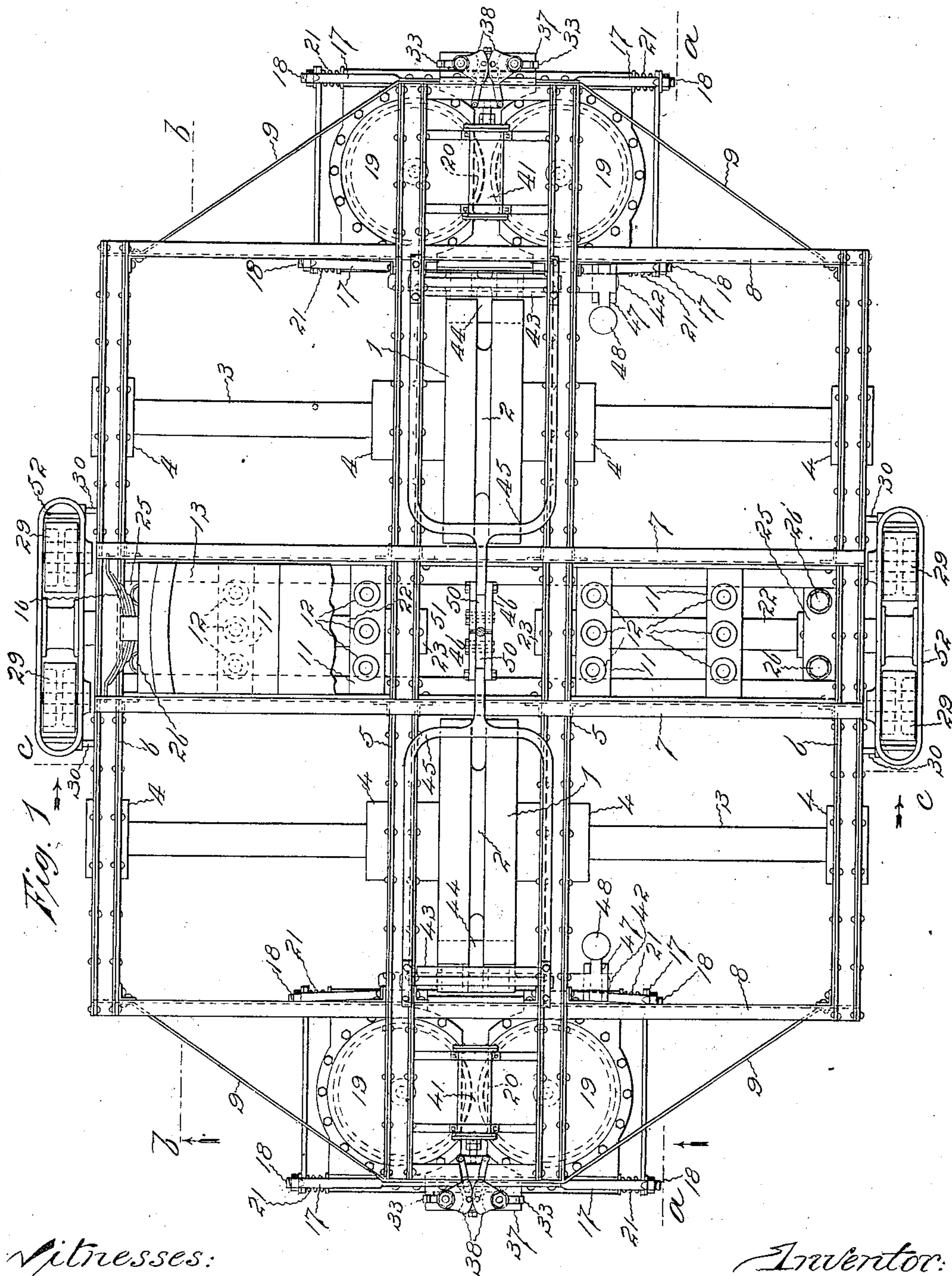


G. J. CAPEWELL.
RAILWAY CAR TRUCK.

(Application filed July 29, 1899. Renewed May 17, 1900.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:
J. G. Holcomb
C. E. Buchanan.

