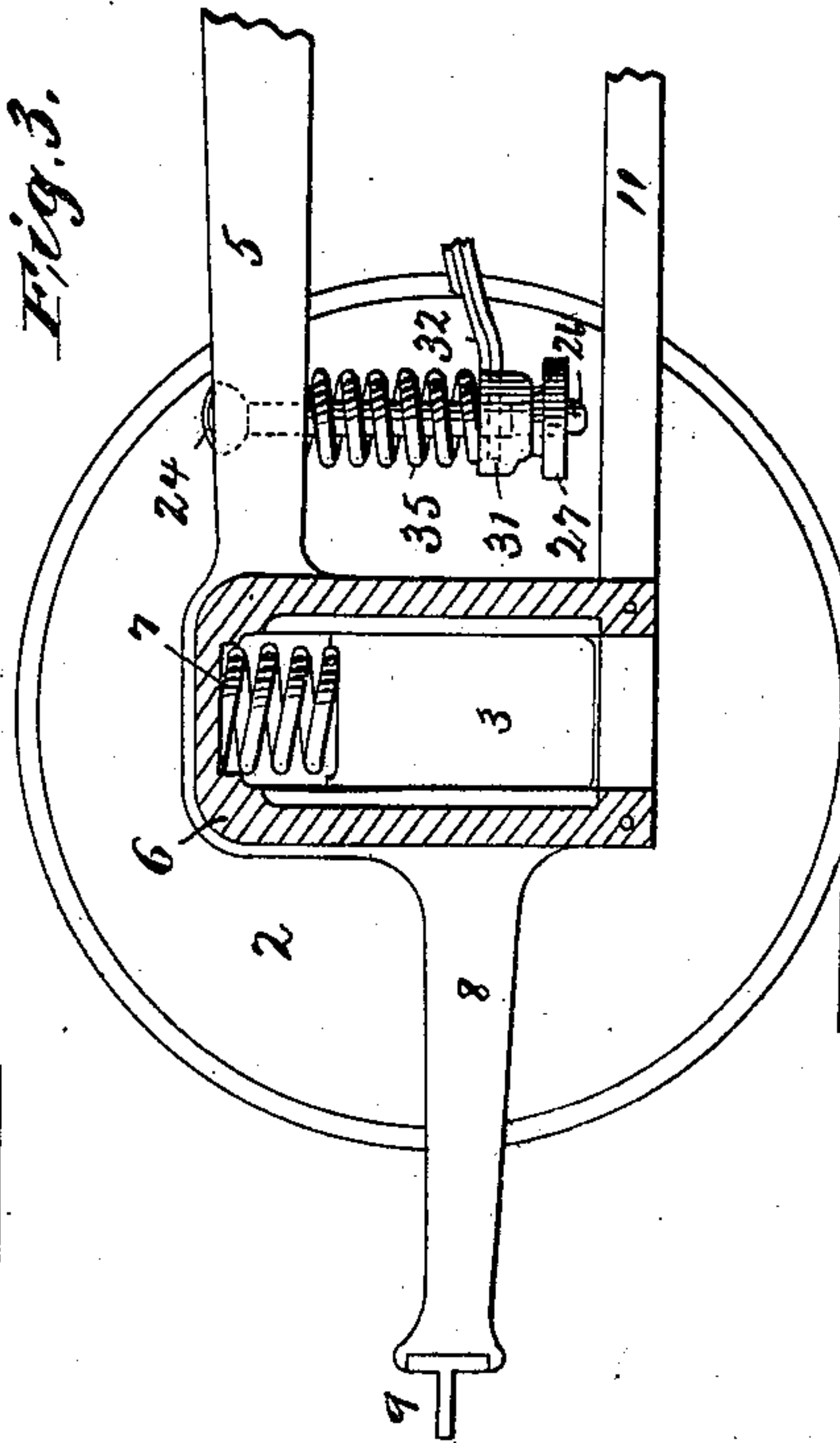
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Fig. 1.



