

(No Model.)

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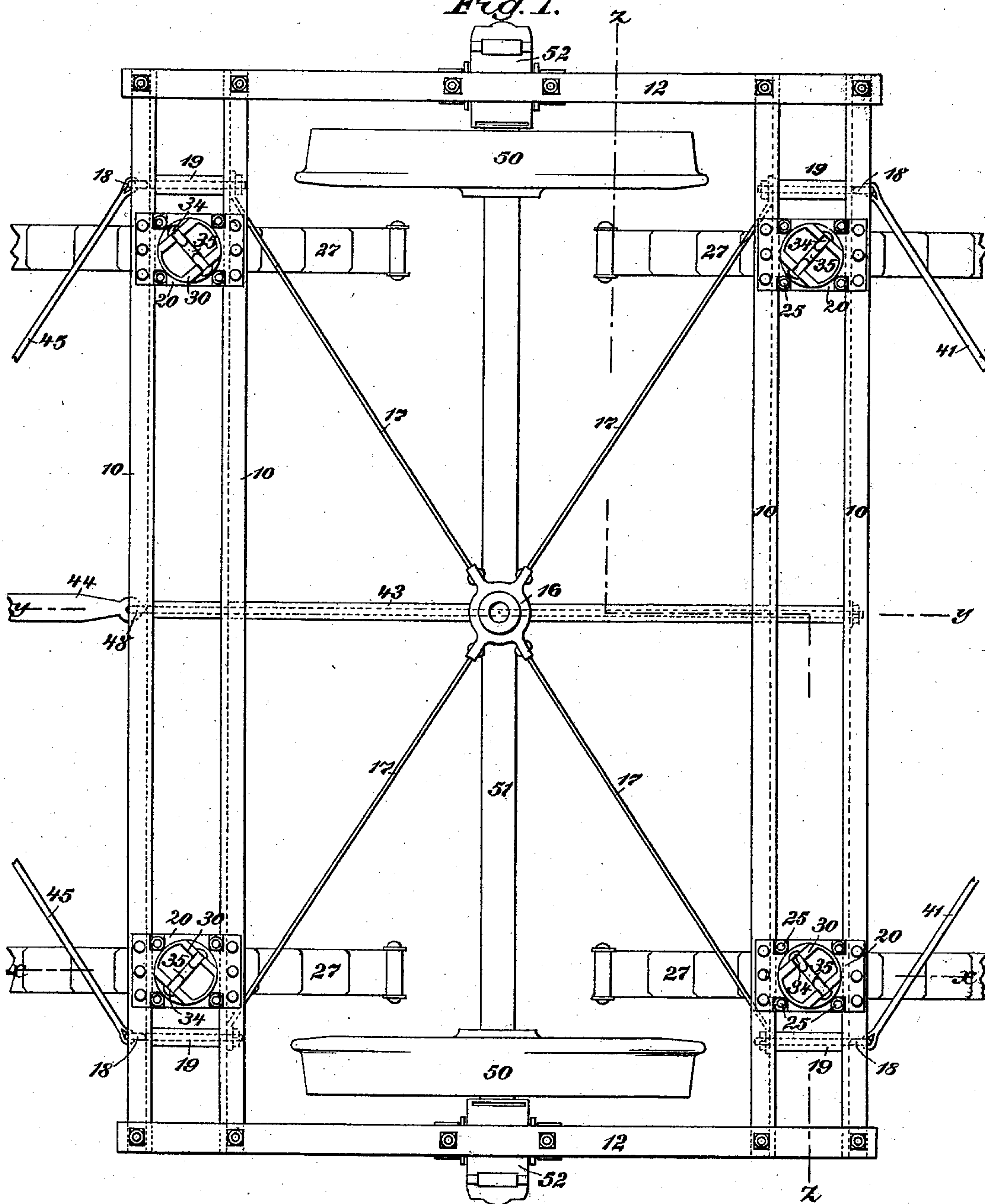
F. E. CANDA.

CAR TRUCK.

No. 369,098.

Patented Aug. 30, 1887.

Fig. 1.



WITNESSES:

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*& Sedgwick*

INVENTOR:

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BY

*Munn & Co*

ATTORNEYS.

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5 Sheets—Sheet 2.

F. E. CANDA.

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Fig. 2.

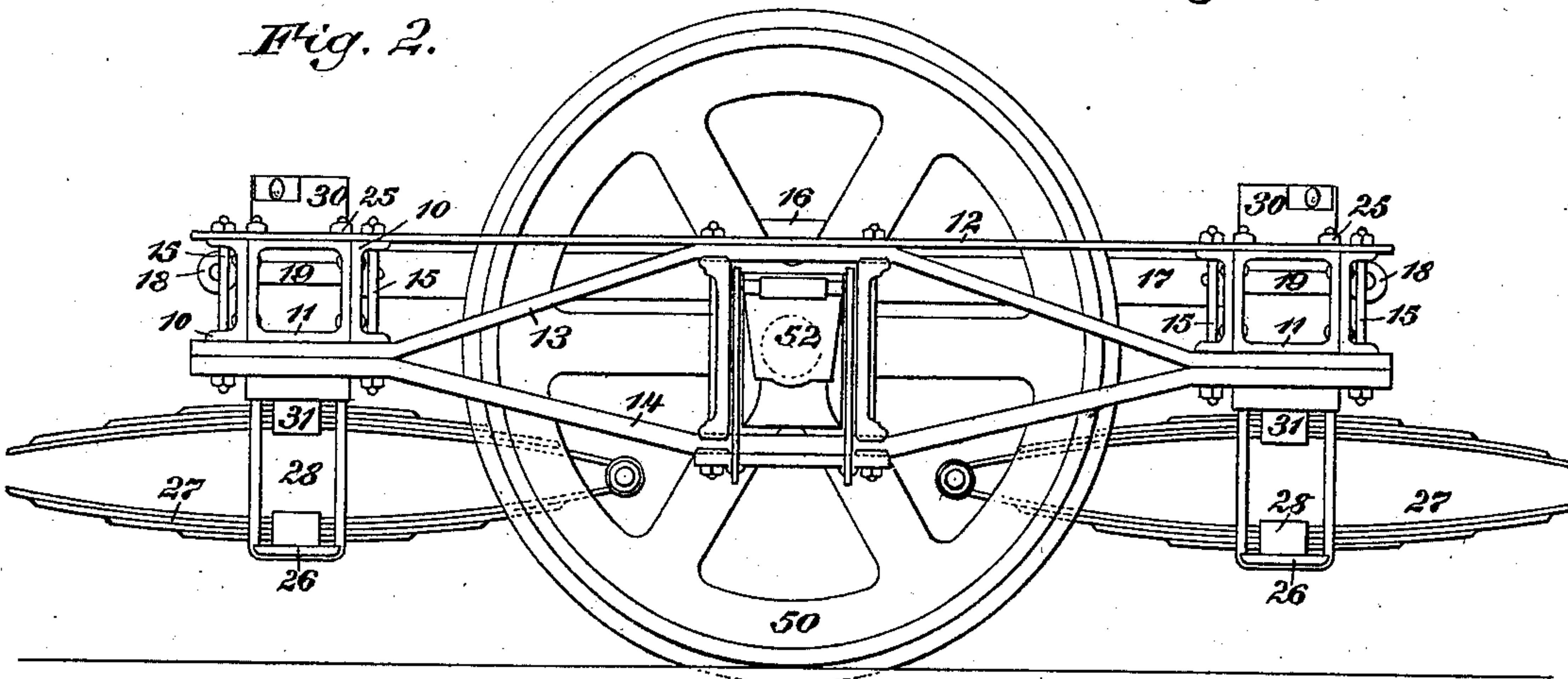


Fig. 3.