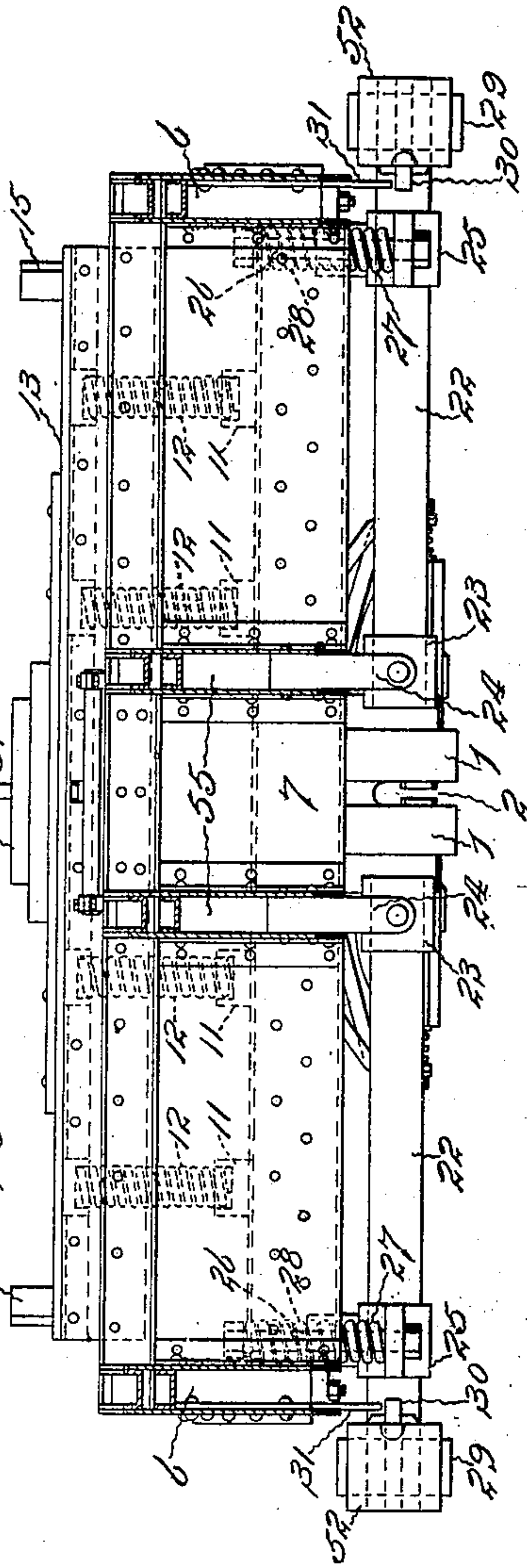
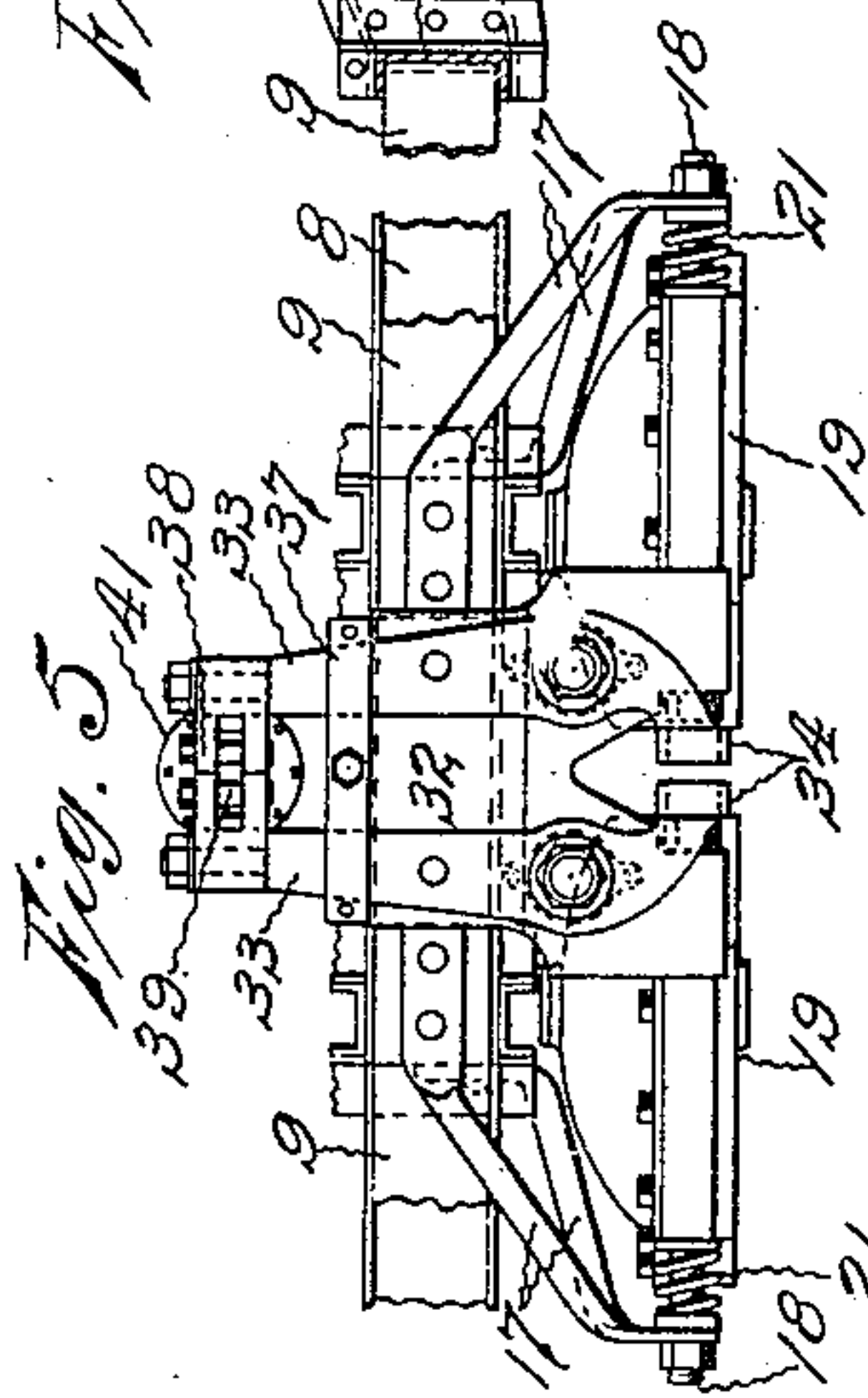
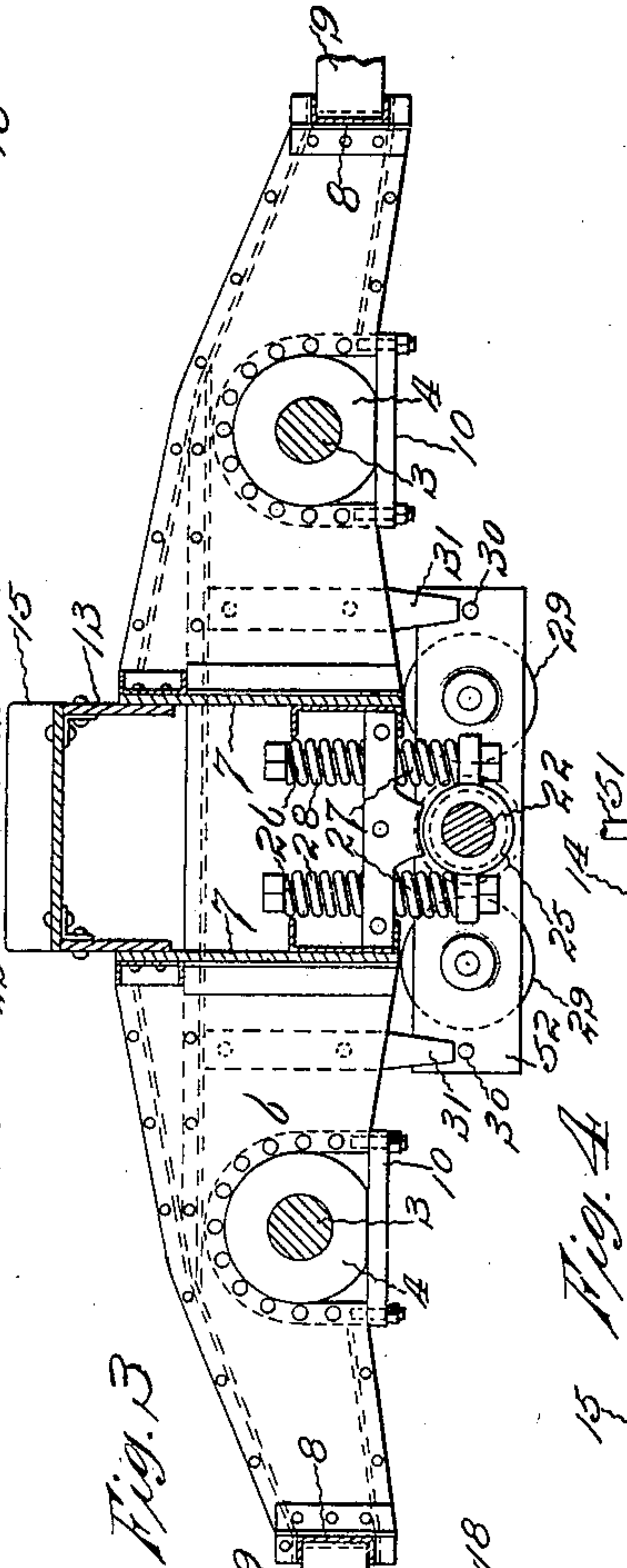
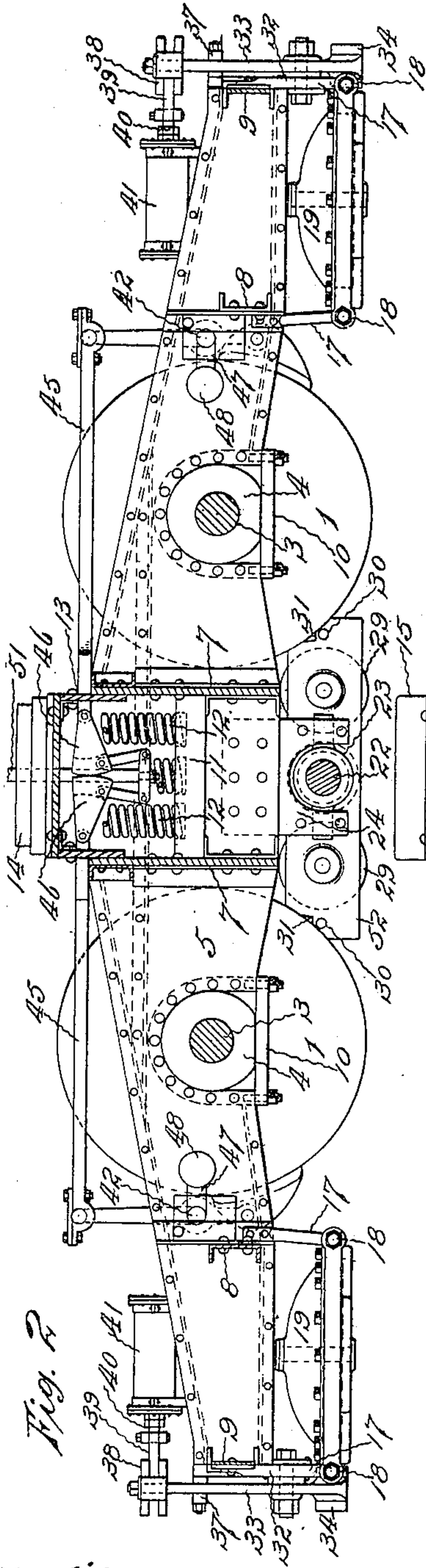
Inventor:
George J. Capewell, by
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G. J. CAPEWELL.
RAILWAY CAR TRUCK.