WITNESSES  
C. M. Benjamin  
W. M. Jacobson

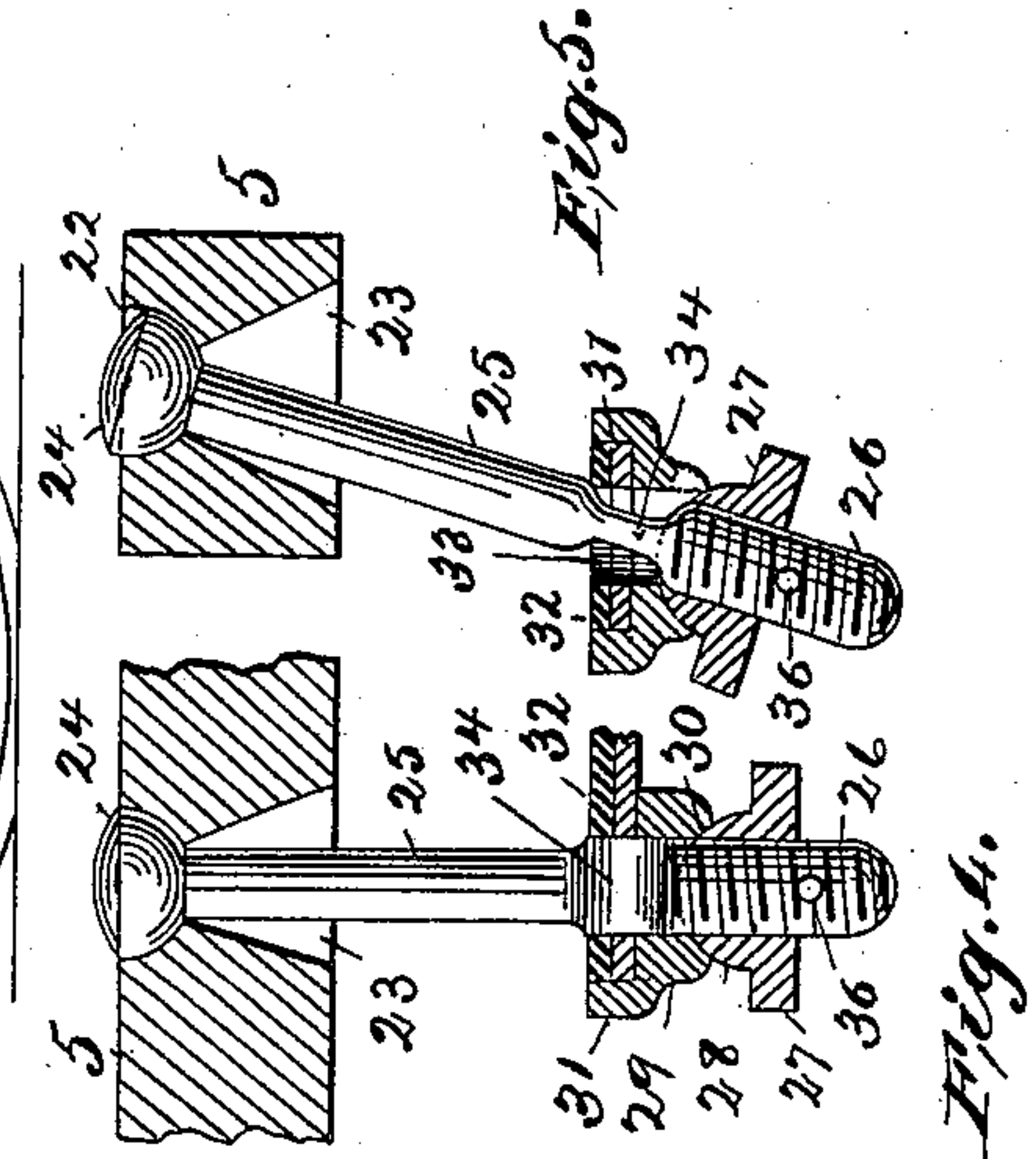
Fig. 3.



