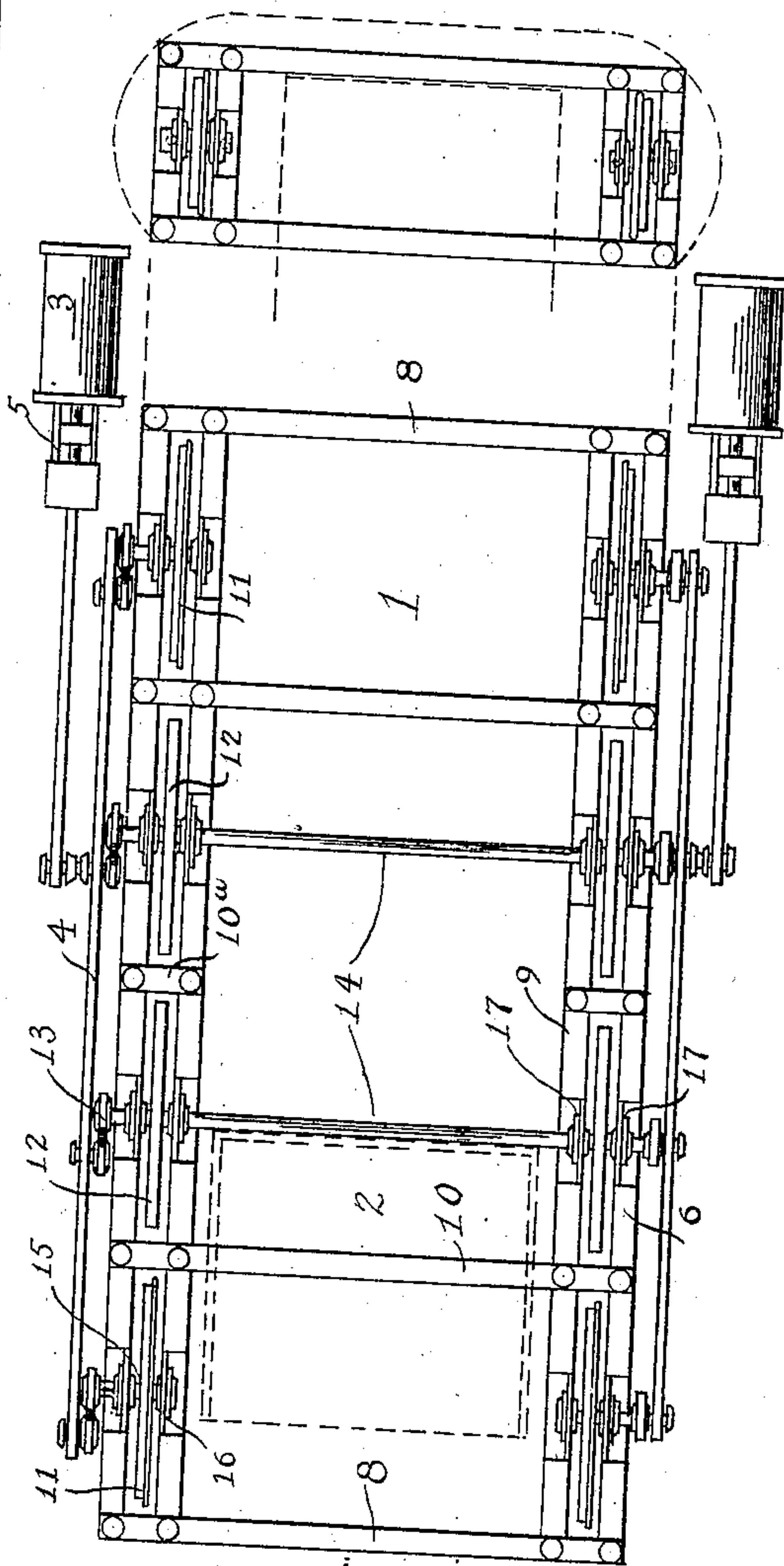
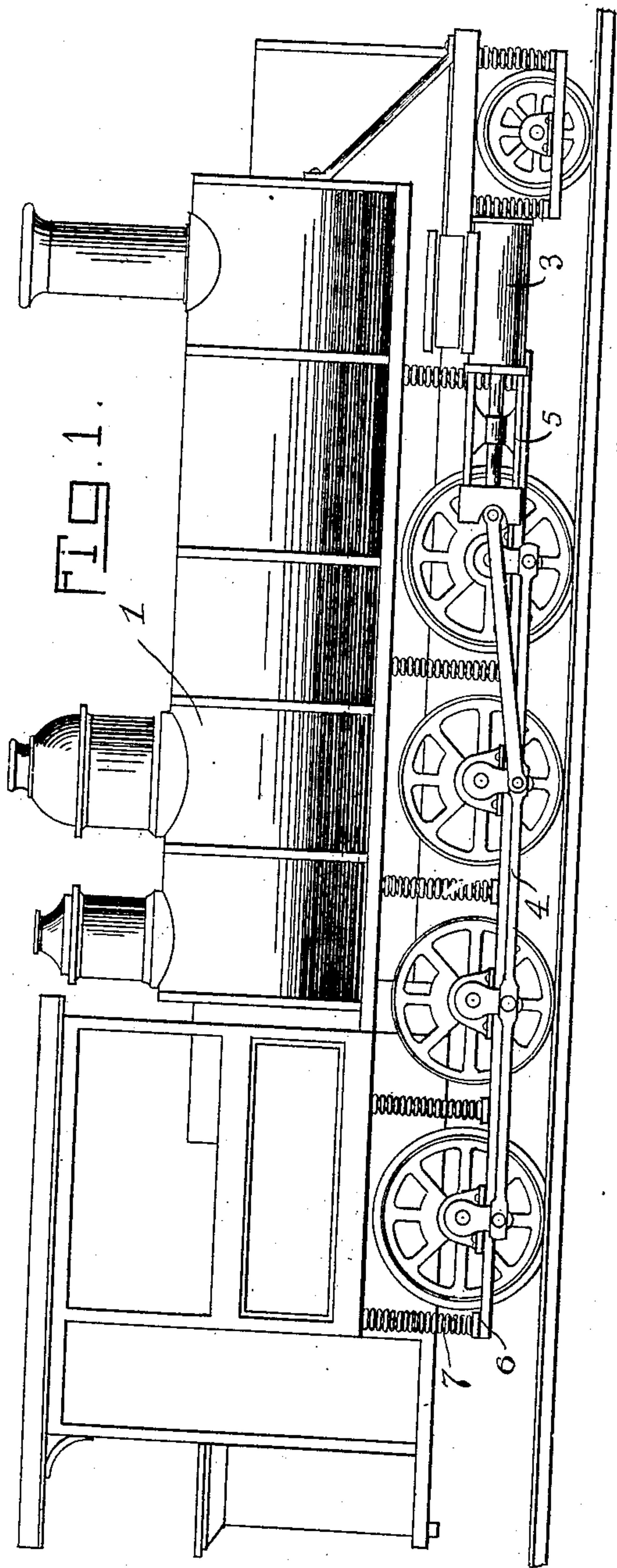


No. 832,037.

PATENTED OCT. 2, 1906.