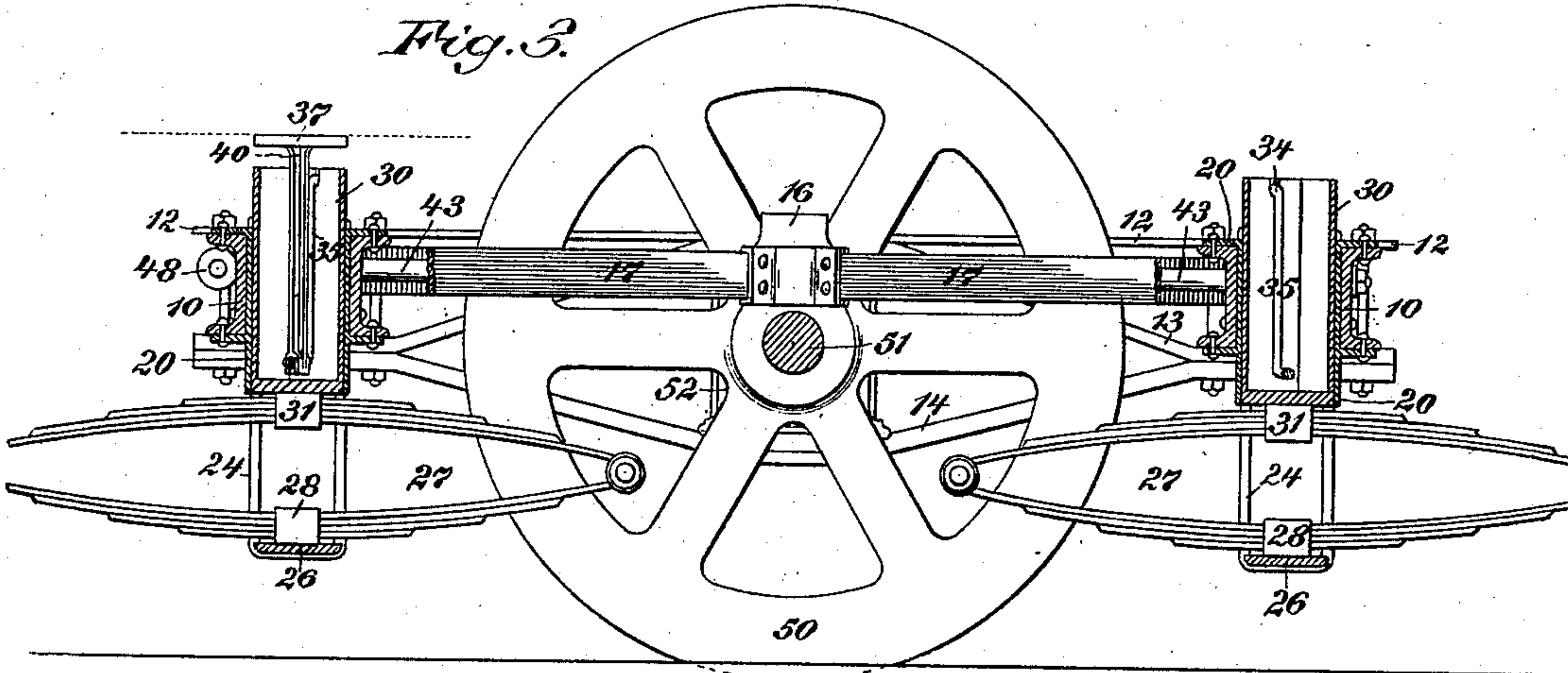
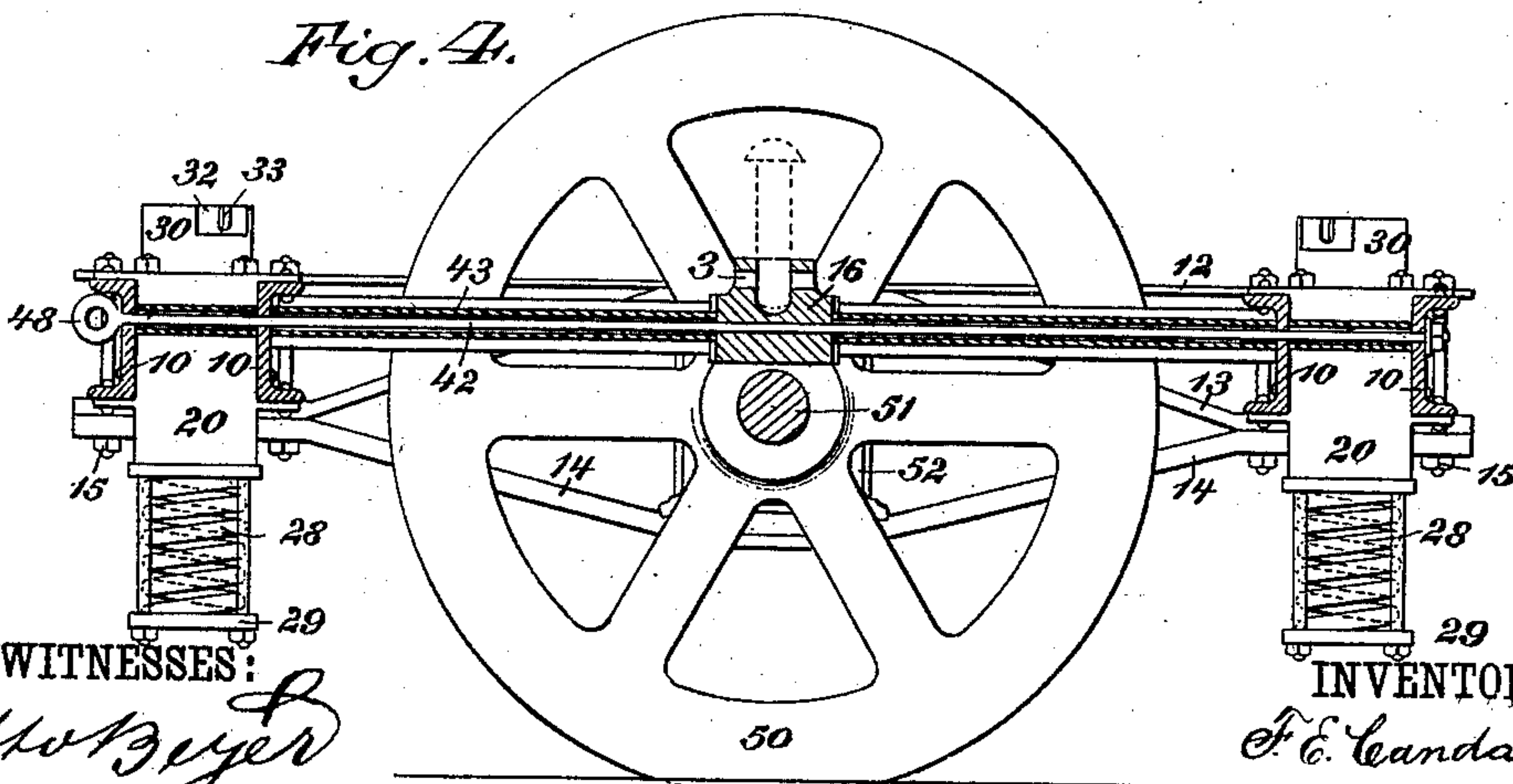


Fig. 4.