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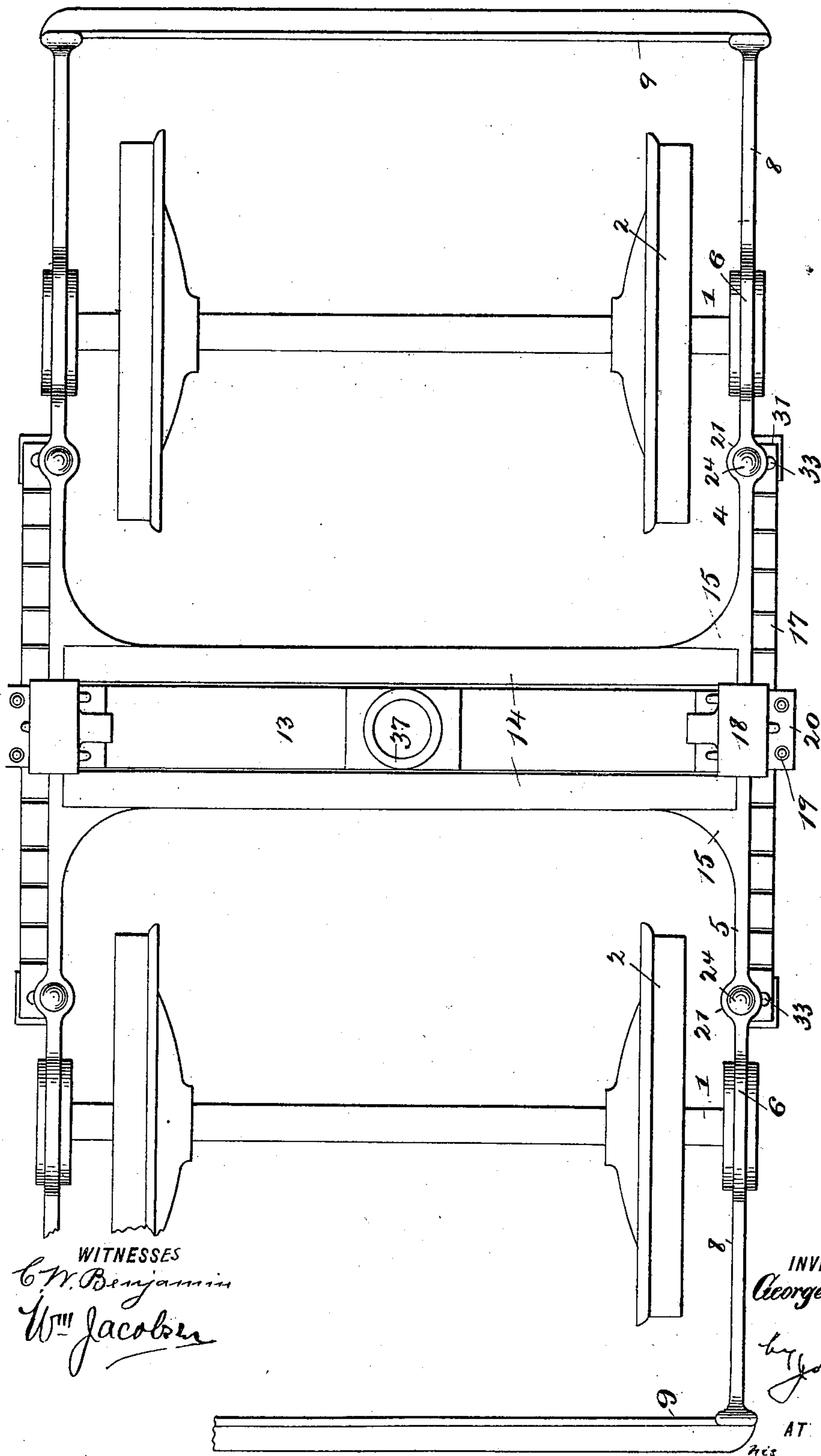
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**2 Sheets—Sheet 2.**



**WITNESSES**

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# UNITED STATES PATENT OFFICE.

GEORGE MARTIN BRILL, OF PHILADELPHIA, PENNSYLVANIA.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 627,899, dated June 27, 1899.

Original application filed July 3, 1897, Serial No. 643,339. Divided and this application filed November 9, 1897. Serial No. 657,969. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE MARTIN BRILL, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have made a certain new and useful Improvement in Car-Trucks, of which the following is a specification.

My invention relates to improvements in car-trucks generally, and especially in trucks employed in passenger service in connection with electric propulsion; and the subject-matter of this present application relates to that forming part of an application filed by me on the 3d day of July, 1897, Serial No. 643,339, of which this application is a division.

In the above-stated application, among other things, is recited means for suspending the truck-bolster, comprising two longitudinally-disposed semi-elliptic springs arched upwardly, the ends of the springs being hung from the side frames by links, which links carry springs cooperating with the links in supporting the semi-elliptic springs from the side frames.

My present improvements relate to the construction of the links for supporting the semi-elliptic springs from the truck-frame.