E. M. CANTO.
RAILWAY ROLLING STOCK.
APPLICATION FILED MAY 4, 1905.

7 SHEETS—SHEET 1.



Witnesses
Philip A. Ferrell
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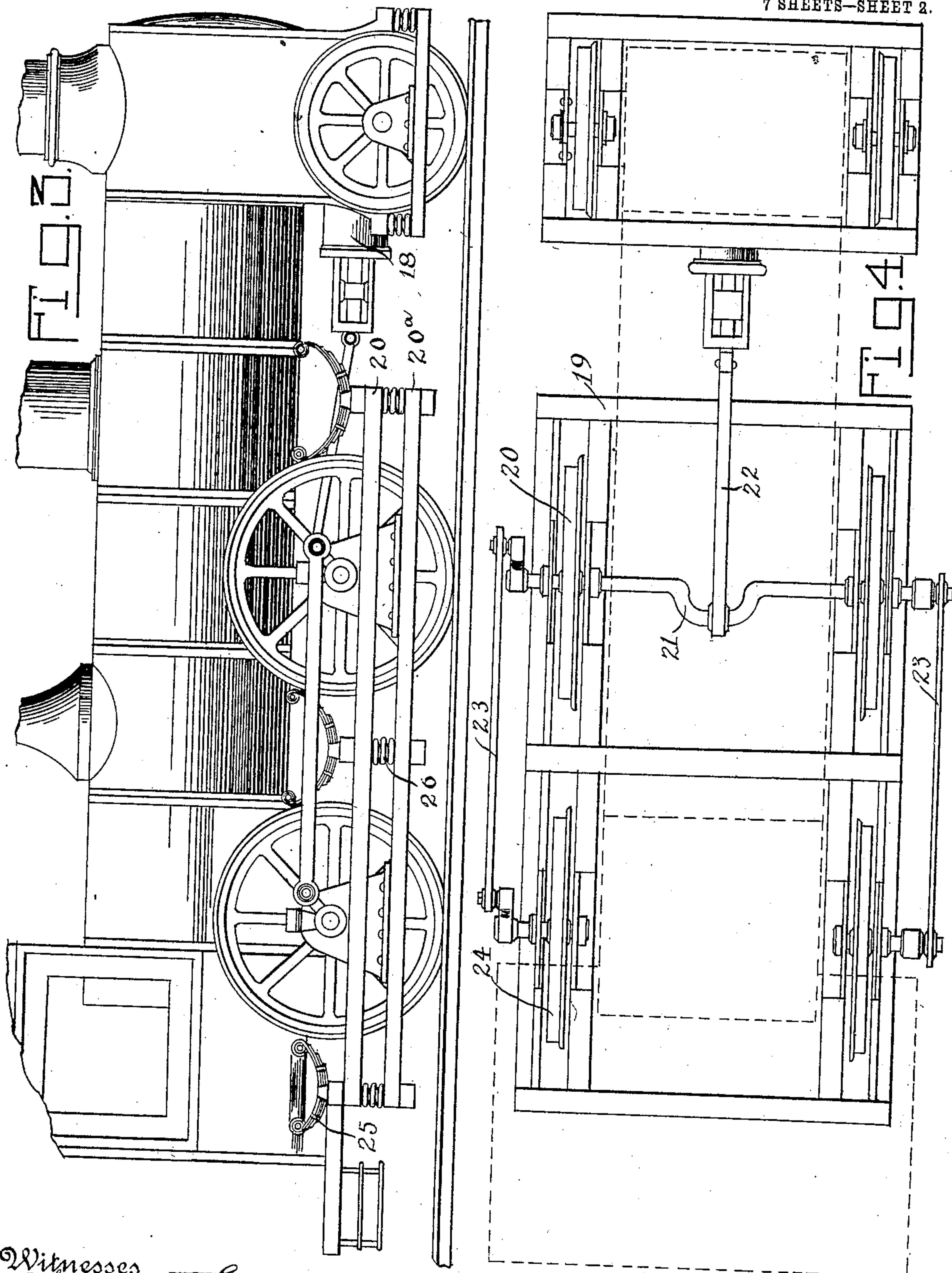
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7 SHEETS—SHEET 2.



Witnesses
Philip A. H. Terrell
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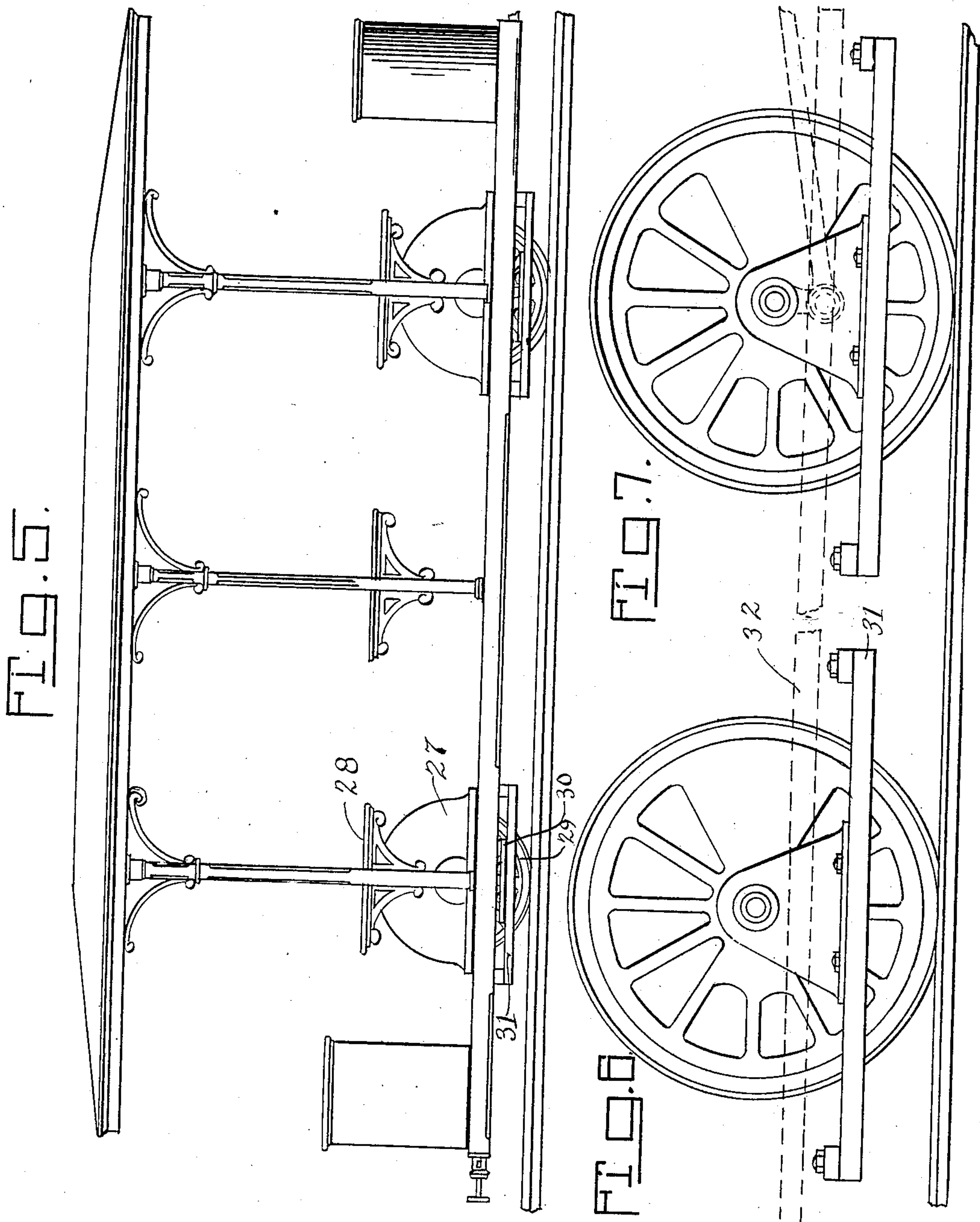
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7 SHEETS—SHEET 3.