(Application filed July 29, 1899. Renewed May 17, 1900.)

(No Model.)

4 Sheets—Sheet 2.



Witnesses:

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No. 663,414.

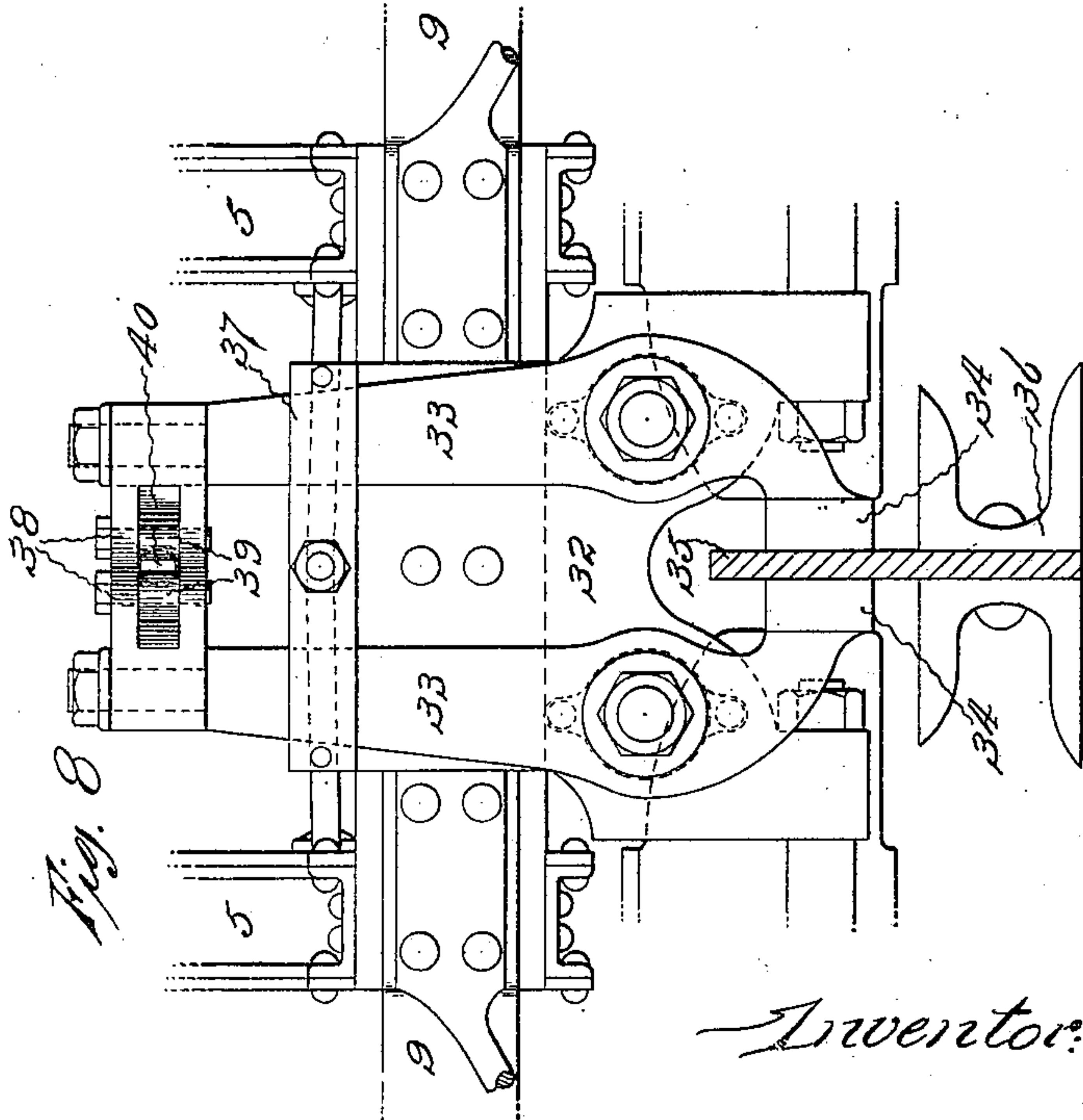
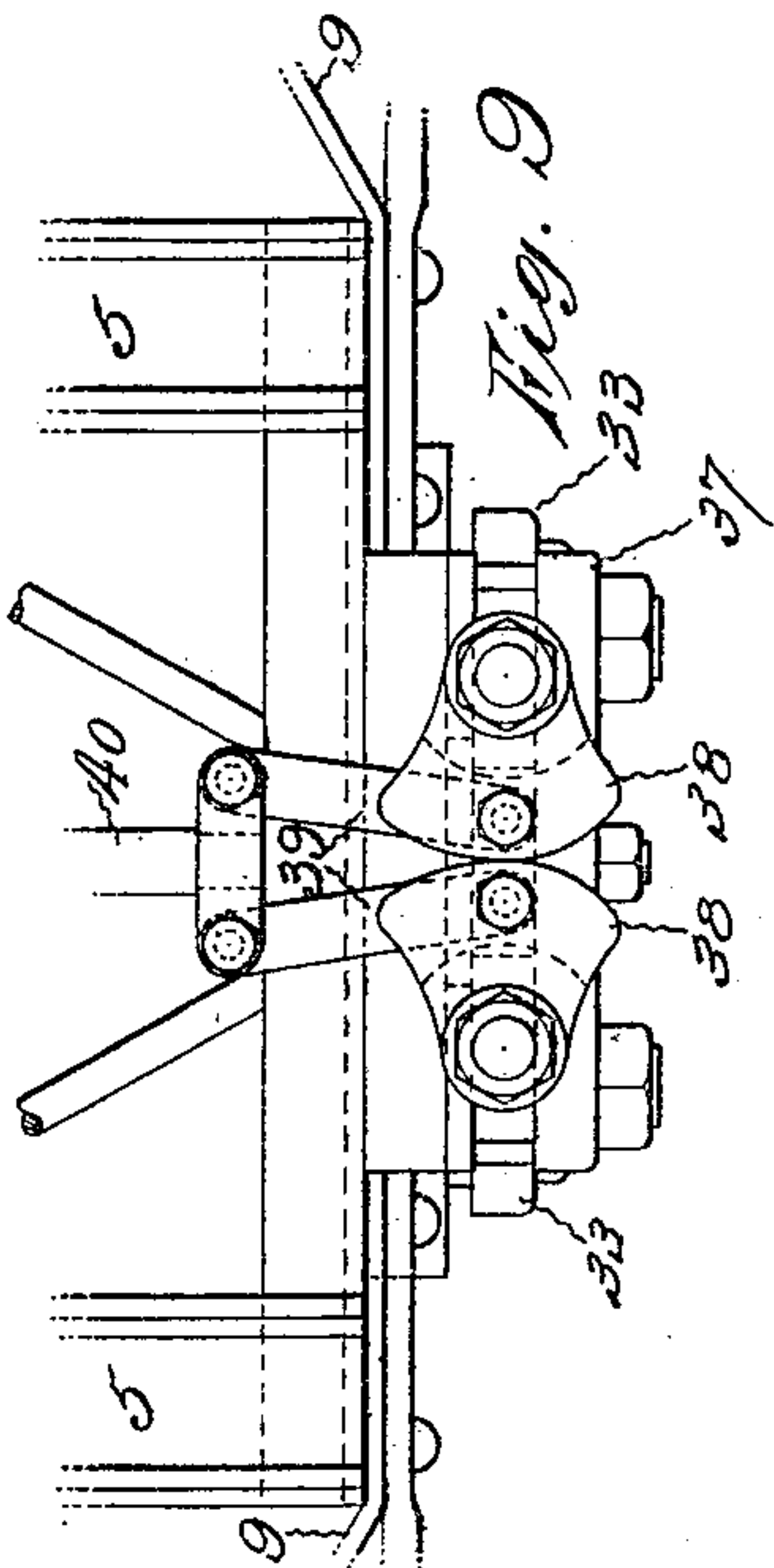
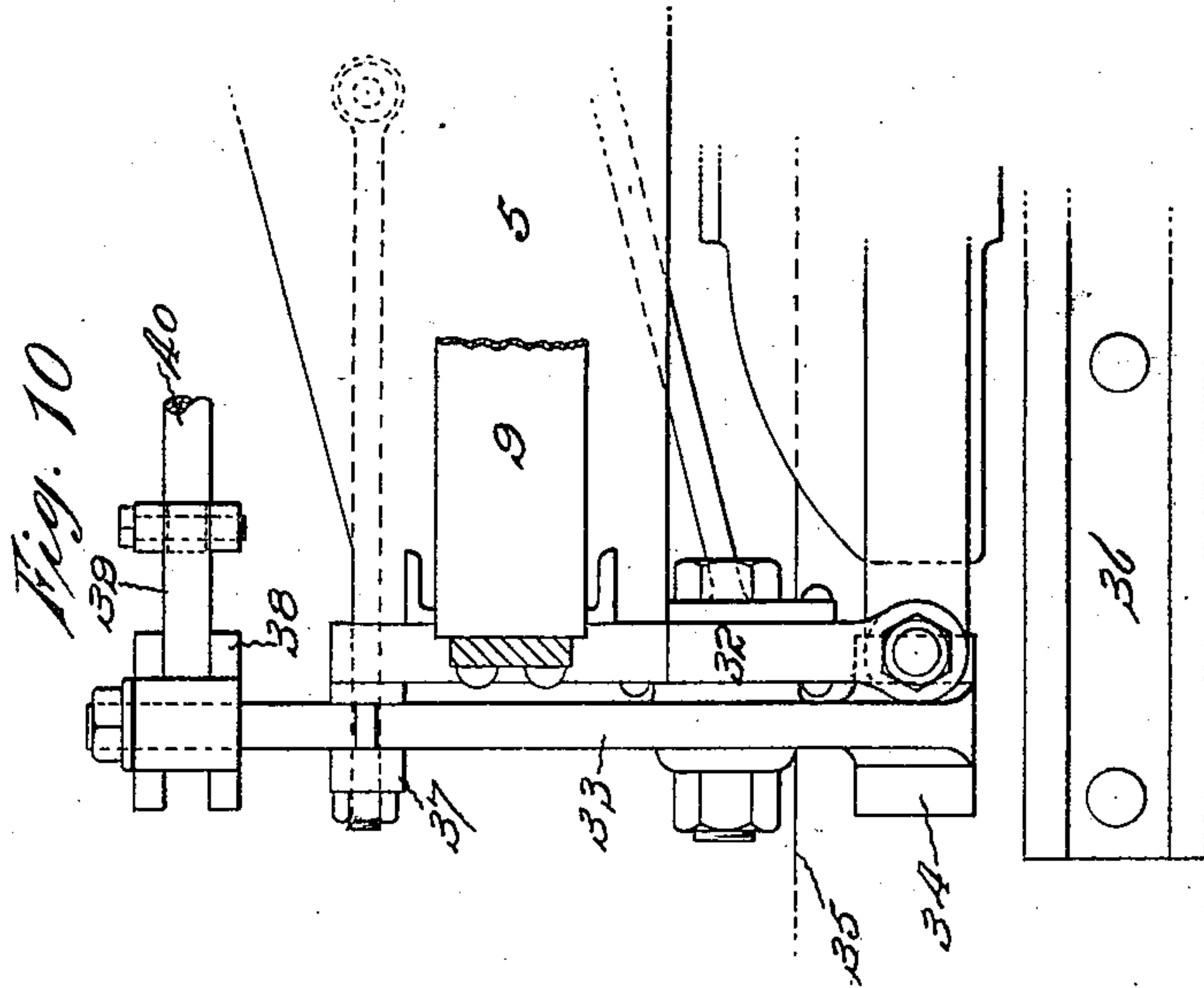
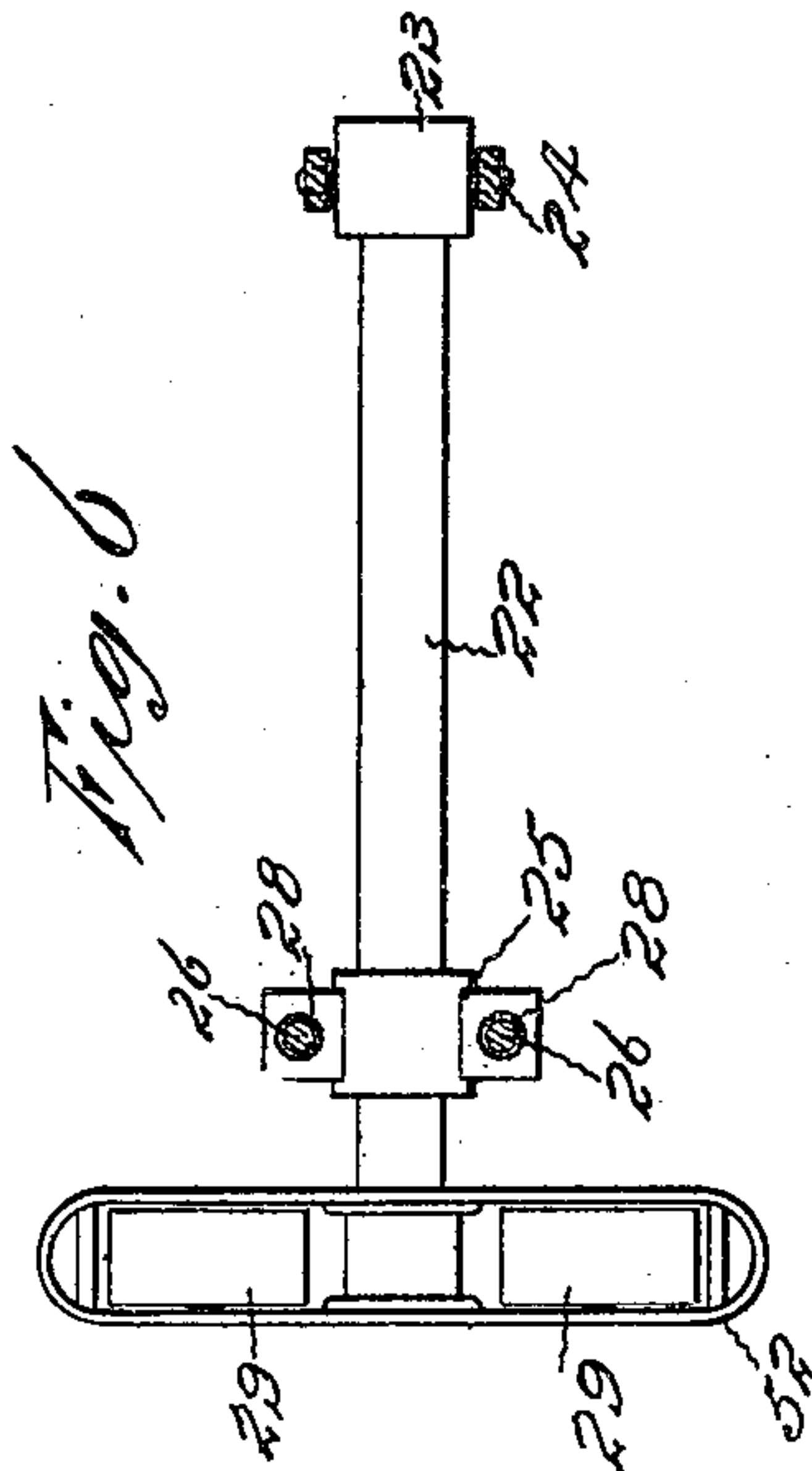
Patented Dec. 11, 1900.

