

No. 842,740.

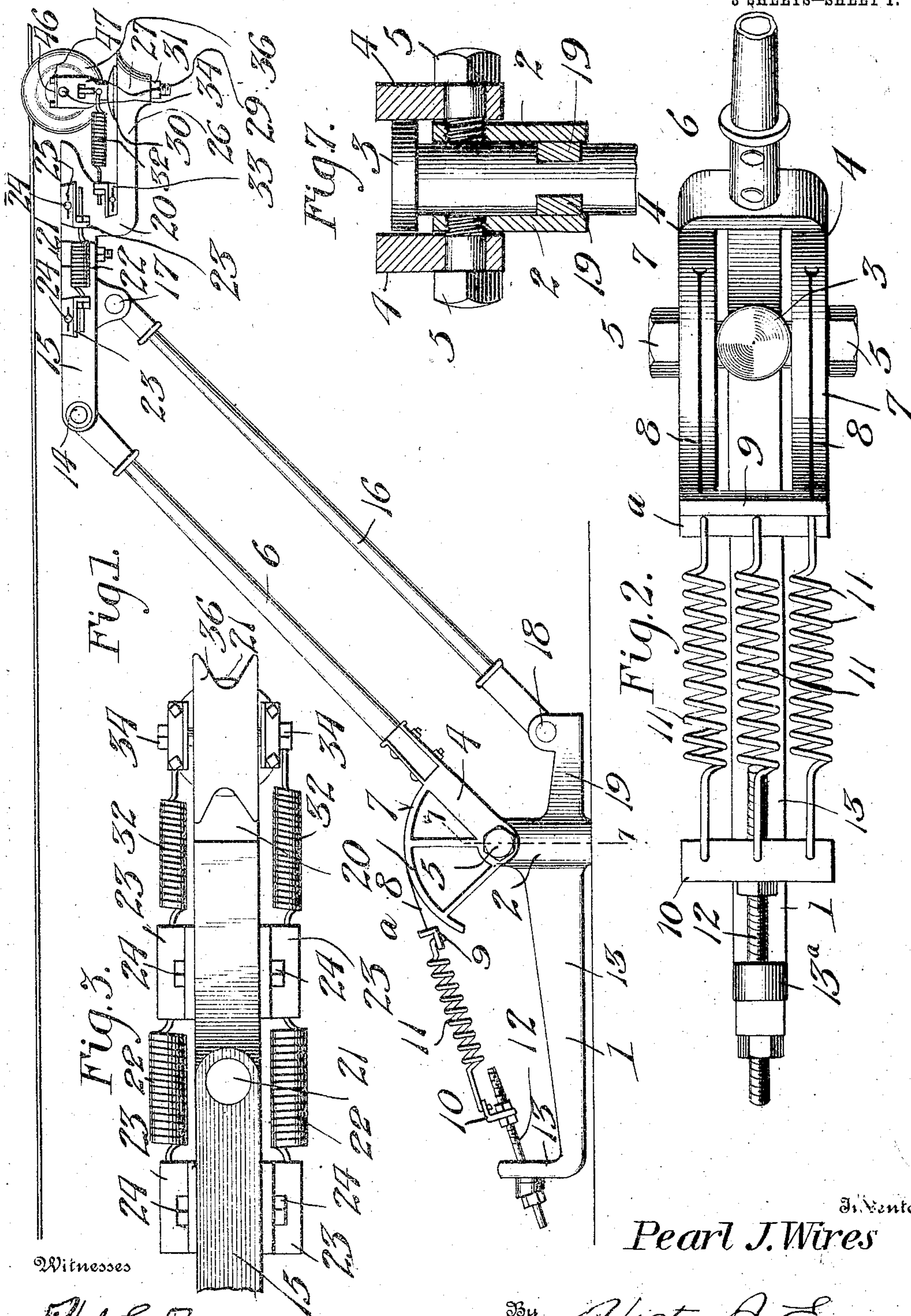
PATENTED JAN. 29, 1907.

P. J. WIRES.

TROLLEY.

APPLICATION FILED MAR. 13, 1906.