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*M. Beyer*  
*C. H. Givoch*

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(No Model.)

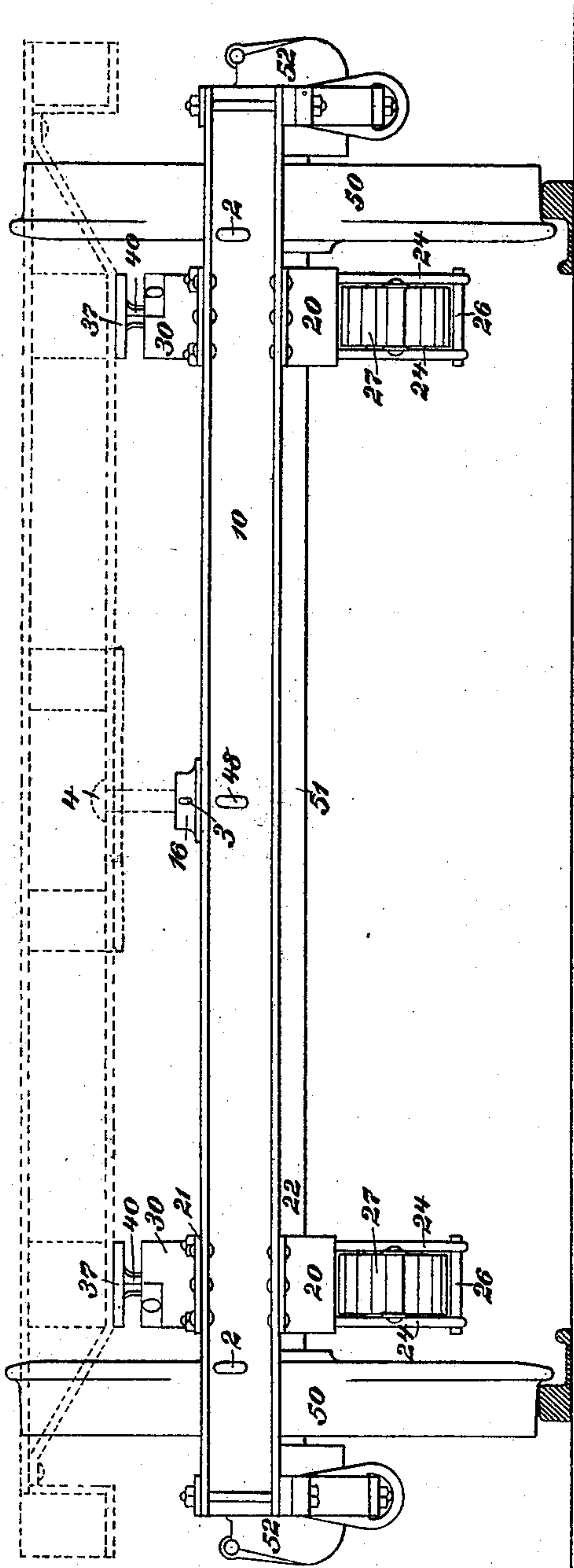
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F. E. CANDA.

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WITNESSES:  
*W. H. Meyer*  
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Fig. 5.

Fig. 5<sup>a</sup>

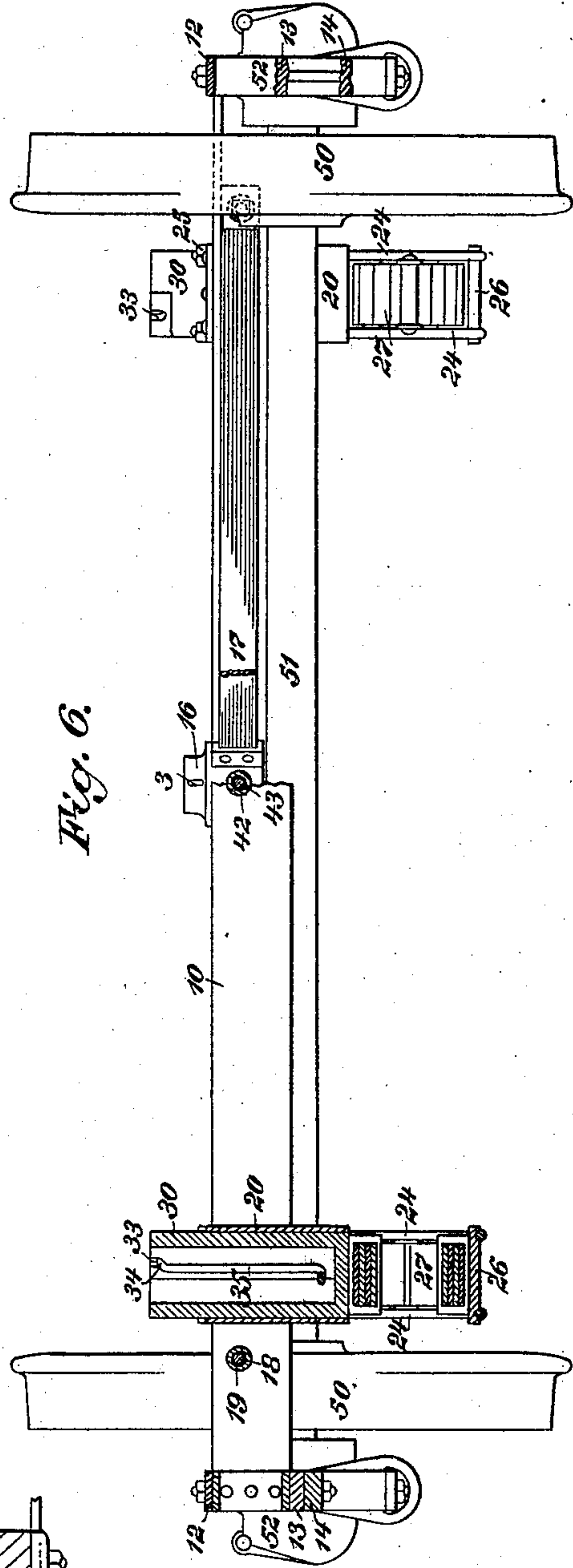
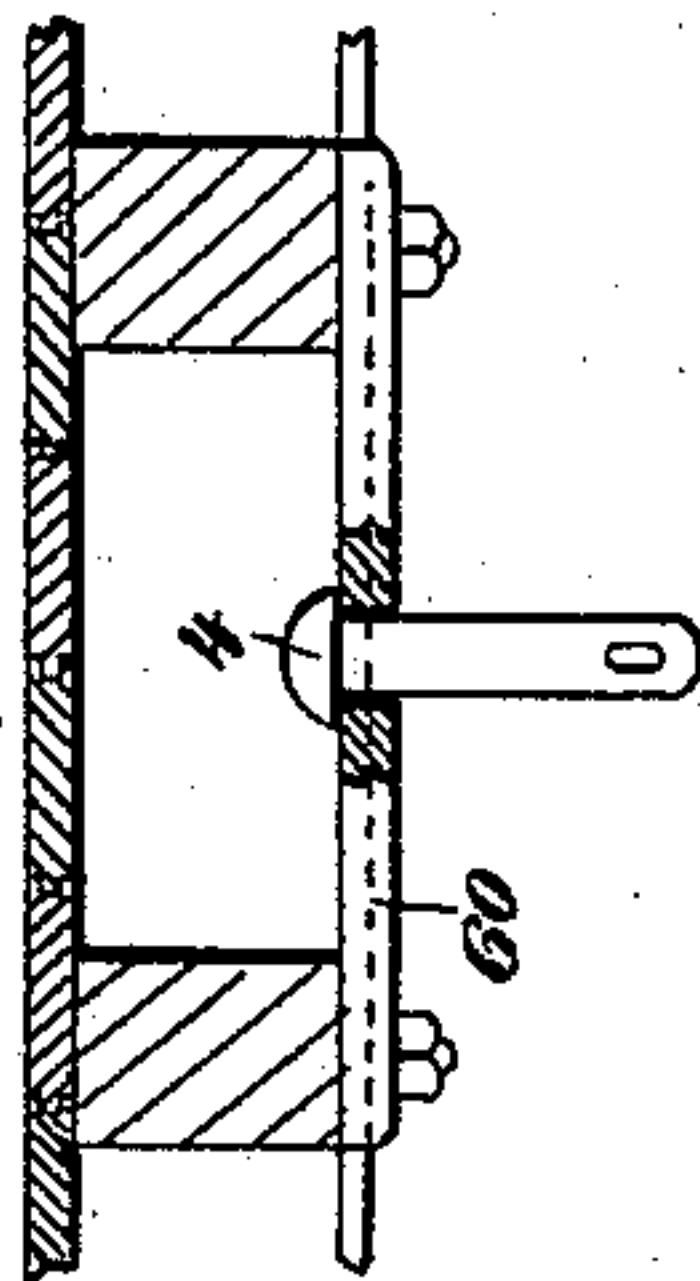