G. J. CAPEWELL.
RAILWAY CAR TRUCK.

(Application filed July 29, 1899. Renewed May 17, 1900.)

(No Model.)

4 Sheets—Sheet 3.



Witnesses:

F. G. Holcomb
C. E. Buckland,

Inventor:

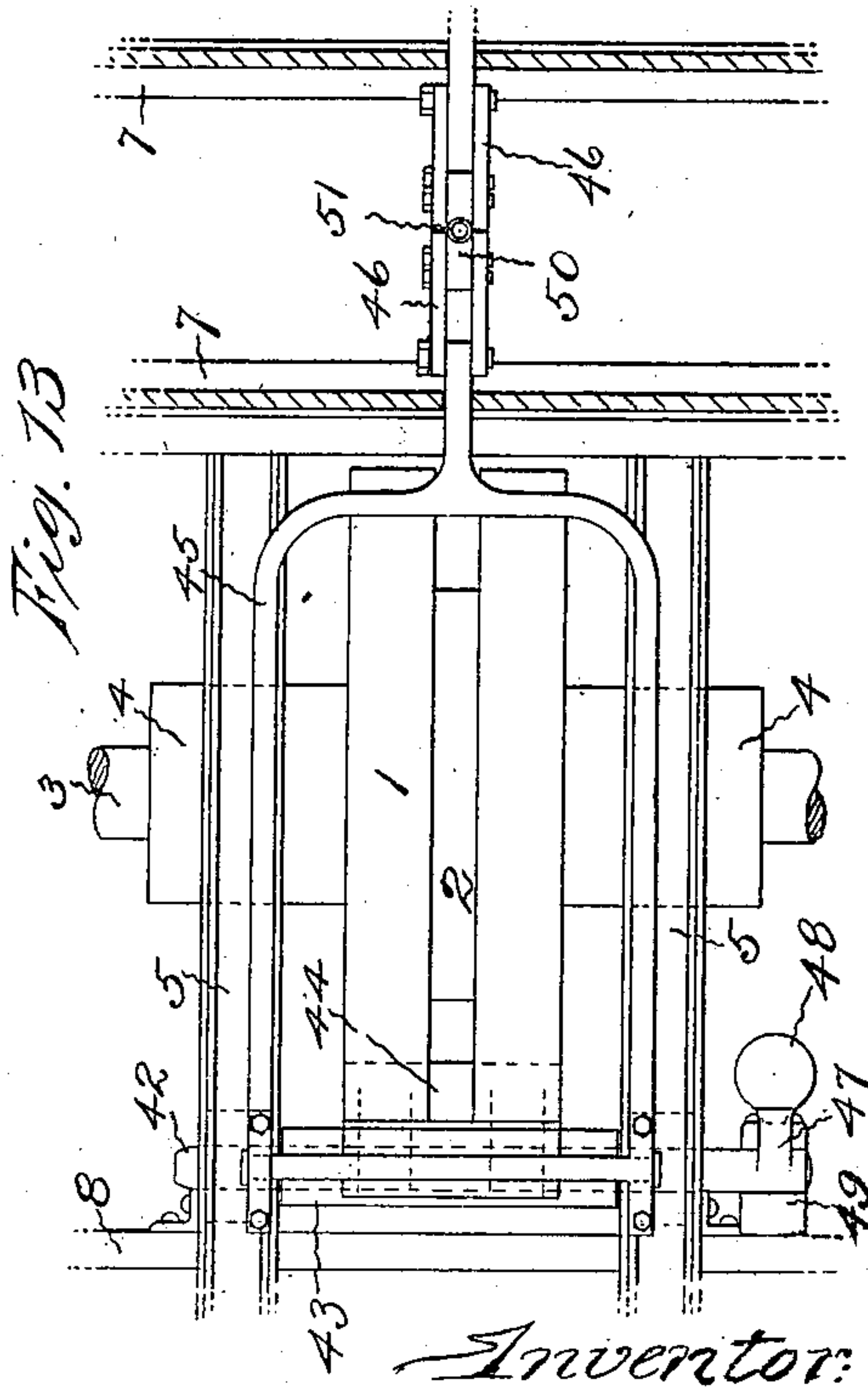