Witnesses
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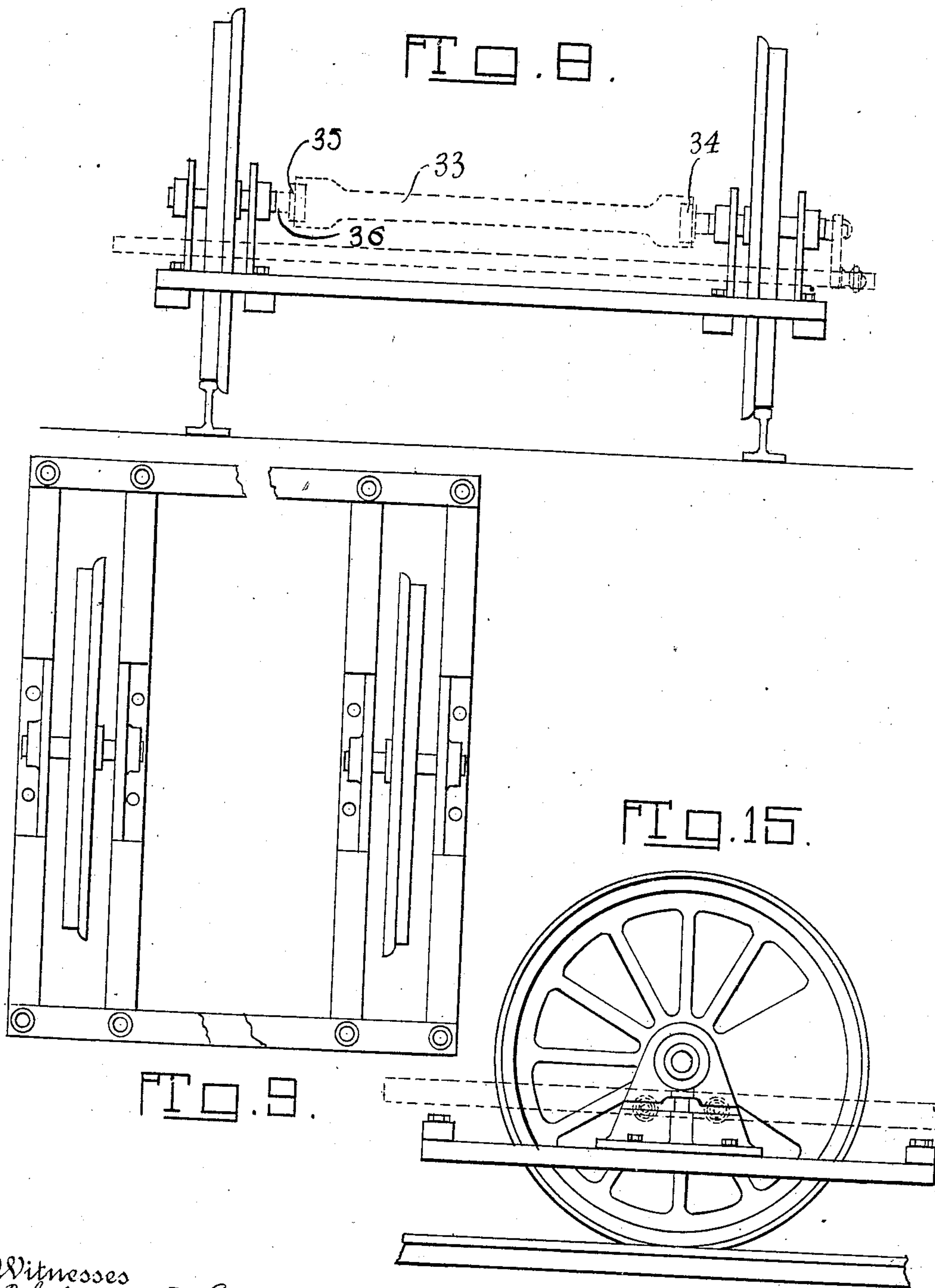
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APPLICATION FILED MAY 4, 1905.

7 SHEETS—SHEET 4.



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RAILWAY ROLLING STOCK.
APPLICATION FILED MAY 4, 1905.

7 SHEETS—SHEET 5.

FIG. 10.

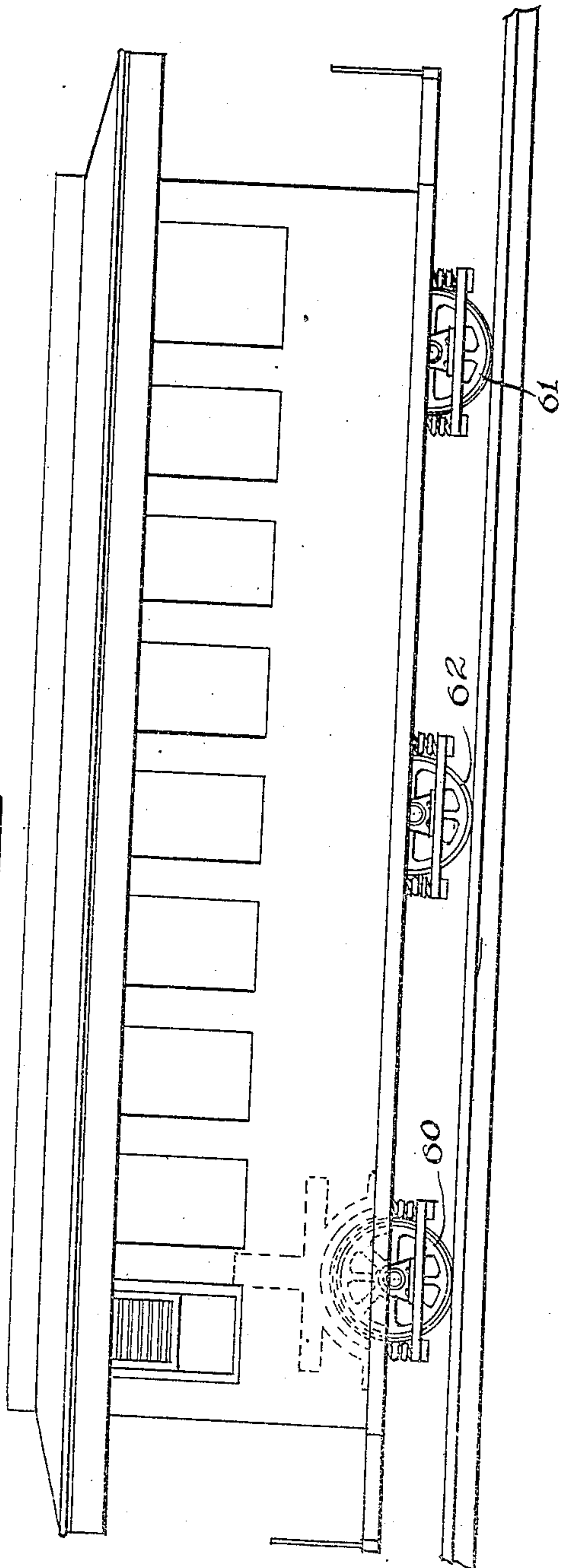
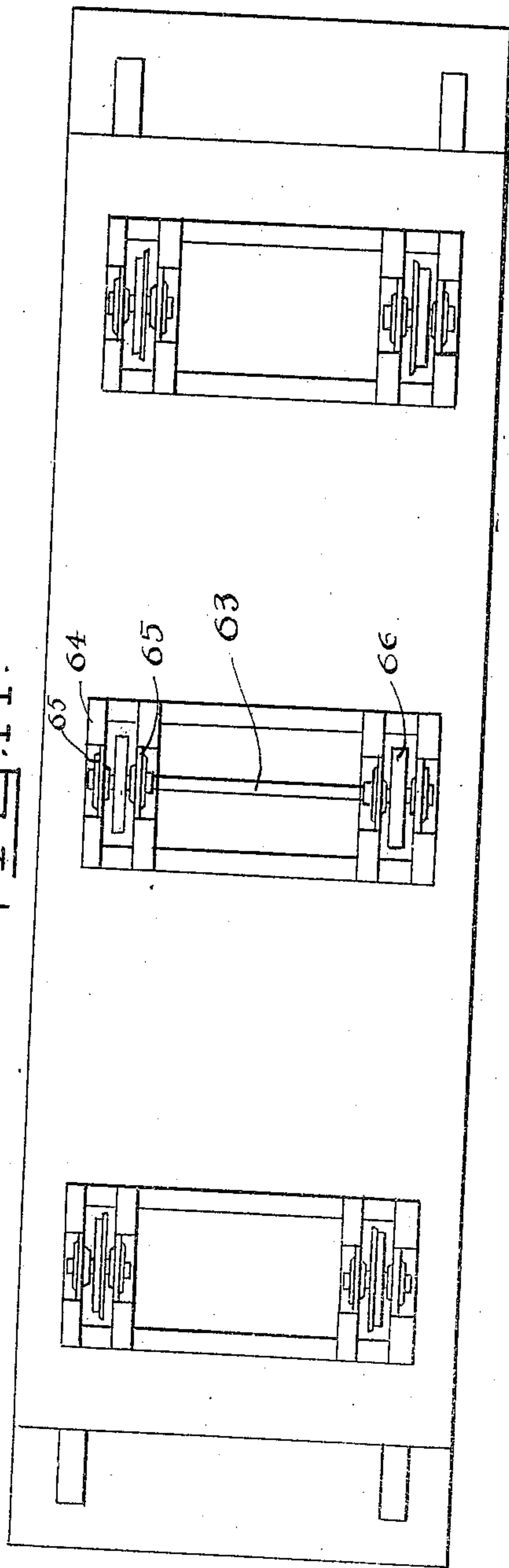


FIG. 11.



Witnesses
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PATENTED OCT. 2, 1906.

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RAILWAY ROLLING STOCK.
APPLICATION FILED MAY 4, 1905.