3 SHEETS—SHEET 1.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 4.

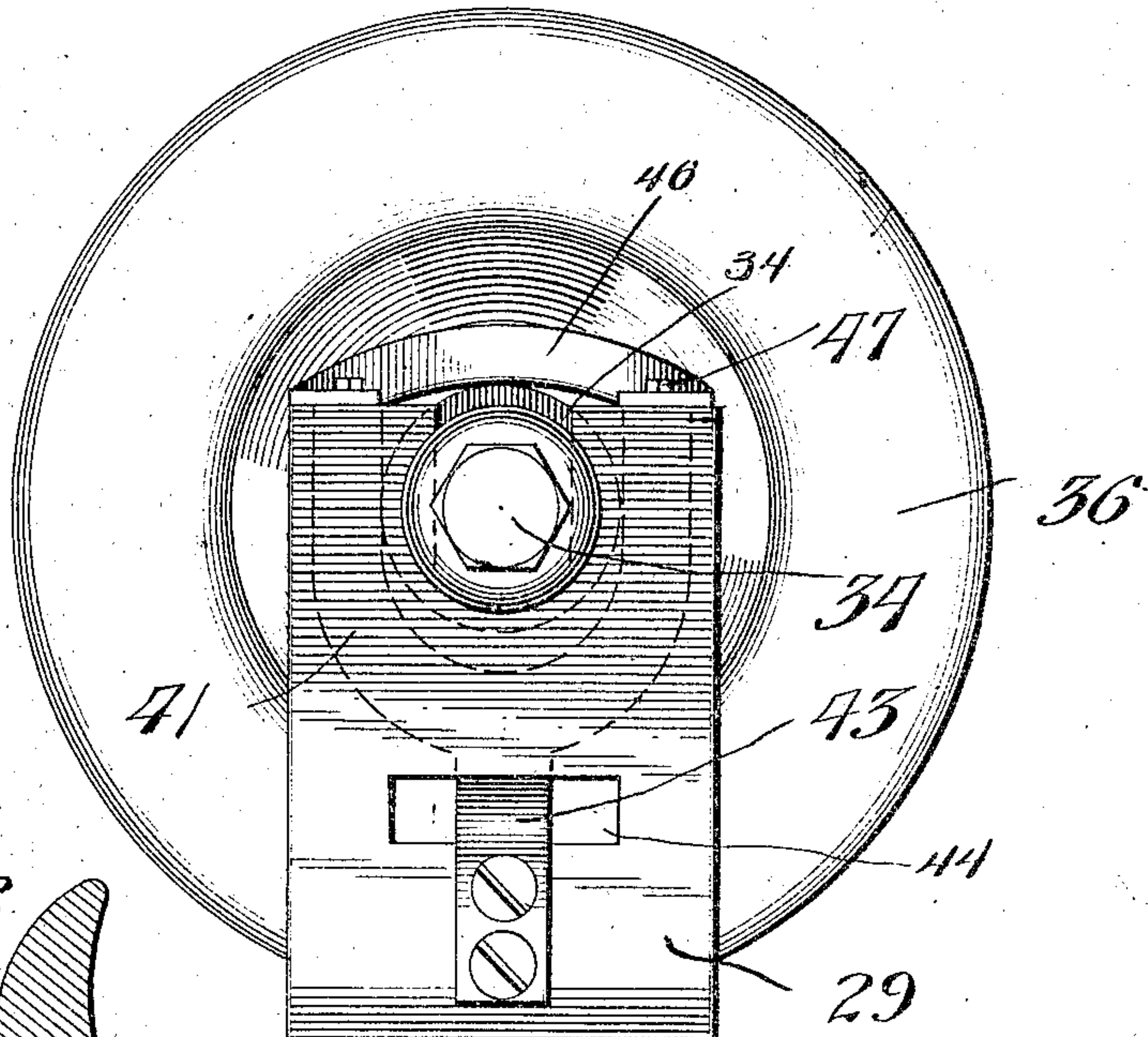


Fig. 5.