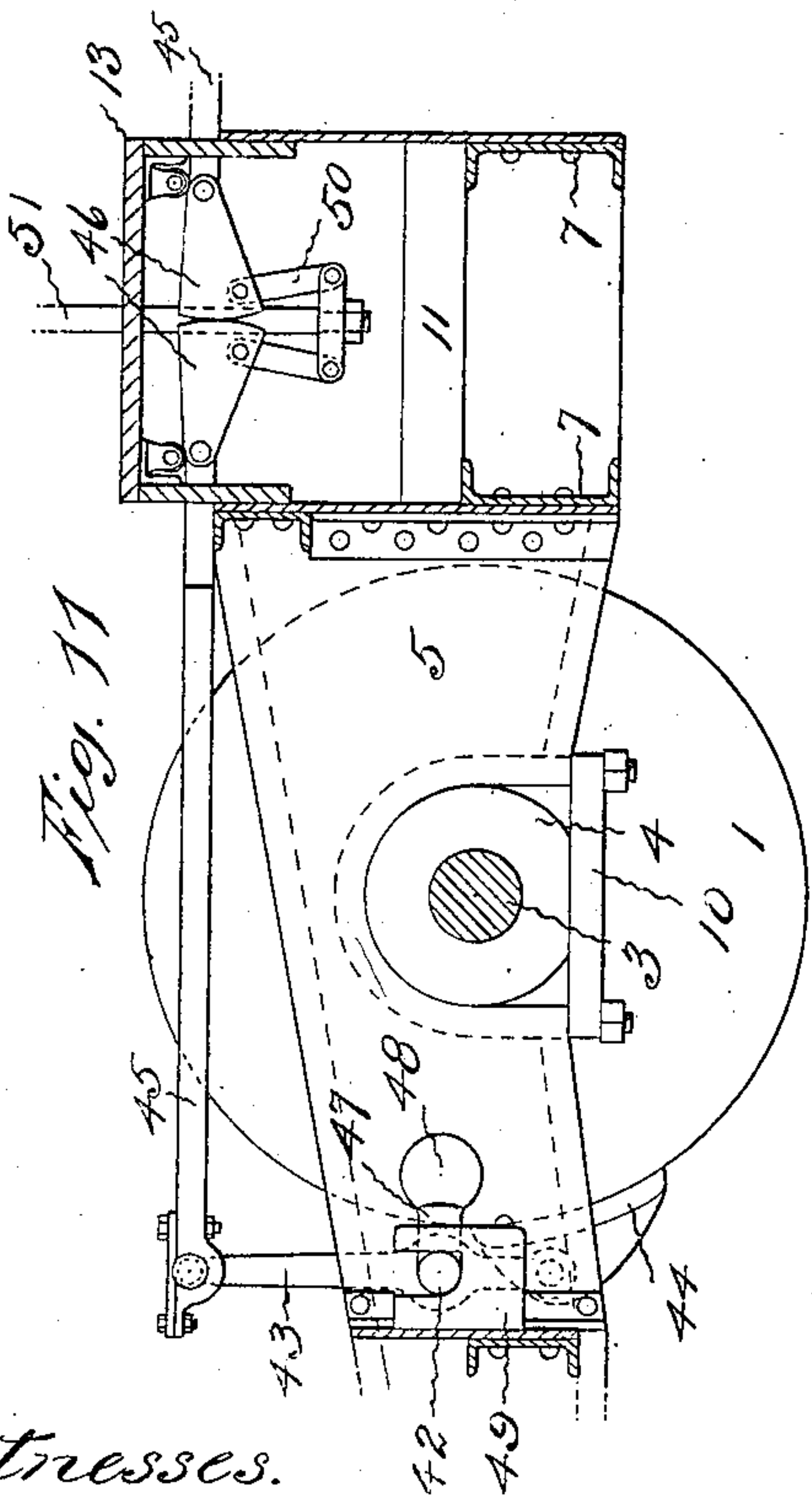
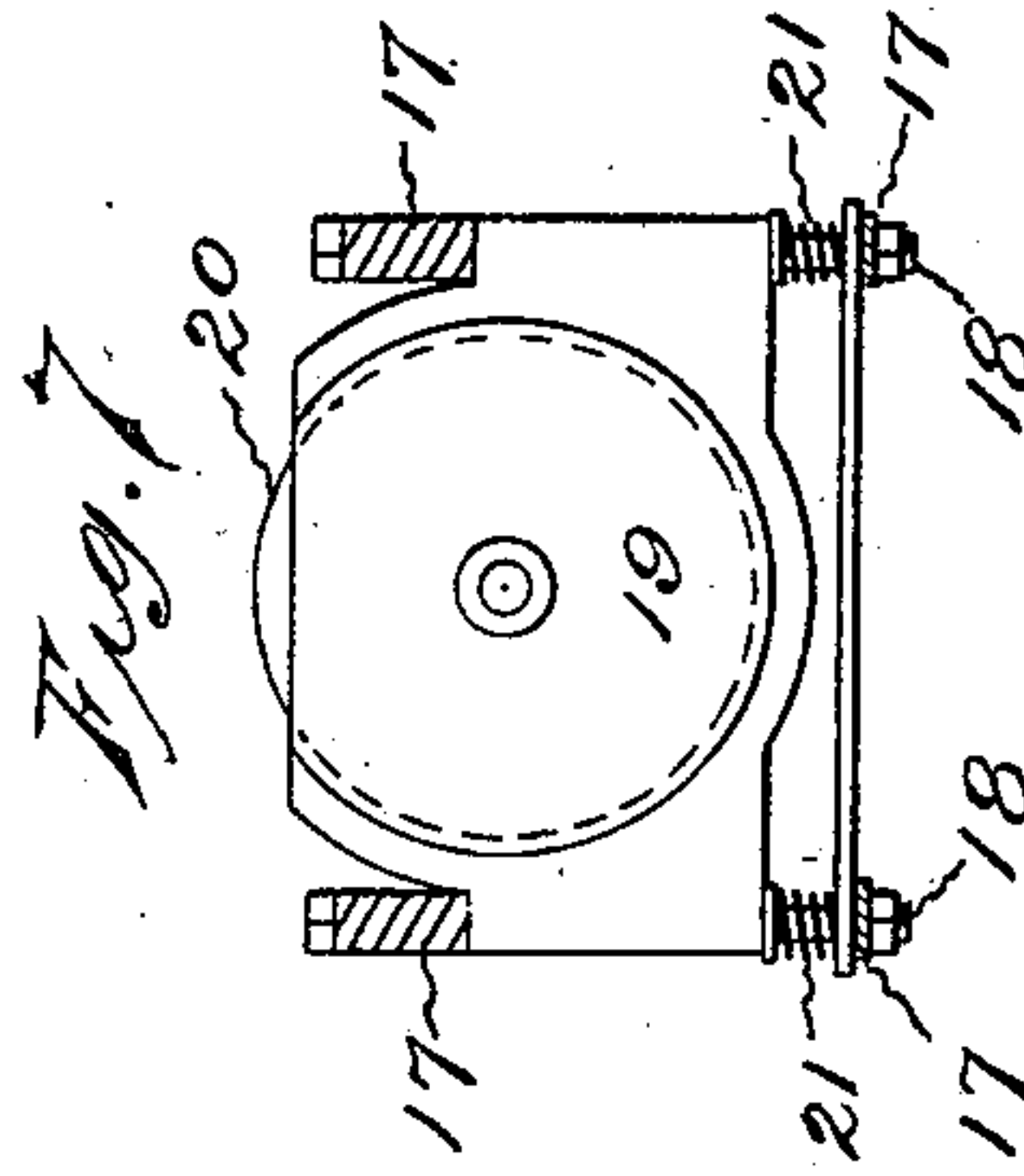
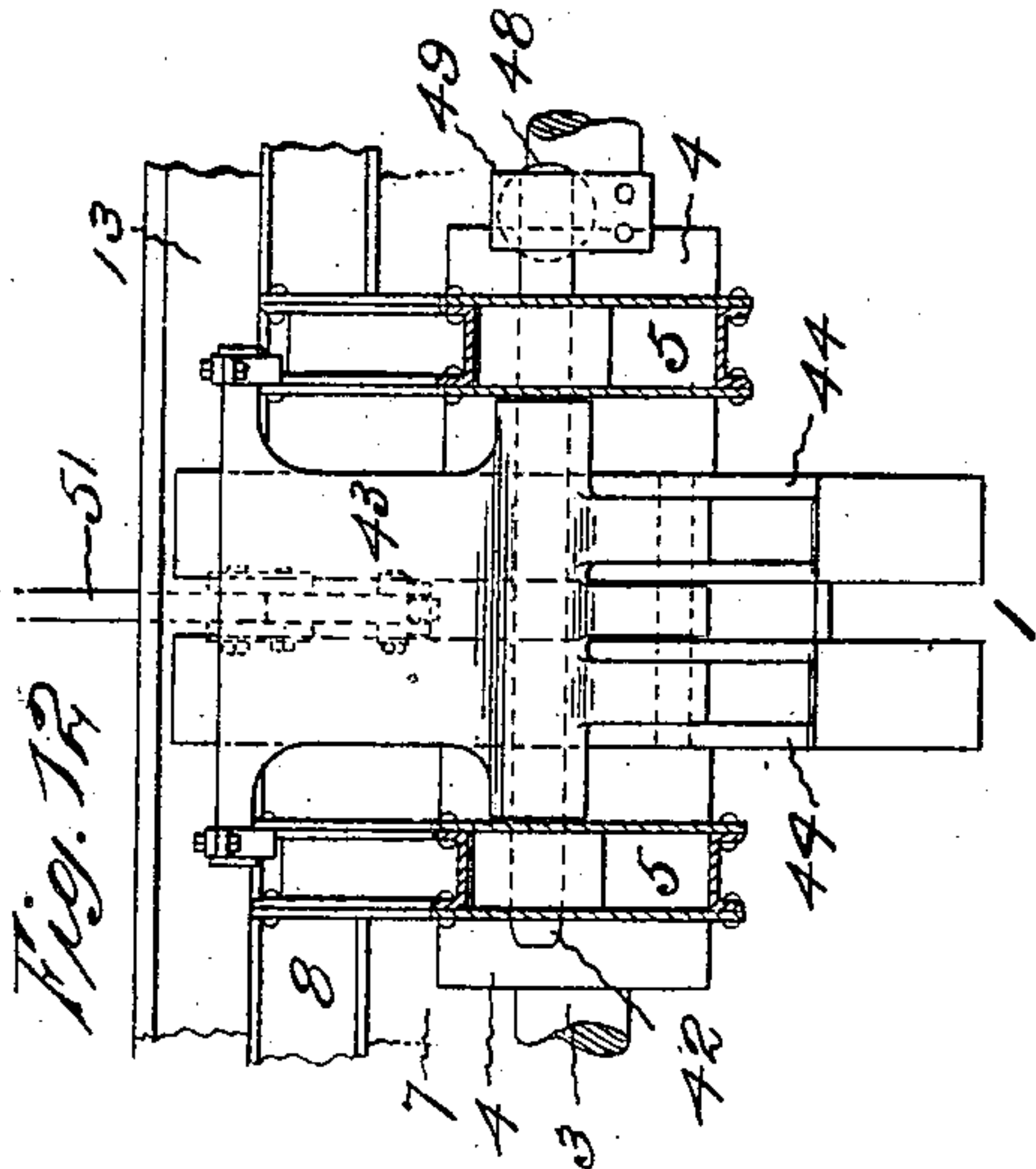
George J. Capewell, by
Harry P. Williams
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G. J. CAPEWELL.
RAILWAY CAR TRUCK.