7 SHEETS—SHEET 6.

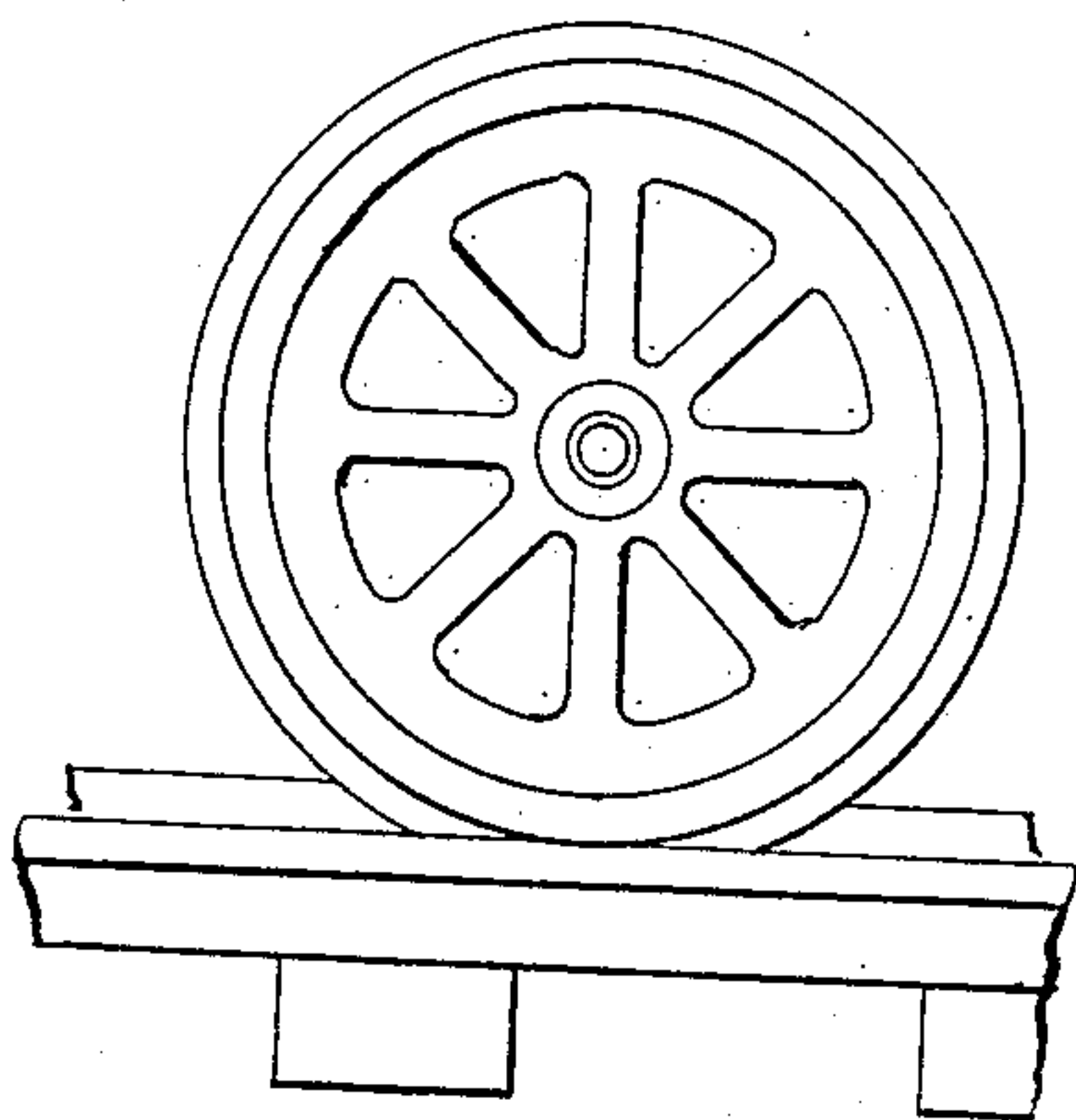


FIG. 13.

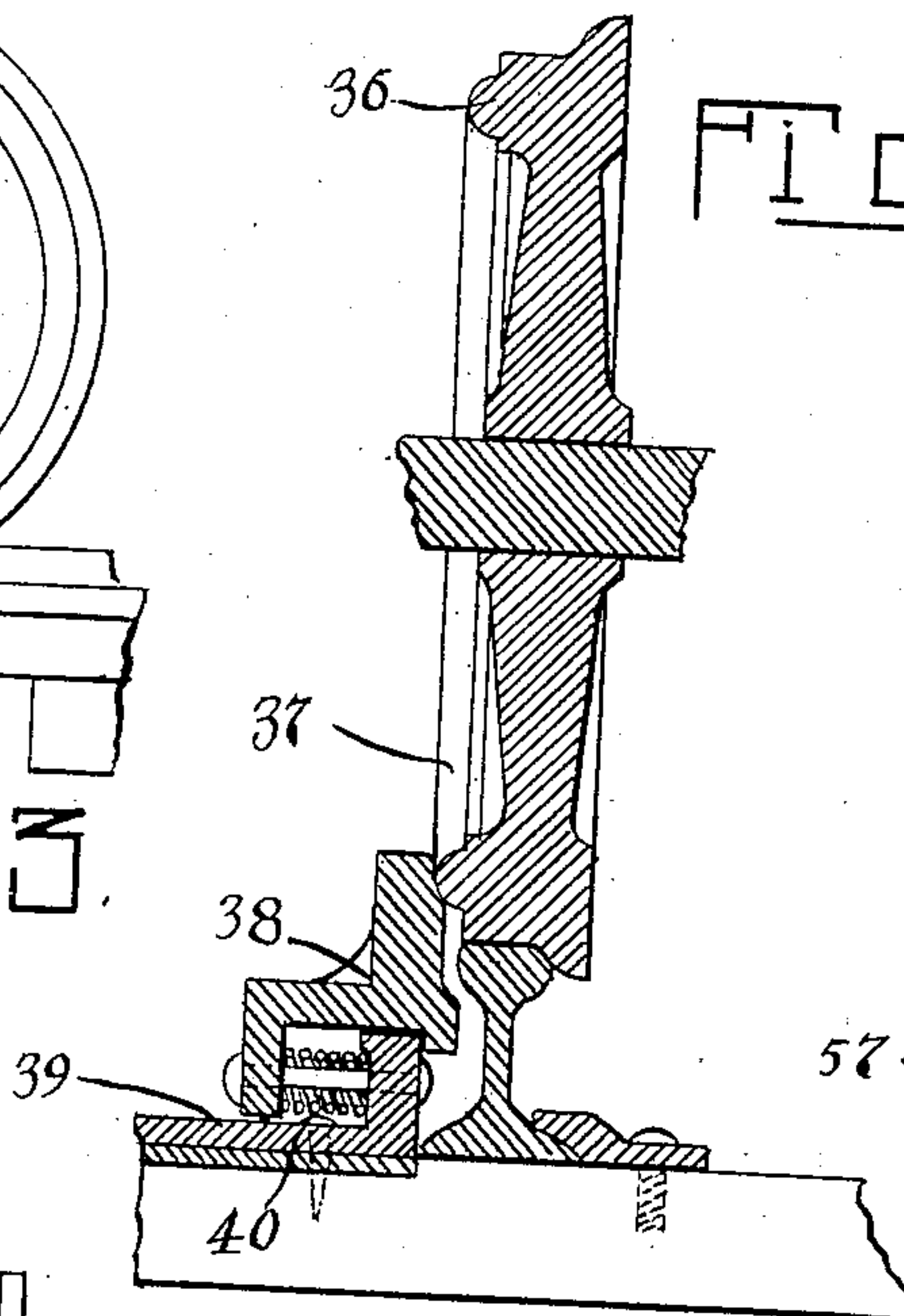


FIG. 12.