Fig. 6.

INVENTOR:

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F. E. CANDA.  
CAR TRUCK.

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Fig. 7.

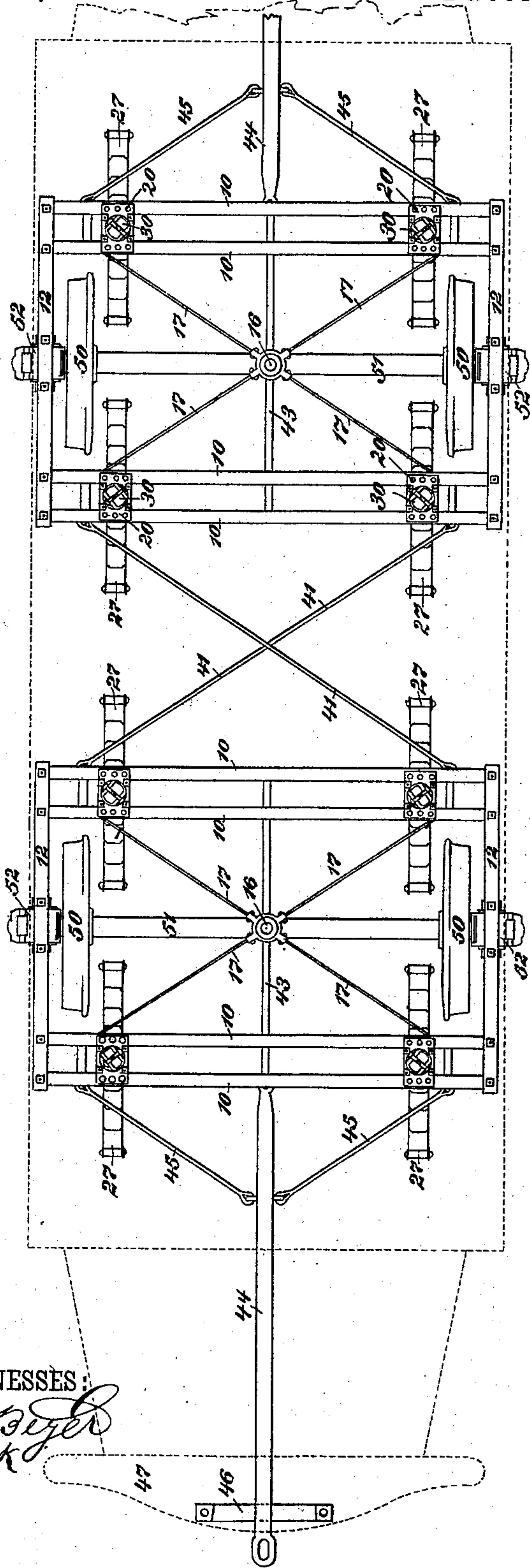


Fig. 10.

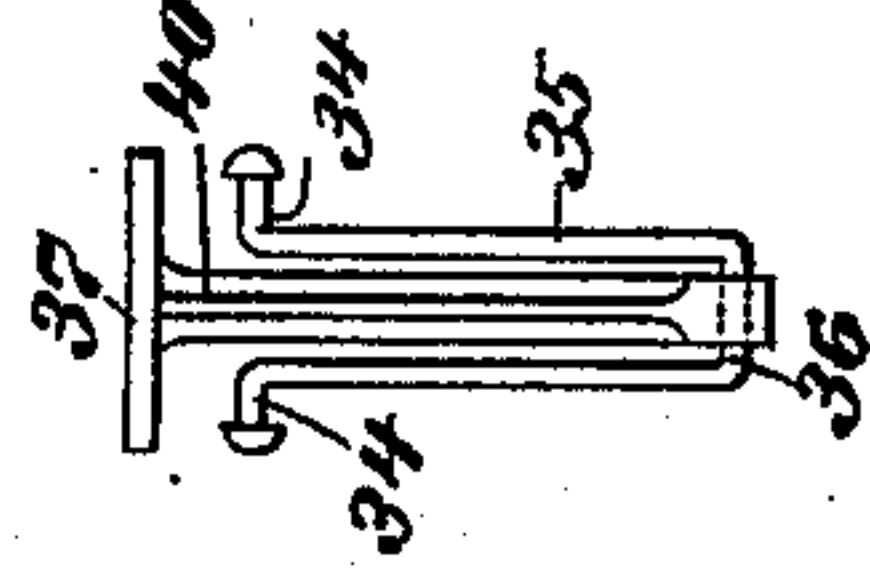


Fig. 9.