(Application filed July 29, 1899. Renewed May 17, 1900.)

(No Model.)

4 Sheets—Sheet 4.



Witnesses.

F. H. Holcomb

C. E. Beckland.

Inventor:

George J. Capewell, by
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UNITED STATES PATENT OFFICE.

GEORGE J. CAPEWELL, OF HARTFORD, CONNECTICUT.

RAILWAY-CAR TRUCK.

SPECIFICATION forming part of Letters Patent No. 663,414, dated December 11, 1900.

Application filed July 29, 1899. Renewed May 17, 1900. Serial No. 16,987. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. CAPEWELL, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Railway-Car Trucks, of which the following is a specification.

This invention relates to those trucks which are constructed for cars designed to travel at very high rates of speed.

The object of the invention is to provide a strong and durable truck which may be run at a high velocity with comfort and safety.

The truck embodying the invention that is illustrated by the accompanying drawings has a pair of centrally-arranged double-tread traction-wheels, the axles of which upon suitable antifriction-bearings support a strong frame that at each end has a pair of horizontally-arranged guiding-wheels and on each side has a pair of vertically-arranged retaining-wheels. The truck-frame also has at each end brakes that are arranged to grip the track and adjacent to the traction-wheels has wheel-brakes.

Figure 1 of the drawings represents a plan of such a truck with a portion of the car-platform broken away. Fig. 2 is a longitudinal section taken on the plane of the broken line *a a* of Fig. 1 looking in the direction indicated by the arrow. Fig. 3 is a longitudinal section on the plane of the line *b b*. Fig. 4 is a transverse section on the plane of the line *c c* of Fig. 1. Fig. 5 is a view of one end of the truck. Fig. 6 is a plan of one set of retaining-wheels and the frame that holds these wheels. Fig. 7 is a plan of one of the guiding-wheel frames. Fig. 8 is a view, on enlarged scale, of the front end of the truck, showing in elevation the track-brake. Fig. 9 is a plan of the track-brake. Fig. 10 is a side elevation of the track-brake. Fig. 11 is a side elevation of one of the wheel-brake mechanisms. Fig. 12 is a front elevation of one of the wheel-brakes, and Fig. 13 is a plan of one of the wheel-brakes.

The traction-wheels 1 are arranged one behind the other in order to travel upon a central-rail track. Each of these wheels has a groove 2 in its periphery, so that there are

practically two tread-faces for each wheel. These treads are designed to run upon the surfaces of a rail that has a web extending upwardly from its middle. Each traction-wheel axle 3 is provided with four bearing-boxes 4, one arranged close to each side of the wheel and one near each end of the axle, and upon these boxes the truck-frame is supported, Fig. 1.

The truck-frame has four longitudinally-extending walls, one on each side of the traction-wheels and one near each end of the axles. These walls are formed of vertically-arranged plates that are wider at the middle than at the ends, and the inner walls 5 are somewhat longer than the outer walls 6. Extending across the middle of the truck-frame are two walls 7, formed of vertically-arranged plates, and across the truck at the ends of the outer walls are bars 8, and from the ends of the shorter longitudinal walls to the ends of the longer longitudinal walls of the truck-frame are braces 9. The plates, bars, and braces which form the truck-frame are riveted together in a common manner, so that a rigid frame is formed, Figs. 1 and 2. The longitudinal walls of the truck-frame are recessed for receiving the bearing-boxes, and after the bearing-boxes are in place plates 10 are bolted over the recess for retaining the boxes. When the bolts are removed from these plates 10, the truck-frame can be raised up from the bearing-boxes, Figs. 2 and 11.

Extending longitudinally of the truck-frame between the transverse middle walls are bars 11, and mounted upon springs 12, that are supported by these bars, so as to have a vertical movement between the middle walls, is a platform 13. The car-body is placed upon this platform. This platform bears a pivot-block 14, through which the car-body connection passes, and it bears blocks 15, that serve to guide the oscillatory movement of the truck with relation to the body and relieve the pivot-bolt from strain, Figs. 2 and 4. The platform is supported upon the spiral springs 12 and is held from displacement front and back by its walls, which fit between the middle transverse walls of the frame, and it is retained in transverse position by leaf-springs 16, located

between the middle frame walls and the ends of the platform, Figs. 1 and 2.

Projecting downwardly at each end of the truck-frame on each side of the longitudinal middle are arms 17, and held by these arms are rods 18. On these rods and movable transversely of the frame are housings 19, and pivotally retained by these housings and arranged to rotate in horizontal planes are the guiding-wheels 20, Figs. 1, 2, 5, and 7. The housings entirely inclose the guiding-wheels except for small portions of the inner peripheries of the wheels which extend toward each other in pairs at each end of the frame in such manner that they will run along the opposite vertical faces of the web that projects upwardly from the center of the rail into the grooves in the peripheries of the traction-wheels. Upon the rods 18 and forcing against the housings are springs 21. These springs hold the housing so that the peripheries of the horizontal wheels will always be in contact with the vertical walls of the web of the rail for guiding the truck and yet allow the wheels to yield sufficiently to prevent undue friction upon the bearings and strain upon the truck-frame when rounding curves or should the track be uneven. The rods 18 are held in place by nuts, which when turned off allow the rods to be withdrawn, and when the rods are removed the housings, with the horizontal guiding-wheels, drop from their places, Figs. 2, 5, and 7.