My invention therefore consists in the construction and combination of parts hereinafter described, and further pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of a car-truck embodying my improvements; Fig. 2, a plan view thereof; Fig. 3, a side elevation, enlarged, of one end of the truck, showing a modified form of link; Fig. 4, an enlarged longitudinal sectional elevation of a portion of the truck side frame and the suspending-link; and Fig. 5 an enlarged transverse sectional elevation through a portion of the side bar of the truck-frame and the link, showing the splayed position of the link while in use.

Similar numerals of reference indicate like parts throughout the several views.

The truck and its associated parts, with the exception of the links, as hereinafter described and claimed, form no part of my present invention, and therefore any suitable form of truck can be employed without de-

parting from the spirit thereof. The one here illustrated, to which my invention has been employed, comprises the axles 1, wheels 2, axle-boxes 3, and a truck-frame comprising side frames 4, made up of the side bars 5, inverted-U-shaped axle-box yokes or pedestals 6, between which and the axle-boxes 3 extend axle-box springs 7, the outer legs of the yokes being provided with extensions 8, tied transversely together by an angle-iron cross-bar 9, seated in a recess in the end of said extensions, the lugs or arms of the yokes being braced by a cross-bar 10 and by an intermediate pedestal tie-bar 11, secured to the inner yoke-arms.

The bolster consists of a cross-bar 12, extending transversely of the truck and lying under the side bars 5, and an inverted arched bar 13, lying between transoms 14, extending between brackets 15, formed on the inner side of the bars 5, the cross-bar 12 of the arch-bar resting on a central strap 16, secured to the semi-elliptic springs 17, which latter extend in the same plane as the side bars and lie below them, the end of the cross-bar carrying an upwardly-extending bifurcated yoke 18, forming a support for the side bearings of the truck, the yoke 18, cross-bar 12, and spring 17 being secured together by straps 19 passing around the band 16 and through the ends of the bar 12 and flanges 20 at the bottom of the yokes 18.

The foregoing describes a truck illustrated in connection with my invention recited in the foregoing application, to which cross-reference is hereby made for more specific details.

The object of my present invention is to provide efficient means for supporting the semi-elliptic springs, which in their turn support the bolster from the side bars of the truck-frame, the bolster tying the springs on each side of the truck together, so that they can move transversely and longitudinally in unison one with the other the superposed yoke 18 embracing the side bar 5 to limit the swing of the bolster and to form, with the side bar, guides for the up-and-down movement of the bolster.

The means for supporting the semi-elliptic springs from the side frames of the truck,



which is the subject-matter of my present invention, will now be described.

It is one of the objects of the invention, recited in the before-mentioned application, to extend the spring-base or resilient support for the bolster as close to the axle-box pedestals as convenient in order to provide a more thorough support for the car on the truck than is had where the spring-support is centered about the bolster in the usual form of truck.

I form links or hangers for the semi-elliptic springs 17 as follows: Adjacent the yokes or pedestals 6 a perpendicularly-disposed aperture is formed in enlargements 21 in the side bars 5, the apertures comprising a circular depression or socket 22 and a conical opening 23 therefrom, leading from the bottom of the side bar. The depression 22 forms, with the devices hereinafter described, one element of the ball-and-socket joint, the other element consisting of the semispherical head 24, seated in the recess or socket 22 in the side bar 5 and extending into the aperture in the side bar, thus forming a ball-and-socket-joint connection with the side bar for a depending bolt 25, on which the head 24 is formed. The bolt depends from the side bar and is exteriorly screw-threaded at 26 and provided with a nut 27, which latter is threaded to move upon the threaded end of the bolt, the nut being provided with a semispherical boss 28, having an aperture for allowing the bolt to pass through it, above which is a casting 29, having a semispherical seat 30, forming a socket for the boss 28, which casting 29 is provided with a seat 31 for the ends 32 of the leaves of the semi-elliptic springs 17, which leaves are likewise provided with apertures 33, through which the bolt passes. At the point where the bolt 25 passes through the leaves 32 of the spring 17 and the casting 29 it is contracted, as at 34, longitudinally to allow of its assuming an angular position, as shown in Fig. 5, carrying with it the nut and its superposed ball and allowing the spring and its supporting-casting to remain horizontal. The hangers or links are thus splayed outwardly in order to give a firm support for the bolster and to enable it to maintain its central position on the truck and to prevent it from moving over the center. This form of link suspension embodies a ball-and-socket connection both between the ends of the semi-elliptic springs and the suspending-bolts and between the suspending-bolts and the truck-frame, allowing the bolster and semi-elliptic springs to swing transversely of the truck in unison, at the same time allowing slight longitudinal movement of the bolster and springs and links, the latter being limited only by the transoms, as shown in Fig. 2.