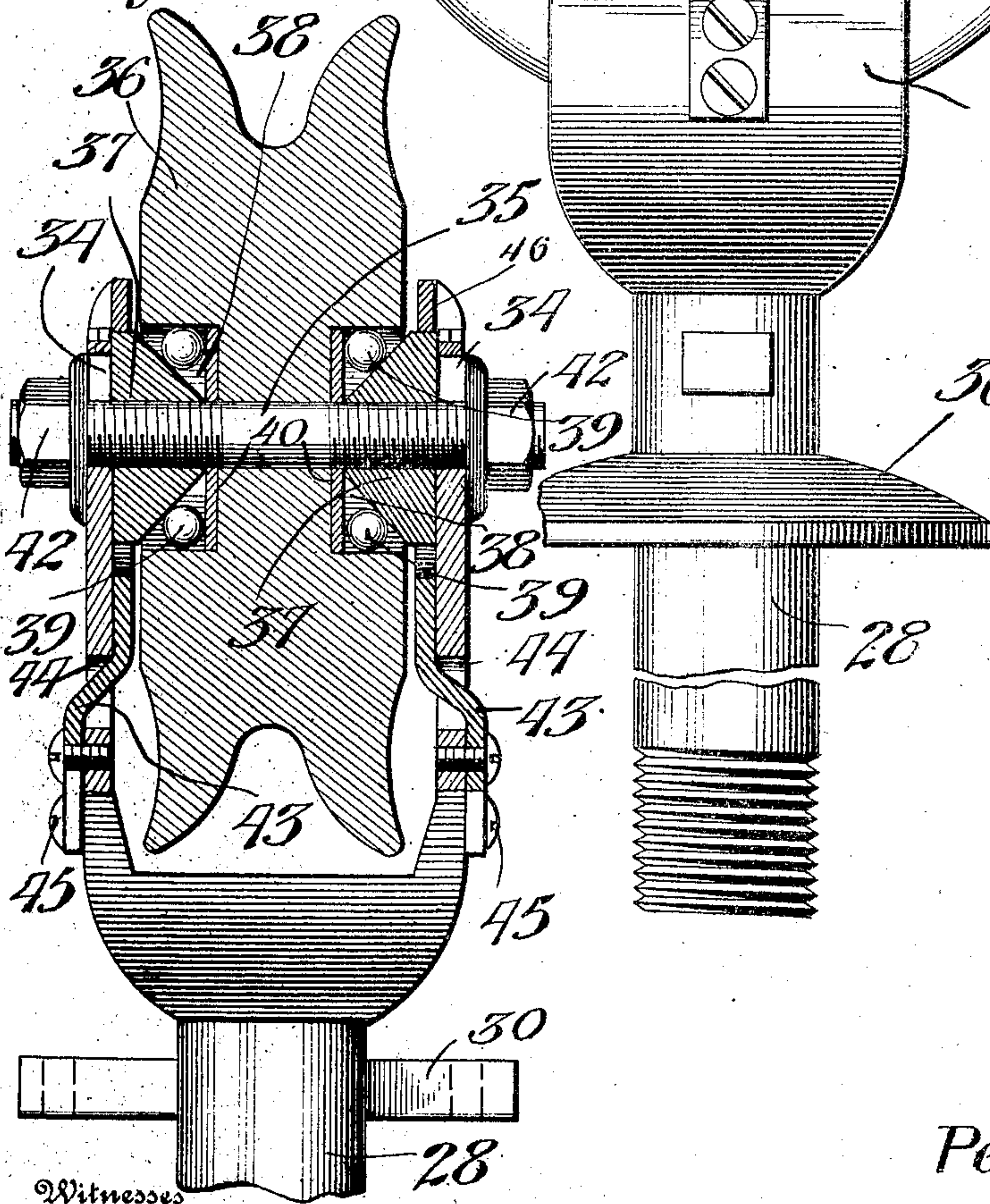