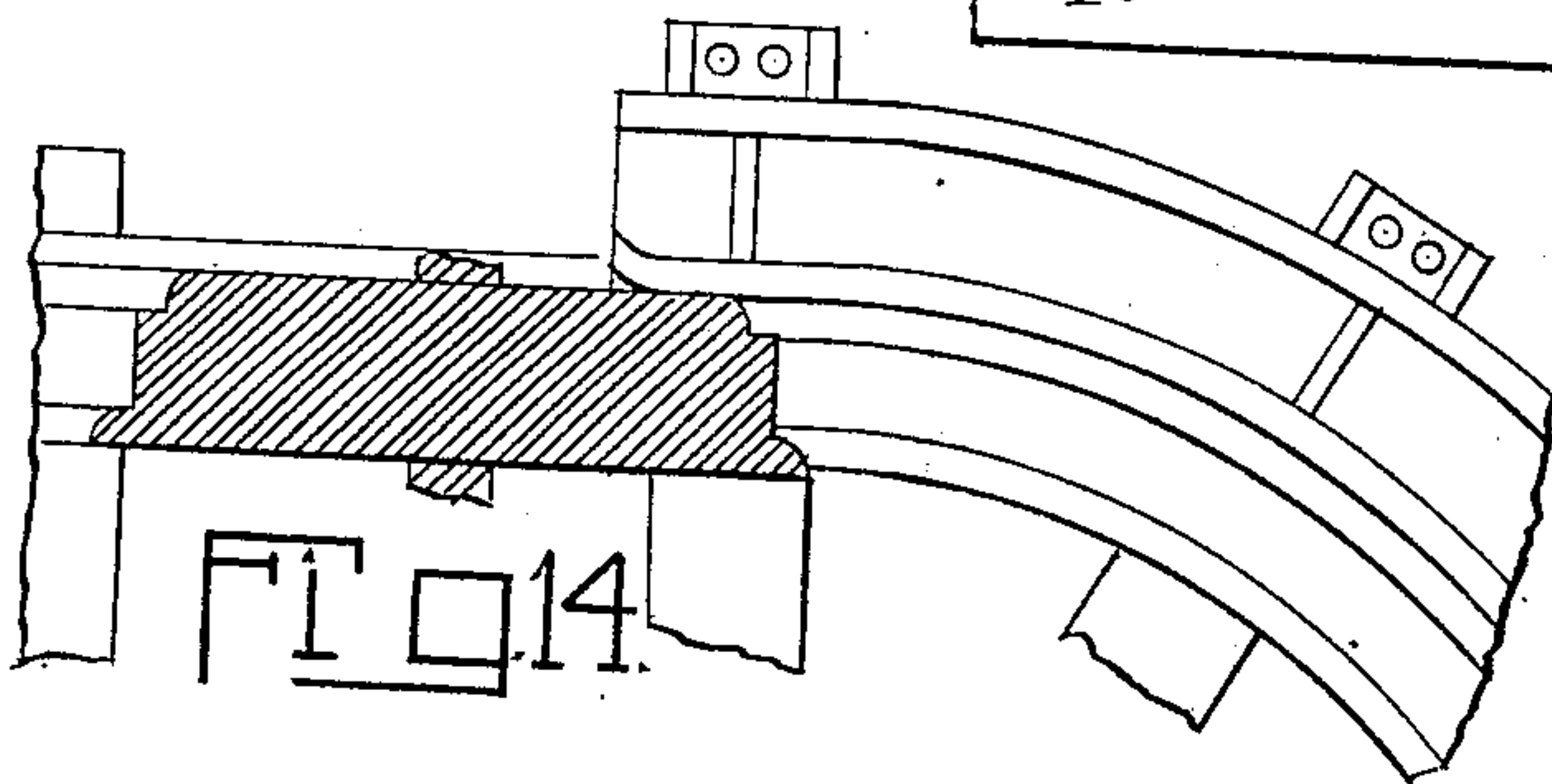


FIG. 14.

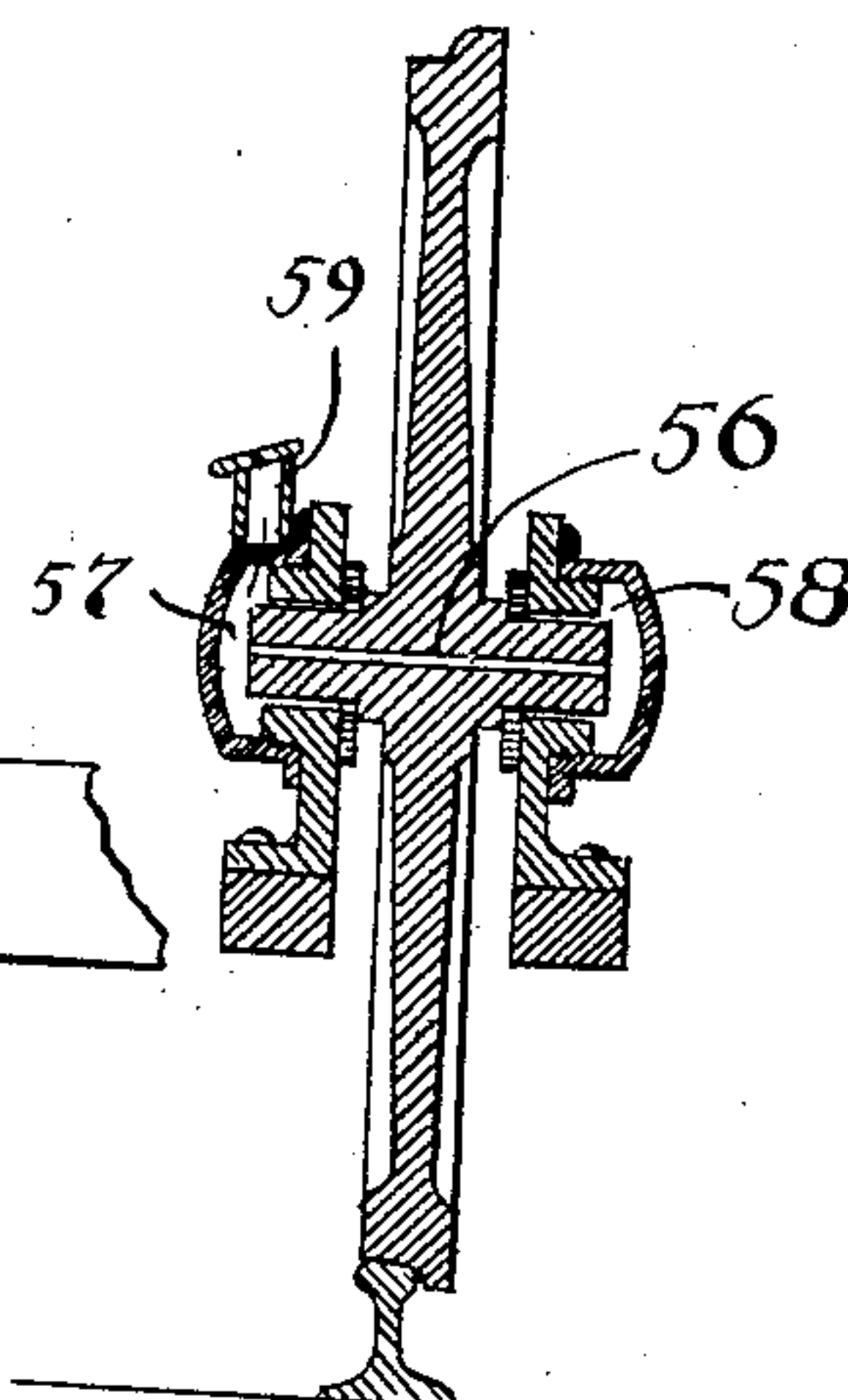


FIG. 20.