In the modified form shown in Fig. 3 a spiral spring 35 encircles the bolt 25 and extends between the ends 32 of the semi-elliptic springs and the under side of the side bar 5. The addition of this spring serves as a means for equalizing the stress between the ends of the

semi-elliptic springs and the side bars during the application of the brakes to the truck-wheels and absorbs and equalizes the movements of the truck while canting or oscillating.

Having described my invention, I claim—

1. The combination in a car-truck, of the side frames having openings formed there-through at or near the axle-boxes, the transversely-swinging links extending through said openings and pivotally supported on the upper portions of the side frames, semi-elliptic springs connecting the links on each of said frames, and a bolster supported on said springs so as to swing in unison with said links, substantially as described.

2. The combination with the side bar, the bolster, and a leaf-spring supporting the bolster, of a bolt for supporting the spring, said bolt having a direct ball-and-socket connection with both the side bar and spring, substantially as described.

3. The combination with the side bar, of the headed bolt depending therefrom, a seat on the bolt, a ball on the seat, a socket on the ball, and a leaf-spring on the socket, substantially as described.

4. The combination with the side bar, of the headed bolt depending therefrom, a seat on the bolt, a ball on the seat, an apertured socket on the ball through which the bolt passes, the seat in the socket, and a leaf-spring in said latter seat having an aperture through which the bolt passes, substantially as described.

5. The combination with the side bar, of the headed bolt depending therefrom, an exterior thread on the lower part of the bolt, a nut having a spherical enlargement engaging the thread, a socket on the bolt resting on the enlargement, a seat in the socket, and a spring resting on the seat, substantially as described.

6. In a car-truck, the combination with the side frames, having perpendicular openings formed therein, of the cross-bolster, the leaf-spring supporting the bolster, and the inflexible links extending through said openings and pendent from the side frames at a point above the bottom of said opening, the leaf-springs having an articulated support on said links, substantially as described.

7. In a car-truck, the combination with the side frames, of the cross-bolster, the semi-elliptic springs supporting the bolster below the side frames, the headed bolts pendent from the side frames, and a laterally-movable connection interposed between the ends of the spring and said bolts, substantially as described.

8. In a car-truck, the combination with the side frames, of the cross-bolster, the semi-elliptic springs on which the bolster rests, means for suspending the bolster and said springs from the side frames, comprising bolts depending from said frames, an enlargement on the ends of the bolts, and a connection



forming a seat for the ends of said springs, said connection movably engaging said enlargement, substantially as described.

5 9. In a car-truck, the combination with the side frames, of links suspended by engagement with an integral portion of said frames and adapted to swing both longitudinally and transversely from a point within said frames, semi-elliptic springs movably secured to the  
10 ends of said links, and a bolster resting on said springs below the side bars, substantially as described.

15 10. In a car-truck, the combination with the side frames each comprising two pedestals, an upper longitudinal beam and a lower longitudinal beam, of a car-body-supporting bolster, half-elliptic springs upon which the ends of said bolster rest, and link appliances having a universal connection alike to the  
20 ends of said springs and to the upper beam, the suspension of the links being had from between the sides of the upper beam, substantially as described.

25 11. In a car-truck, the combination with the side frames, of a car-body-supporting bolster,

half-elliptic springs upon which the ends of said bolster rest, and links suspended from a point within the side frames and supporting the ends of said half-elliptic springs, said suspension and support being had by universal connections, substantially as described. 30

12. In a car-truck, the combination with the side frames having upper chords, of a car-body-supporting bolster, half-elliptic springs longitudinally disposed in relation to the side  
35 frames and supporting the bolster, and non-extensible pendent links flexibly supported on the side frames and adapted to swing from a point above the bottom of the upper chord, the lower ends of said links being movably se- 40  
cured to the ends of said half-elliptic springs, substantially as described.

Signed in the city and county of Philadelphia, State of Pennsylvania, this 21st day of October, 1897.

GEORGE MARTIN BRILL.

Witnesses:

HENRY C. ESLING,  
EDW. P. RAWLE.