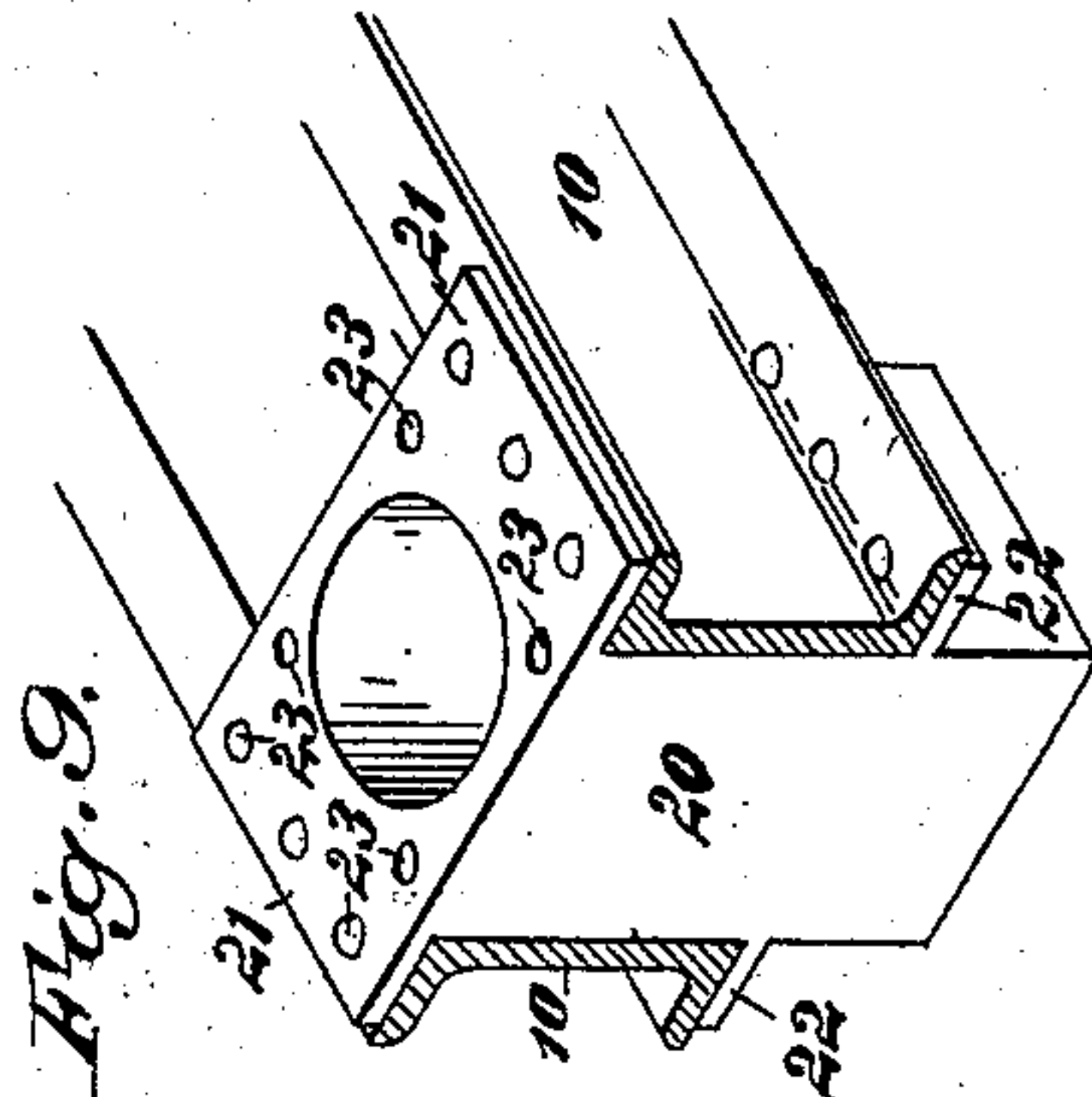
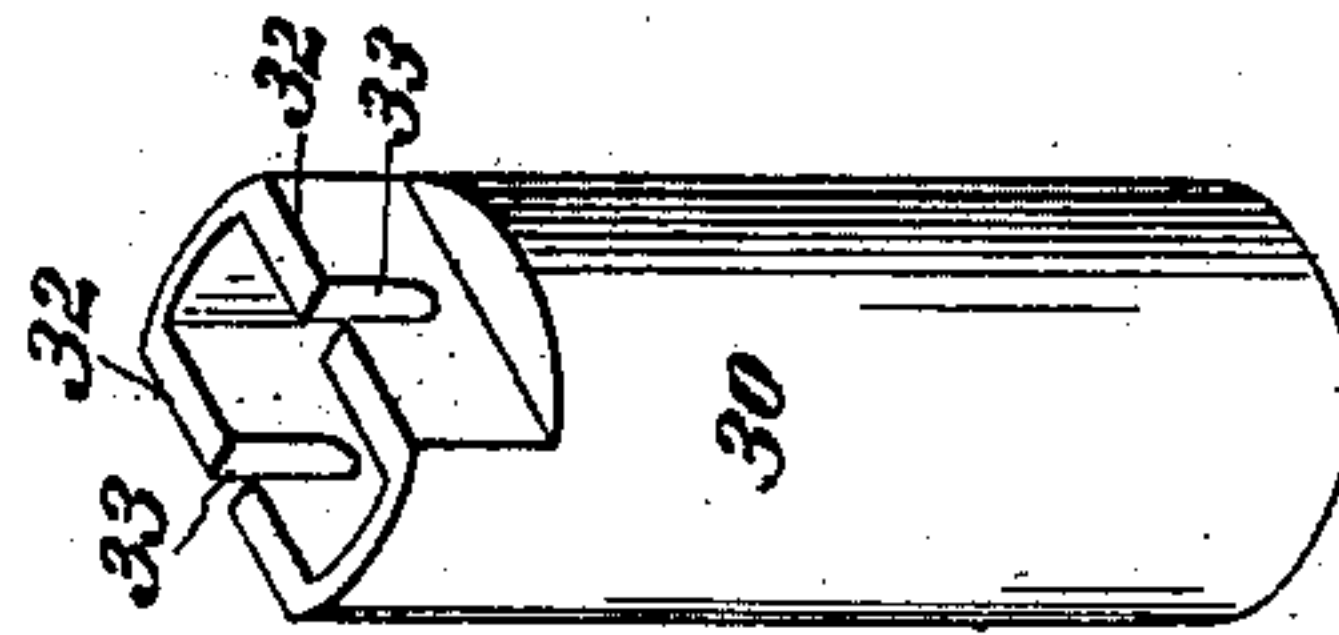


Fig. 8.



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(No Model.)

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CAR TRUCK.

No. 369,098.

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Fig. 12.