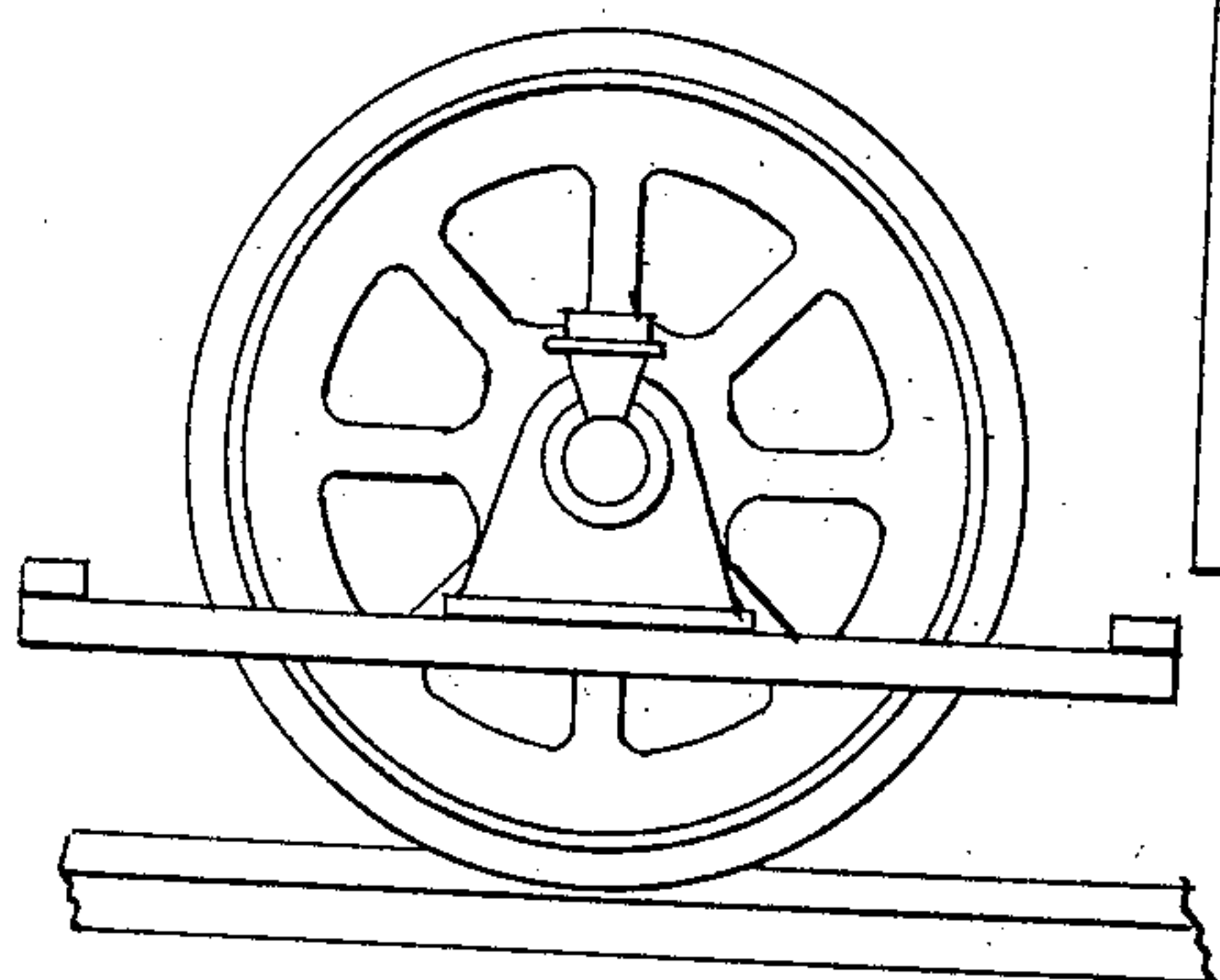


FIG. 18.

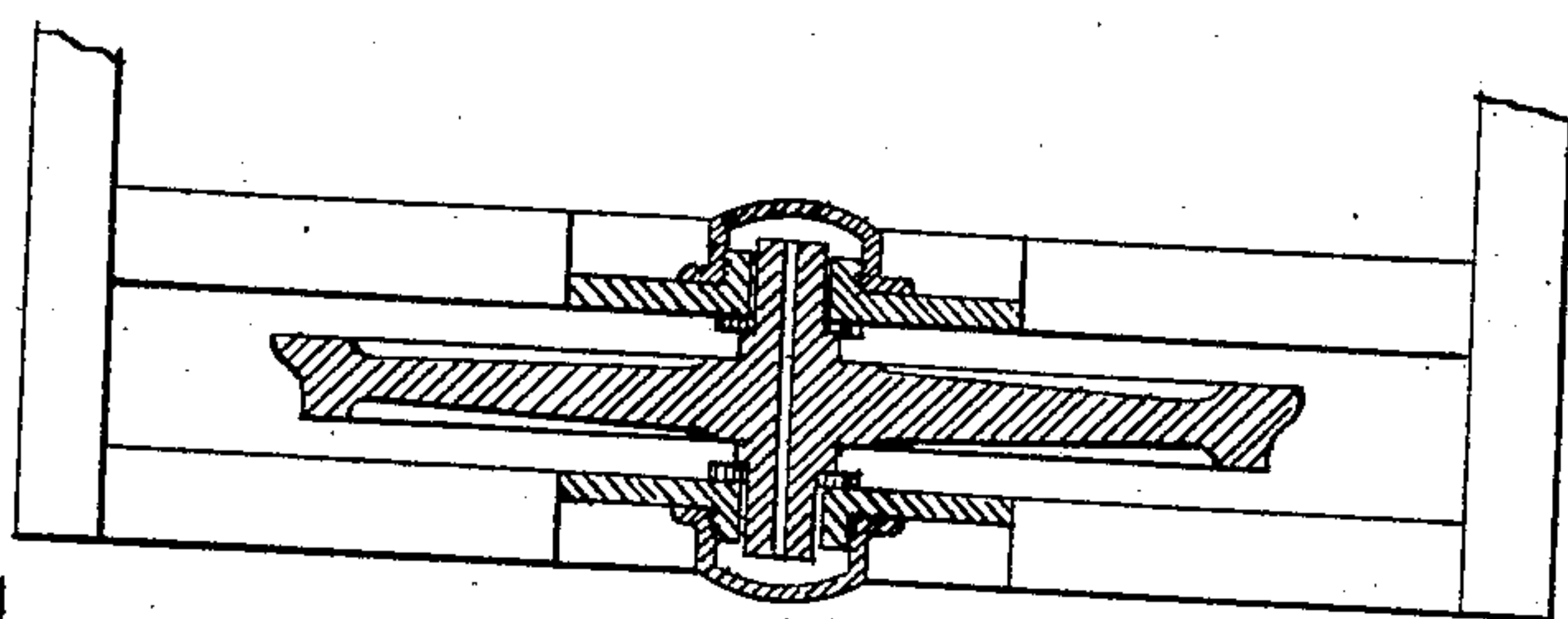


FIG. 19.

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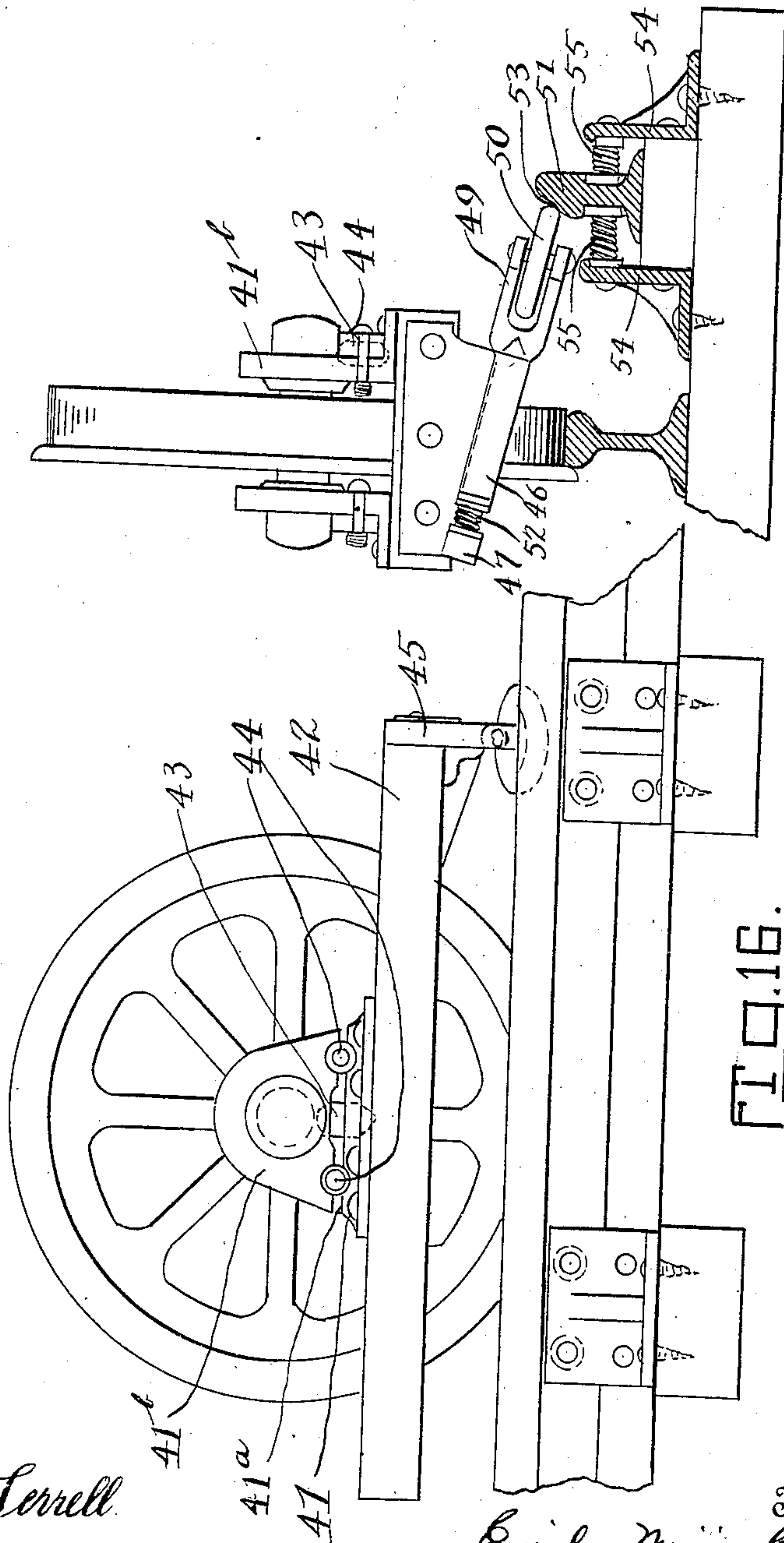
No. 832,037.