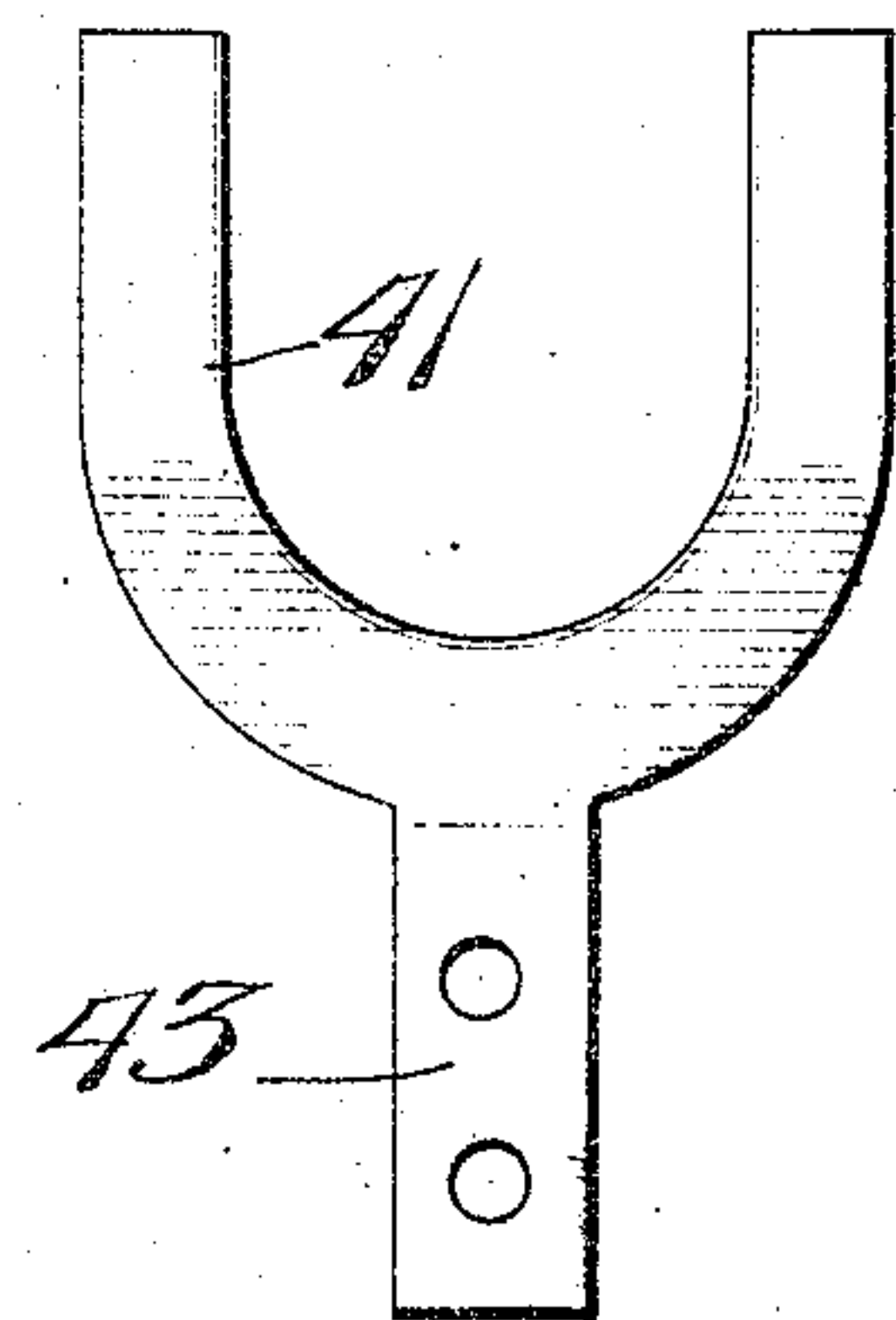