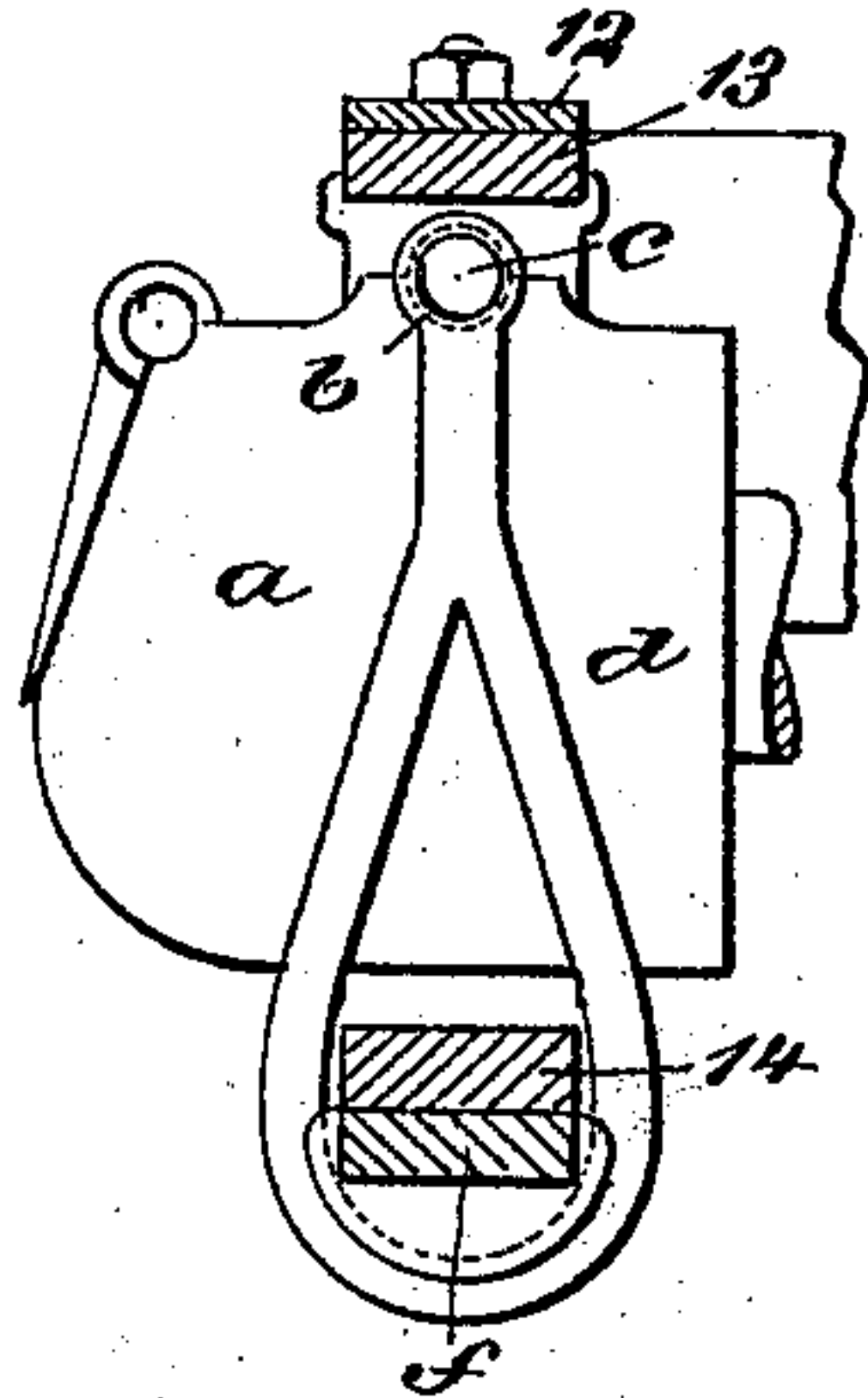


Fig. 11.

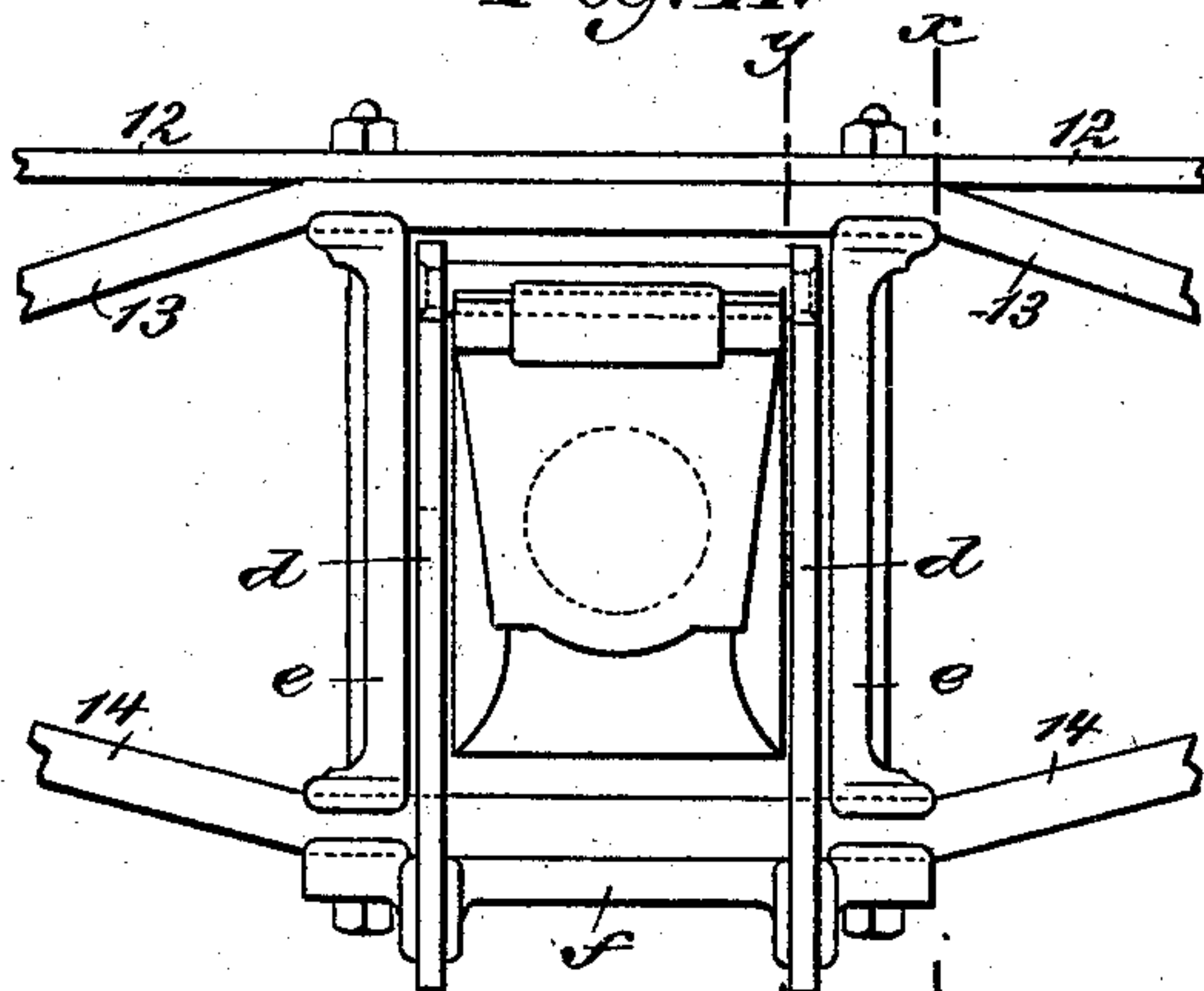
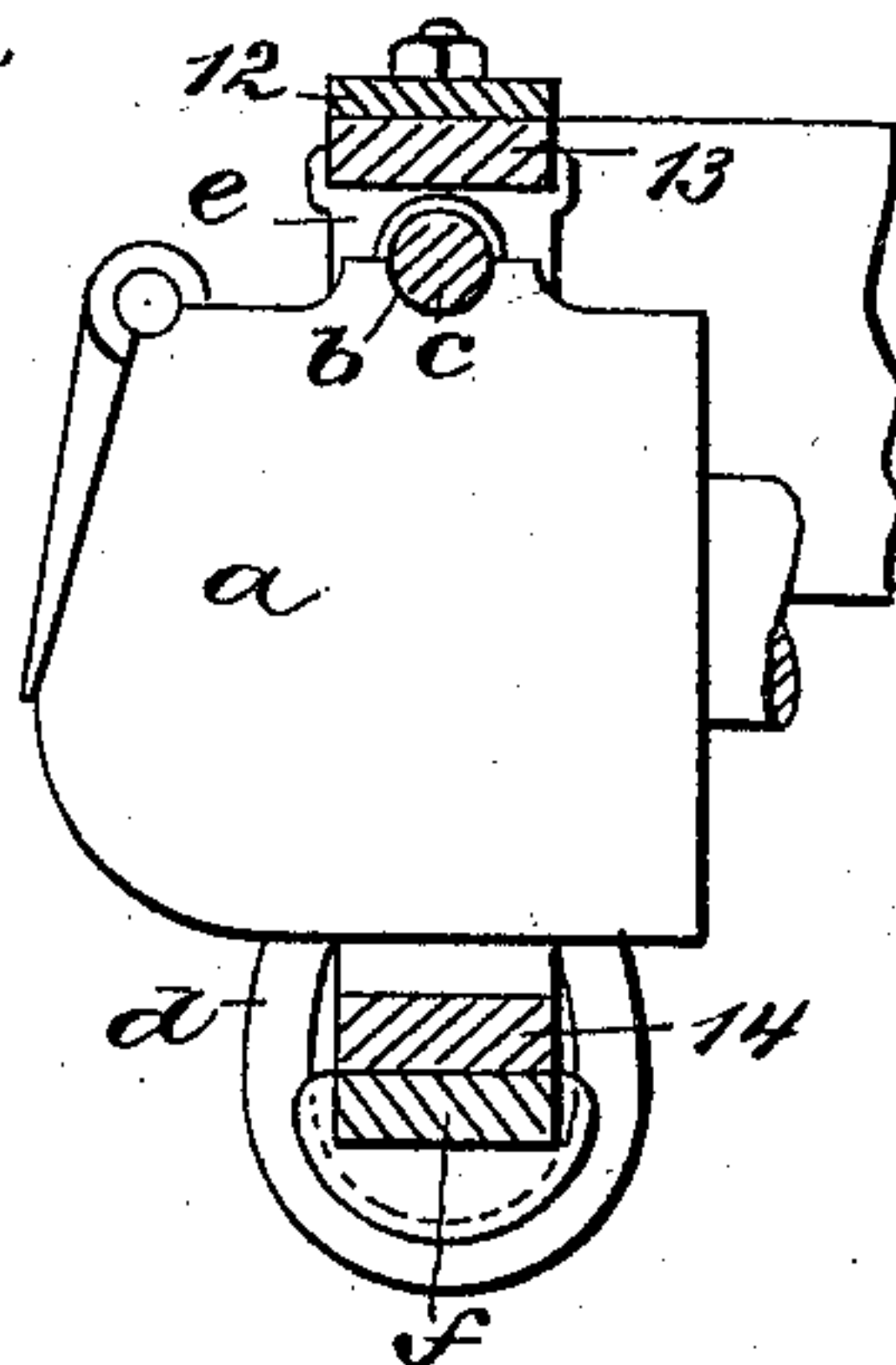