PATENTED OCT. 2, 1906.

E. M. CANTO.
RAILWAY ROLLING STOCK.

APPLICATION FILED MAY 4, 1906.

7 SHEETS—SHEET 7.



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UNITED STATES PATENT OFFICE.

EMILIO MUJICA CANTO, OF SANTIAGO, CHILE.

RAILWAY ROLLING-STOCK.

No. 832,037.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed May 4, 1905. Serial No. 258,916.

To all whom it may concern:

Be it known that I, EMILIO MUJICA CANTO, lieutenant-colonel in the Chilean army, and a citizen of the Republic of Chile, residing at Santiago, Chile, have invented certain new and useful Improvements in Railway Rolling-Stock, of which the following is a specification, reference being had therein to the accompanying drawings.

My present invention relates to improvements in railway rolling-stock; and the main object of my invention is a provision whereby the wheels carried by the locomotive or cars are so mounted as to revolve independently, so that there is no danger of the axle breaking in rounding curves and which are so constructed as to bring the body of the car relatively lower to the rails, and thus bring the center of gravity nearer the surface.

Where my invention is applied to locomotives, the fire-box area is greatly increased, as it can be extended farther forward without interfering with the axle of the drive-wheels, and thus greatly assisting in the capacity for generating steam.

Where the invention is applied to cars where the trucks in general use are employed carrying from four to six wheels, I simply use two wheels, each one of which is independently journaled, and where the cars are of extra length I provide a third set of wheels arranged centrally of the car, said wheels being flangeless or smooth, so as to have a lateral movement as the car rounds curves and at the same time receiving the central weight of the car, these central wheels being connected with an integral axle, as the twisting motion on the smooth-surfaced wheels is not so great as on the flanged wheels, where the flange abuts the side edges of the rails in rounding the same.

Another object of my invention is to provide a means whereby the wheels are guided while rounding the curves and also a means whereby each wheel is properly oiled and the oil retained, so as to not render it necessary to continually supply the wheels with oil, which in the old form of bearing is continually wasted instead of being economically used.

Another object of my invention is to so mount the wheels that the weight of the car is suspended upon the axle in each individual wheel instead of, as in general use, having a bearing-down weight, this means of mounting allowing the car-body or locomotive-

body to assume a position lower to the rails than is the case in general use.

To attain these objects, my invention consists of a new and novel arrangement for railway rolling-stock embodying novel features of construction and combination of parts, substantially as disclosed herein.

In the accompanying drawings, Figure 1 is a side elevation of a locomotive equipped with my invention. Fig. 2 is a bottom plan view thereof. Fig. 3 is a side elevation of another form of a locomotive equipped with another form of my invention. Fig. 4 is a bottom plan view thereof. Fig. 5 is a side elevation of an open tramway-car embodying my invention. Figs. 6, 7, 8, and 9 are views of the car and its frame as employed on locomotives or cars, as may be desired. Fig. 10 is a side elevation of a railway-car embodying my invention and having the central wheels. Fig. 11 is a bottom plan view thereof. Figs. 12, 13, and 14 are detail views of a construction of wheel with means for assisting the same in rounding curves. Fig. 15 is a side elevation of a modified construction of frame and the wheel to be used in connection with the curved rounding device. Figs. 16 and 17 are detail constructions of a modified form of invention for assisting the wheels in rounding curves. Figs. 18, 19, and 20 are detail views of the oil device used in connection with the wheels.

Referring to the drawings, and more particularly to Figs. 1 and 2 thereof, the numeral 1 designates the locomotive-boiler; 2, the fire-box; 3, the cylinder, and 4 the connecting-rods operated upon by the piston 5.

The entire locomotive is supported on the beams 6 through the medium of the heavy springs 7, the beam 6 with the cross-pieces 8 forming a platform or frame. Connected to the cross-pieces 8 and parallel with the beams 6 are the inner beams 9 and 9^a, which form, by means of the long cross-pieces 10 and the short pieces 10^a, receptacles for the flanged wheels 11 and the smooth-surfaced wheels 12, the wheels 11 and 12 being connected to the connecting-rod through the medium of the cranks 13, so that they will revolve in unison and form the drive-wheels of the locomotive. The wheels 12 are connected together, as clearly shown in Fig. 2, by means of the axle 14, while the wheels 11 are journaled upon the short axles 15, whose ends are mounted, respectively, in the bearings carried by the standards 16, the said stand-

ards being arranged in pairs and carried by the beams 6 and 9, respectively. The wheels 12 are also provided with the pairs of standards 17, so that each wheel has a bearing upon both sides thereof instead of only on the ends of the axle, as is the case in general use.

In Figs. 3 and 4 I show my invention as applied to a locomotive in which the cylinder 18 is located under the boiler and centrally of the locomotive, so as not to project upon the sides thereof, as shown in Figs. 1 and 2, and in this form I provide the usual frame 19, in which the forward wheels 20 are connected by the crank-shaft 21, which is operably connected to the piston-rod 22, the connecting-rods 23 transmitting motion to the rear drive-wheels 24, these drive-wheels being provided with flanges instead of in the locomotive, where the central wheels are smooth and the forward wheels are flanged. The frame 19 is of a slightly-modified construction from the other frame shown, double bars 20^a 20^b being employed, the bar 20^a carrying the journals or standards for the wheels, while the bar 20^b is connected so as to support the locomotive through the medium of the leaf-springs 25, the heavy coiled spring 26 being the supporting medium between the bars 20^a and 20^b.

As clearly shown in Fig. 5 of the drawings, the car is provided with the semicircular casings 27, which project up into the body of the car, preferably below the seats 28, but within the cars, so as to reduce, if possible, the gage of the tracks, the wheels 29 being carried as usual and independently mounted with relation to each other, their supports or standards 30 being carried by the usual frame 31, which is mounted transversely under the bottom of the car and forms a platform therefor.

In Figs. 6, 7, 8, and 9 I have illustrated in detail a construction preferably for various uses. These constructions may be used on the tram-cars or locomotives, and it will be seen that the platform 32, as shown in dotted lines, will assume a position with relation to the wheels so that they are swingingly supported below the axle, but above the tracks 31, a bottom plan view of the entire frame, with its wheels, being clearly shown in Fig. 9.

In Fig. 8 I show a means whereby the wheels can be held apart, and though allowed to revolve independently they are connected together with virtually a solid axle 33. In this case the ends of this axle are socketed, as at 34, for the reception of the ends 35 of the short axles 36, the heads of these ends being of a smaller diameter than the socket, so that the wheels are allowed to revolve within the same. This construction is especially desirable for locomotives, as it relieves the strain occasioned by rounding curves and the vibration of the engine and provides a solid structure for the support thereof.