Near the middle of the truck-frame and extending transversely on each side from the inner wall to the outer wall is an axle 22. The inner ends of these axles are supported by bearing-boxes 23, that are pivoted to blocks 24, fastened to the longitudinal walls of the truck-frame, Fig. 4. Near the outer ends the axles are supported by bearing-blocks 25, that are mounted upon rods 26, that project downwardly from the outer longitudinal walls of the truck-frame, Fig. 4. Upon the rods between the outer boxes and the bottom of the frame are springs 27, and between the bottom of the frame and the heads of the rods above the bottom are placed springs 28. These hold the outer boxes so that they may yield vertically on the rods, Fig. 3.

On the outer ends of the axles 22 are oblong frames 52, and supported by the walls of each of these frames upon horizontal bearings is a pair of retaining-wheels 29. The peripheries of these retaining-wheels extend slightly above and also slightly below the walls of the frames, so that they may run against guard-rails placed parallel with the central rail either above or below the retaining-wheels. These retaining-wheels may run under elevated guard-rails to prevent the truck from tipping sidewise beyond a certain limit, or they may run over guard-rails placed upon the ground parallel with the central rail for the same purpose, or they may, if desired, run between elevated and ground rails. The

frames containing these retaining-wheels oscillate in vertical planes longitudinally of the truck upon the axles, and they also oscillate vertically transversely of the truck upon the pivots of the boxes that support the inner ends of the axles when there is sufficient force to overcome the pressure of the springs that yieldingly hold the outer boxes. Stop-studs 30 are attached to the retaining-wheel frames, so as to engage the stops 31, attached to the side walls of the truck-frames, and limit the oscillation of the retaining-wheels, Figs. 3 and 4.

To the plates 32, which assist in supporting the guiding-wheel housings at each end of the truck-frame, levers 33 are provided. The lower ends of the levers are provided with friction-shoes 34, and the levers are so arranged that the shoes will oscillate toward and from the vertical wall of the web 35, that projects upwardly from the middle of the central track-rail 36. A plate 37 is fastened in front of the upper ends of the levers to guide them when the upper ends are forced outwardly, Fig. 8.

Pivoted to the upper ends of the lever are toggle-wedges 38, and links 39 connect these wedges with a piston-rod 40, that is connected with a piston which is movable in an air-cylinder 41, Figs. 1, 2 and 9. When the piston in the cylinder at each end is driven outwardly by air in the usual manner, the toggles are so moved that the upper ends of the levers are forced apart and the shoes on the lower ends of the levers are caused to bite the web of the rail. When the pistons are drawn inwardly, the levers are moved so that the shoes release their bite against the web. Either one or both of these track-brakes may be operated as desired. The air connections are not shown, for they are arranged in the common manner employed for air-brake systems.

A pivot-bolt 42 is supported by the inner longitudinal walls of the truck-frame in front of each of the traction-wheels, and mounted upon each of these bolts is a lever 43. The lower ends of these levers are provided with brake-shoes 44, arranged to engage with the peripheries of the traction-wheels, while the upper ends of the levers are connected by yoke-shaped links 45 with toggle-wedges 46 at the middle of the truck-frame, Fig. 11. Each pivot-bolt is loosely thrust through the bearings in the walls and through the levers and then is given an oscillation, so that the shank 47 of its weighted head 48 will be dropped into a notch in a block 49, that is fastened to one of the walls of the frame. This holds the bolt in place; but by simply turning the bolt on its axis it is free to be withdrawn for removing the levers and repairing or renewing the brake, Figs. 11 and 13.

The toggle-wedges 46 are by links 50 connected with the rod 51—that is, connected with a piston in an ordinary air-brake system. When the rod 51 is drawn upwardly

the toggles are caused to force the links 45 outwardly and so rock the levers 43 that the brakes are applied to the traction-wheels. When the rod is pushed downwardly, the
5 brakes are loosened.

I claim as my invention—

1. A railway-car truck having centrally-arranged traction-wheels, a frame supported by the traction-wheels, an outwardly-yielding
10 frame supported on each side of the center at each end of the truck-frame, a horizontally-arranged guiding-wheel supported by each yielding frame, an oscillating frame supported
15 on each side of the middle of the truck-frame, and a pair of vertically-arranged retaining-wheels supported by each oscillating frame, substantially as specified.

2. A railway-car truck having centrally-arranged traction-wheels, a frame supported by
20 the traction-wheels, horizontally-arranged guiding-wheels supported by the frame, a wheel-frame supported on each side of the truck-frame so as to oscillate in a vertical longitudinal plane on an axis extending trans-
25 versely of the truck-frame, and vertically-arranged retaining-wheels held by the wheel-frames, substantially as specified.

3. A railway-car truck having centrally-arranged traction-wheels, a frame supported by
30 the traction-wheels, horizontally-arranged guiding-wheels supported by the frame, a wheel-frame supported on each side of the truck-frame so as to oscillate in a vertical transverse plane on an axis extending longi-
35 tudinally of the truck-frame, and vertically-arranged retaining-wheels held by the wheel-frames, substantially as specified.

4. A railway-car truck having centrally-arranged traction-wheels, a frame supported by
40 the traction-wheels, horizontally-arranged guiding-wheels supported by the frame, a wheel-frame supported on each side of the truck-frame so as to oscillate in a vertical longitudinal plane on a transverse axis, and
45 also in a vertical transverse plane on a longitudinal axis, and vertically-arranged retaining-wheels held by the wheel-frames, substantially as specified.

5. A railway-car truck having centrally-arranged traction-wheels, a frame supported by
50 the traction-wheels, horizontally-arranged guiding-wheels supported by the frame, an axle extending transversely on each side of the truck-frame near the middle, pivoted
55 bearing-blocks holding the inner ends of the axles, spring-supported bearing-boxes holding the outer ends of the axles, a frame secured to the outer end of each axle, and a

pair of retaining-wheels held by each frame, substantially as specified. 60

6. A railway-car truck having centrally-arranged traction-wheels, a frame supported by the traction-wheels, horizontally-arranged
65 guiding-wheels supported by the frame, an axle extending transversely on each side of the truck-frame near the middle, pivoted bearing-boxes holding the inner ends of the axles, spring-supported bearing-boxes holding the outer ends of the axles, a frame se-
70 cured to the end of each axle, a pair of retaining-wheels held by each frame, and stops arranged on each wheel-frame for engagement with the walls of the truck-frame, so as to limit the oscillation of the wheel-frame,
75 substantially as specified.

7. A railway-car truck having centrally-arranged traction-wheels, a frame supported by the traction-wheels, a housing supported on
80 each side of the middle at each end of the frame, a guiding-wheel supported by a vertical axle held by each housing, and vertically-arranged retaining-wheels supported by the frame, substantially as specified.

8. A railway-car truck having centrally-arranged traction-wheels, a frame supported by
85 the traction-wheels, a housing supported on each side of the middle on each end of the frame, springs for forcing the housing toward the middle line of the truck-frame, a guiding-wheel supported by a vertical axle
90 held by each housing, and vertically-arranged retaining-wheels supported by the frame, substantially as specified.

9. A railway-car truck having centrally-arranged traction-wheels, a frame supported by
95 the traction-wheels, a housing supported on each side of the middle of the frame, springs for forcing the housings toward the middle line of the truck-frame, and a guiding-wheel supported in each housing by a vertical axle,
100 substantially as specified.

10. A railway-car truck having centrally-arranged traction-wheels, a frame supported by the traction-wheels, an axle extending trans-
105 versely on each side of the truck-frame near the middle, pivoted bearing-boxes holding the inner ends of the axles, spring-supported bearing-boxes holding the outer ends of the axles, a frame secured to the outer end of each axle, and retaining-wheels held by these
110 frames, substantially as specified.

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Witnesses:

H. R. WILLIAMS,
F. G. HOLCOMB.