Fig. 13.



WITNESSES:

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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

FERDINAND E. CANDA, OF NEW YORK, N. Y.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 369,098, dated August 30, 1887.

Application filed December 10, 1886. Serial No. 221,187. (No model.)

*To all whom it may concern:*

Be it known that I, FERDINAND EUGENE CANDA, of the city, county, and State of New York, have invented a new and Improved  
5 System of and Apparatus for Mounting Car-Bodies, of which the following is a full, clear, and exact description.

This invention relates to the mounting of car-bodies, and is more especially applicable  
10 for use in the mounting of street-car bodies, the invention consisting, essentially, of an arrangement whereby the car-body is mounted upon and supported by posts that are free to tilt upon their connections with the car-trucks,  
15 as will be hereinafter more fully described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate  
20 corresponding parts in all the views.

Figure 1 is a plan view of the truck preferably employed in carrying out my improved system of mounting car-bodies. Fig. 2 is a side view of the truck. Fig. 3 is a sectional  
25 view taken on line *xx* of Fig. 1. Fig. 4 is a central longitudinal sectional view of the truck, representing the same as being provided with coil instead of with elliptic springs, as in the case of the other figures, the view being taken upon a line corresponding with that  
30 of the line *yy* of Fig. 1. Fig. 5 is an end view of the truck, the position of the sills, center floor-timbers, and one of the body-bolsters of the car-body being indicated by dotted lines.  
35 Fig. 5<sup>A</sup> is a detail view illustrating the arrangement of one of the king-pins. Fig. 6 is a sectional view taken on the broken line *zz* of Fig. 1. Fig. 7 is a plan view of two of the trucks, representing them as properly con-  
40 nected and arranged to support the car-body, the position of which car-body is indicated by dotted lines. Fig. 8 is a perspective view of one of the bolsters. Fig. 9 is a perspective view of one of the castings within which the  
45 bolsters are arranged, the casting being shown in connection with its supporting angle-irons. Fig. 10 is a view of one of the stirrups and its car-supporting post or standard, the parts being represented as they appear when removed  
50 from the stirrup-supporting bolster. Fig. 11 is a face or end view of one of the axle-boxes and its connections. Fig. 12 is a sectional

view of the construction illustrated in Fig. 11, the view being taken on line *xx* of said figure; and Fig. 13 is a sectional view taken on line  
55 *yy* of Fig. 11.

In carrying my invention into practice I prefer to employ such car-trucks as those illustrated in the drawings above referred to, said trucks consisting, essentially, of angle-iron 10,  
60 between the ends of which there are inserted rectangular castings 11, the angle-irons and castings being bolted together, as probably best shown in Fig. 2. Two sets of these angle-irons 10 are employed, and the two sets are  
65 united by plates 12 and by arch-bars 13 and inverted arch-bars 14, the arch-bars and inverted arch-bars being bolted to place beneath the ends of the angle-irons by bolts 15, which bolts also pass through the plates 12.  
70

A center block, 16, is supported at the center of the frame, formed as above described, by diagonally-arranged bracing-rods 17, said bracing-rods being secured to the center block and being bolted to the angle-irons just inside  
75 of the plates 12, the bolts 18 employed to so connect the bracing-rods being eyebolts, of which the eyes 2 are upon the outside of the frame, the main portion or shank of the bolts passing through tubes 19, that are arranged be-  
80 tween each pair of angle-irons. The block 16 is centrally apertured, in order that it may receive the king-pin, by means of which connection between the trucks and the car-bodies is established, the lower end of said king-pin be-  
85 ing keyed within said block.

Between each pair of angle-irons 10 I arrange a centrally apertured casting, 20, which castings are formed with flanges 21 and 22,  
90 between which the angle-irons fit, the castings being firmly bolted or riveted to place, as best shown in Fig. 9. Each of the castings 20 is formed with four vertical bolt apertures or bores, 23, through which there are passed the shanks of spring suspending-stirrups 24, the  
95 upper ends of said stirrups being engaged by nuts 25, as clearly shown in the drawings.

The stirrups 24 carry a spring-bed, 26, the springs 27 being held to said beds in the usual manner by spring-bands in case such springs  
100 as are illustrated in Figs. 1, 2, 3, 5, and 6 are employed—that is, when elliptical springs are used; but in certain cases it might be deemed advisable to employ coil-springs—such as those



shown at 28 in Fig. 4—in which case the spring-bed 29 would be supported by four downwardly-extending bolts.

To the upper section of each spring there is 5 connected a bolster, 30, the bolster being held to the spring by an upper spring-band, 31, and extending upward through the central bore or aperture of the casting 20. The main portion of each of the bolsters is cylindrical, while the 10 bore of each bolster is preferably oblong, the upper end of each bolster consisting of parallel walls or flanges 32, that are recessed, as shown at 33, to receive the overturned ends 34 of post-supporting stirrups 35, said stirrups 15 being arranged to extend downward within the bores of the bolster.

Upon the lower horizontal section, 36, of each of the stirrups 35 there is stepped a post or standard, 40, the lower ends of said posts being 20 recessed to fit over the said horizontal sections 36. The upper ends of the posts 40 carry plates 37. In setting up the bolsters 30 they are so adjusted that their recesses 33 will be in lines parallel with the radii of a circle of 25 which the block 16 is the center.

Two trucks of the construction above described are employed in connection with each car, the two trucks being united by diagonal 30 connecting-rods 41, which are connected to the eyes 2 of the bolts 18, the rods being arranged to extend diagonally across the space between the trucks, as clearly shown in Fig. 7.