In order that the wheels may be properly guided in rounding curves, I have shown various constructions in Figs. 12, 13, 14, 15, and 16 of the drawings. In Figs. 13 and 14 and also 15 of the drawings I provide upon the inner face of the wheels the circumferential rib 36, which is adapted to engage the curved portion 37 of the outtrail 38, which is spring-actuatingly mounted with relation to the supporting-plate 39 by means of the bolt-and-spring connection 40. This is especially desirable for the locomotive or for heavy cars. Where the device is applied to the forward portion of the engine, I mount the wheels as shown in detail in Figs. 16 and 17, in which the supports 41, carried by the frame 42, are in two sections 41^a and 41^b, the same being connected together by means of the double-pointed pin 43 and returned to its original condition by means of the springs 44. By this means the wheels are allowed to turn slightly when rounding curves, so as to properly guide the locomotive or car therearound, and thus reduce the grinding or sliding friction upon the rails. In order to properly guide the wheel in this movement, I connect in the forward end of the frame 42 a braced plate 45, which is provided with the large sleeve 46, the other sleeve 47, in which is adapted to be mounted the stem 48, carrying the yoke 49. In order to properly cushion this yoke as its wheel 50 strikes the auxiliary rail 51, I provide the spring 52, which is mounted upon the stem between the sleeves 46 and 47. The third rail or the auxiliary rail 51 is provided with the curved abutting surface 53 and is mounted slidingly between the parallel guide-plates 54, to which the guide-rail is connected by means of the spring-actuated bolts 55. In order to properly oil the axles of my improved construction of wheel, the axle is provided with the central bore or channel 56, which is adapted to communicate with the caps or receptacles 57 and 58, the oil being fed to the cap 57 through the cup 59 and following the lines of the arrow, as indicated in Fig. 20, all the details of these constructions being shown in Figs. 18, 19, and 20.

In Figs. 10 and 11 I have shown a new embodiment of my invention as applied to long heavy cars as used upon steam and electric railways and in which I obviate the great difficulty in rounding the curves and also in distributing the weight, the three pairs of wheels 60, 61, and 62 being employed. The wheels 60 and 61 and their frames are constructed similarly to the wheels shown in Fig. 16, except that the device for rounding the curves is dispensed with, these pairs of wheels being mounted, respectively, at the ends of the car. The centrally-arranged wheels 62 are both carried upon a common axle 63, the said wheels being mounted within their individual frame-supports 64

upon the usual standards 65, the tread 66 of these wheels being of greater width than the treads of the wheel 61 and are flangeless or perfectly smooth, so that as the car rounds the curves these wheels slide sidewise or laterally upon the tread of the rail, and thus properly carry the weight of the car and provide a means whereby the central portion of the car is properly supported, the dispensing with the flange and the widening of the wheel in combination with the wheels mounted at the end of the car making this possible.

From the foregoing description, taken in connection with the drawings, it is evident that I provide a means for mounting railway rolling-stock which allows the center of gravity to be nearer the tracks, which assists the locomotives or cars in rounding curves not only for guiding them properly around the curves, but also lessening the danger of accident by twisting or breaking the axle, which allows the weight of the car to be equally distributed, as a number of sets of flangeless wheels may be mounted between the end wheels, so as to equally distribute the weight of the body of the car thereon, and I also provide a means whereby the fire-box capacity of locomotives is greatly increased, thus improving in a great many respects the efficiency of the railway rolling-stock as now used.

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

1. The combination with a locomotive of a platform and heavy springs interposed between the platform and the body of the locomotive, flanged wheels individually mounted in the forward and rear portions thereof and smooth-surfaced wheels individually mounted in the platform between the flanged wheels, all of said wheels being connected to the piston-rod of the engine.

2. The combination with railway rolling-stock, of a frame for supporting the wheels, standards carrying journals carried by the frame, wheels having their axles individually mounted in said journals and an axle having a socket in its ends adapted to fit over the ends of the other axles of the wheels to assist the wheels in rounding curves but to allow the wheels to revolve individually.

3. The combination with abutments at the curves of a railroad, of frames for supporting wheels in pairs, each of said wheels being independently rotatably mounted within the frames and having their journals above the body of the frame so that the frame is brought nearer to the surface and below the axles of the wheels, and means carried by the frames adapted to engage said abutments to assist the wheels in rounding curves.

4. The combination with abutments at the curves of a railroad of a framework, journals mounted in the ends thereof above the body of the framework, individually-mounted ro-

tatable wheels supported in said journals so that their central portions will be above the frame, and means carried by the frames adapted to engage said abutments to assist the wheels in rounding curves.

5. The combination with abutments at the curves of a railroad of frames for supporting wheels in pairs, each of said wheels being independently rotatably mounted within the frames and having their journals above the body of the frame so that the frame is brought nearer to the surface and below the axles of the wheels, whereby when attached to the body of the rolling-stock the weight of the same is hangingly supported by the wheels and the body is brought closer to the surface, and means carried by the frames adapted to engage said abutments to assist the wheels in rounding curves.

6. The combination with abutments at the curves of a railroad of a locomotive provided with beams, heavy springs interposed between the locomotive and beams, flanged wheels individually mounted in the forward and rear portions of the beams, smooth-surfaced wheels individually mounted in the beams between the flanged wheels, all of said wheels being connected to the piston-rod of the engine, and means carried by the frames adapted to engage said abutments to assist the wheels in rounding curves.

7. The combination with abutments at the curves of a railroad, of a locomotive provided with a platform and heavy springs interposed between the platform and the body of the locomotive, flanged wheels individually mounted in the forward and rear portions thereof, smooth-surfaced wheels individually mounted in the platform between the flanged wheels, and means carried by the frames adapted to engage said abutments to assist the wheels in rounding curves.

8. In combination with abutments at the curves of a railroad of a car provided with semicircular casings in the floor thereof, a frame mounted below the car and provided with receptacles in each end thereof, standards or supports carrying journals opposed to said receptacles and projecting into the casings of the car, individually-mounted wheels connected to the journals of the standards and projecting into the casings of the car, and means carried by the frames adapted to engage said abutments to assist the wheels in rounding curves.

9. The combination with abutments at the curves of railroad, of railway rolling-stock provided with a framework, journals mounted in the ends thereof above the body of the framework and individually-mounted rotatable wheels supported in said journals so that their central portions will be above the framework, whereby when attached to the body of the rolling-stock the weight of the same is hangingly supported by the wheels

and the body is brought nearer to the surface, and means carried by the frame-work adapted to engage said abutments to assist the wheels in rounding curves.

- 5 10. In a mount for railway rolling-stock, the combination of a frame, a pair of individually-mounted wheels carried by the frame, a pair of supports for each wheel carried by the frame and adapted to engage the axle of the wheel upon each side thereof so that the axle of the frame will be above the frame, and means connected to the forward end of the frame adapted to engage the auxiliary rail to assist the wheel in rounding curves.
- 15 11. The combination with railway rolling-stock, of a frame, individually-mounted wheels carried by the frame and provided upon their inner face with a circumferential rib which is adapted to engage the curved portion upon an auxiliary rail to assist the wheels in rounding curves.
- 20 12. The combination with an outtrail paralleling the curve of railroads, of a series of individually-mounted wheels provided with a circumferential rib adapted to engage said outtrail for the purpose set forth.
- 25 13. The combination with a spring-actuated auxiliary rail paralleling the curve of railroads, of a series of individually-mounted wheels provided with a circumferential rib adapted to engage said auxiliary rail, for the purpose set forth.
- 30 14. The combination with railway rolling-stock, of a frame, wheels journaled in said frame, a brace-plate connected to the forward portion of the frame, a sleeve carried by said brace-plate, a stem slidably mounted in said sleeve, a yoke carried by said stem, and

a wheel mounted in said yoke adapted to strike an auxiliary rail to assist the wheels in rounding curves. 40

15. The combination with railway rolling-stock, of a frame, wheels journaled in said frame, a brace-plate connected to the forward portion of the frame, a sleeve carried by said brace-plate, a spring-actuated stem slidably mounted in said sleeve, a yoke carried by said stem, and a wheel mounted in said yoke adapted to strike an auxiliary rail to assist the wheels in rounding curves. 45 50

16. The combination with an auxiliary rail in railway rolling-stock, of a frame, wheels journaled in said frame, a brace-plate connected to the forward portion of the frame, a sleeve carried by said brace-plate, a spring-actuated stem slidably mounted in said sleeve, a yoke carried by said stem, and a wheel mounted in said yoke adapted to strike said auxiliary rail to assist the wheels in rounding curves. 55 60

17. The combination with an auxiliary rail in railway rolling-stock, of a frame, wheels journaled in said frame, a brace-plate connected to the forward portion of the frame, a sleeve carried by said brace-plate, a stem slidably mounted in said sleeve, a yoke carried by said stem, and a wheel mounted in said yoke adapted to strike an auxiliary rail to assist the wheels in rounding curves. 65

In testimony whereof I affix my signature 70 in presence of two witnesses.

EMILIO MUJICA CANTO.

Witnesses:

FRANK C. HALL,
DAVID P. MOORE.