In order that the draw-bars of the car may be firmly connected to the trucks, I pass a 35 long-shanked bolt, 42, through the two pairs of angle-irons 10 of each of the trucks, the bolt 42 passing through an aperture that is formed in the block 16, the bolt being inclosed within tubes 43, arranged as clearly shown.

Upon that end of the bolt which is most remote from the center of the car I form an eye, 48, to which the draw-bar 44 is secured, said 40 draw-bar being held against any relative lateral motion by means of diagonal braces 45, which extend from the bar to the eyes 2 of the 45 bolts 18, the extreme forward end of the draw-bar being supported by a strap, 46, that is secured to the upper side of the platform end timber, 47.

Each of the trucks carries a single pair of 50 wheels, 50, the axle 51 of said wheels being mounted in bearings 52, which may be of any of the well-known constructions; but in order that the wear and tear upon the rolling-stock 55 may be reduced, and the vibrations and shocks due to irregularities in the rails or gage of the track materially lessened, and the traction power required to draw cars when passing curves decreased, I prefer to mount the axles 60 as illustrated in the drawings, and particularly in Figs. 11 and 12.

In the figures referred to the journal-box *a* is provided with a recess, *b*, in which rests a rod, *c*, connected to and forming the upper 65 bearing of truck-suspending links *d*, which hang down between the sides of the journal-

boxes and the pedestal-castings *e*, the inverted tie-bar 14 passing through the lower open ends of the links just above a saddle, *f*, that is arranged between the links and the said tie-bar. 70 The lower face of this saddle *f* is curved to correspond with the lower curve of the opening in the links *d*, so that the links are free to lock upon the saddle and carry the axle and wheels in transverse direction to the track, it 75 being understood that the weight of the truck and the car supported thereby is held by these suspending-links *d*.

In applying the car-body to such a running-gear as has just been described the said car-body is adjusted so that its king-pins, which 80 are carried by plates 60, that are secured to the center floor-timbers, will enter the central recesses of the center blocks, 16, the lower end of the king-pins being keyed within the blocks 85 by means of keys that are passed through apertures 3, formed in the blocks for their reception, the upper ends of the king-pins being formed with enlarged heads 4, as shown in Fig. 5<sup>A</sup> and indicated in Fig. 5. 90

When the parts have been adjusted as described, the weight of the car-body will be supported by the standards or posts 40, of which the plates 37 are secured to the body-bolsters, which bolsters are held to place 95 against the lower faces of the floor-timbers of the car, as indicated in Fig. 5.

By mounting the car-bodies as above described I provide for the easy passage of the cars about curves, for as the forward truck 100 strikes a curve it will turn upon its king-pin as a center, being drawn in the proper direction by the team, and in so turning will, through the medium of the rods 41, draw the rear truck to a position so that the axles of 105 the two trucks will be in lines that are substantially parallel with the radii of the curve; but at this time, as at all other times, the standards or posts 40 will act to hold the car in substantially a horizontal position, and will 110 prevent any excessive tilting or rocking of the car, the posts themselves tilting upon their connections with the bolsters when the car passes about a curve.

Another great advantage arising from my 115 novel system of mounting cars is that the two pairs of wheels may be set farther apart—that is, nearer the ends of the car—so that the longitudinal rocking of the car will be greatly reduced, and as by my system I am enabled to 120 use elliptic springs, I obtain a very easy-riding car, and by mounting the axles as above described I provide for a free transverse movement of the wheels and axle, which, together with the tilting of the posts or standards upon 125 which the car-body rests, as above set forth, prevents all undue shock or jar and facilitates the passing of curves, as will be readily appreciated by those skilled in the art.

Although I have illustrated and described 130 a specific form of bolster and guiding-casting therefor, it will of course be understood that



any other proper form of bolster and casting could be employed without departing from the spirit of my invention.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. That improvement in the art of supporting car-bodies which consists in mounting the car-body upon tilting posts or standards that are supported by trucks, substantially as described.

2. That improvement in the art of supporting car-bodies which consists in mounting the car-body upon posts or standards, the lower ends of which rest upon stirrups that are suspended within spring-supported bolsters, substantially as described.

3. That improvement in the art of supporting car-bodies which consists in connecting the car-body to the trucks by king pins or bolts and in supporting the said car upon tilting posts that are carried by trucks, substantially as described.

4. That improvement in the art of supporting car-bodies which consists in mounting the car-body on tilting posts that are arranged about the center blocks of each truck, which said center blocks carry king pins or bolts that pass upward and through apertured bars or plates, that are carried by the car-body, the two trucks being united by cross-tie rods, substantially as described.

5. The herein-described system of mounting four-wheeled cars, which consists in journaling the axle of each pair of wheels in a separate truck, the said truck being held to the car by king-bolts and the car being supported by tilting posts or standards, substantially as described.

6. The combination, with a truck, of tilting supporting posts, substantially as described.

7. The combination, with a truck-frame suspended by links that are supported by the axle-boxes, of tilting supporting posts, substantially as described.

8. The combination, with a truck-frame, of suspending links supported by the axle-box, springs suspended beneath the frame, bolsters supported by the springs, stirrups suspended in the bolsters, and posts or standards supported by the stirrups, substantially as described.

9. The combination, with a truck-frame, of wheels and an axle, axle-boxes, links carried by the boxes and supporting the truck-frame, springs suspended beneath the frame, bolsters supported by the springs and arranged within castings that are carried by the frame, stirrups suspended in the bolsters, posts or standards supported by the stirrups, and a center block carried by the frame, the bores or apertures of the bolster being at about right angles to the radii of a circle drawn from the center plate, substantially as described.

10. That improvement in the art of supporting car-bodies which consists in mounting the car-body upon tilting posts or standards that are carried by truck-frames that are supported by suspending-links, substantially as described.

11. That improvement in the art of supporting car-bodies which consists in mounting the car-body upon tilting posts or standards that are carried by link-supported truck-frames, substantially as described.

12. That improvement in the art of supporting car-bodies which consists in connecting the car-body to the trucks by king pins or bolts that are located directly over the axle, and in supporting said car upon tilting posts that are carried by link-suspended truck-frames, substantially as described.

13. The combination, with the truck-frame, of wheels carried thereby, springs suspended beneath the frame, bolsters supported by the springs, stirrups suspended in the bolsters, and posts or standards supported by the stirrups, substantially as described.

14. The combination, with a truck-frame, of wheels carried thereby, springs suspended beneath the frame, bolsters supported by the springs and arranged within castings that are carried by the frame, stirrups suspended in the bolsters, posts or standards supported by the stirrups, and a center block carried by the frame, the bores or apertures of the bolsters being at about right angles to the radii of a circle drawn from the center block, substantially as described.

15. The combination, with a truck-frame, of wheels carried thereby, springs suspended beneath the frame, bolster supported by the spring and arranged within castings that are carried by the frame, stirrups suspended in the bolsters, posts or standards supported by the stirrups, and a center block carried by diagonal braces that are connected to the frame, said center block being arranged for rigid connection with a king-pin, substantially as described.

16. The combination, with a truck-frame and its wheels, of a draw-bar connected to the forward end of a frame by a bolt that passes through the angle-irons of the frame to engage with a nut at the rear end of the frame, substantially as described.

17. A car-truck frame consisting, essentially, of two pairs of angle-irons, castings 11, plates 12, arch-bars 13, and inverted arch-bars 14, the parts being arranged and connected substantially in the manner described.

FERDINAND E. CANDA.

Witnesses:

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