Fig. 6.



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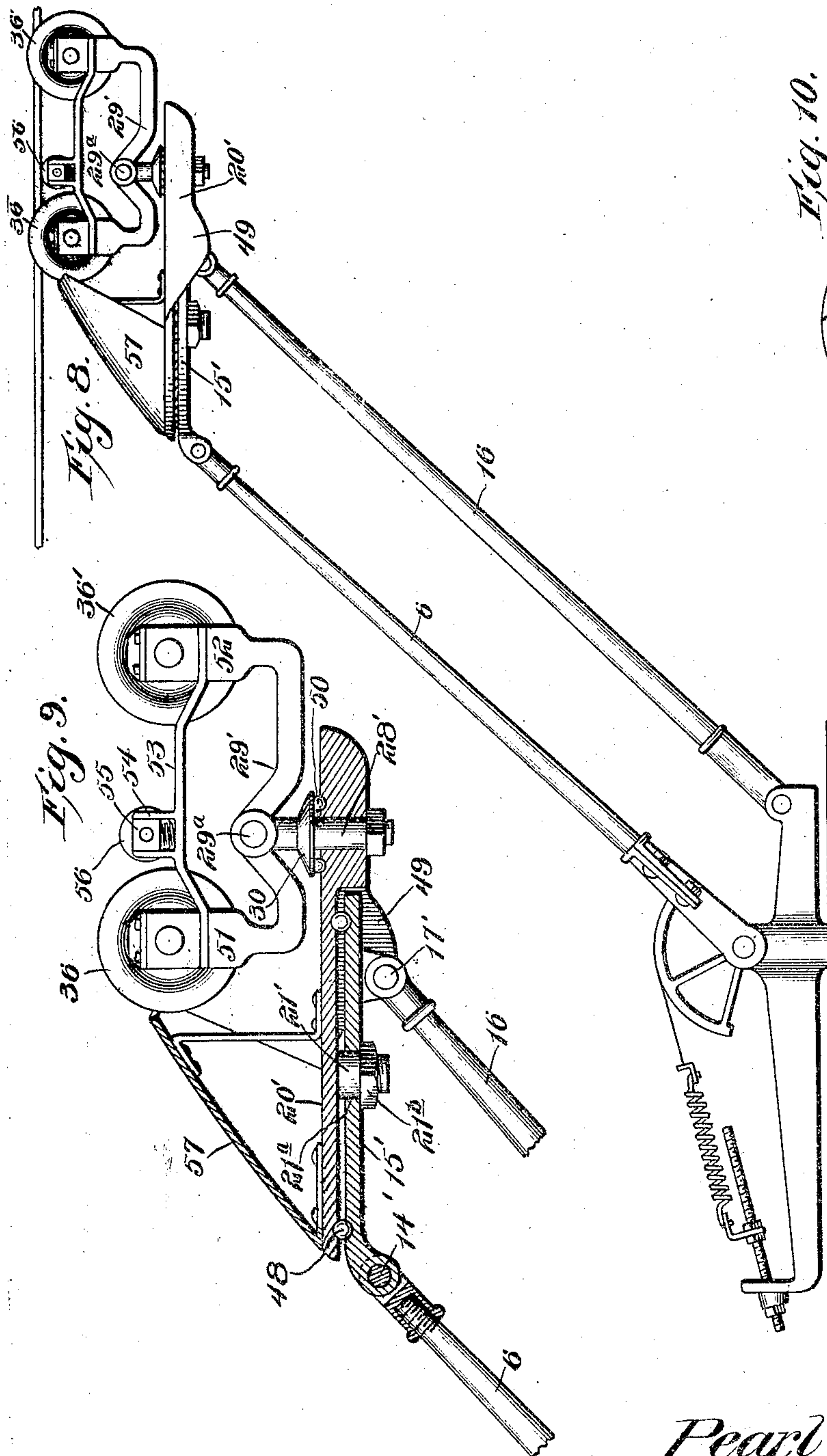
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

PEARL J. WIRES, OF OSBORN, OHIO.

TROLLEY.

No. 842,740.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed March 13, 1906. Serial No. 305,869.

To all whom it may concern:

Be it known that I, PEARL J. WIRES, a citizen of the United States of America, residing at Osborn, in the county of Greene and State of Ohio, have invented new and useful Improvements in Trolleys, of which the following is a specification.

This invention relates to improvements in trolleys for electric railway-cars, the object of the invention being to provide a trolley which will permit the trolley-wheel to freely accommodate itself to all sinuosities, lateral diversions, curves, and variations in the height of the trolley-wire without strain upon the trolley-pole, and which will thereby reduce wear and tear on the parts of the trolley, as well as the liability of the trolley-wheel jumping the wire.

Another object is to provide means to permit ready removal of the trolley-wheel when occasion requires and to secure a free feed of electric current from the wire to the car-circuit through the pole.

With the above and other objects in view the invention consists of the novel construction and combination of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a trolley embodying the novel features of my invention. Fig. 2 is a top plan view of the trolley base or stand and connected parts. Fig. 3 is a similar view of the trolley-head and trolley-wheel carried thereby. Fig. 4 is a side elevational view of the trolley. Fig. 5 is a vertical transverse section thereof. Fig. 6 is a side view of one of the brushes or conductor-strips. Fig. 7 is a cross-section on the line 7-7 of Fig. 1. Fig. 8 is a side elevation of a modified form of trolley. Fig. 9 is a vertical longitudinal section through the head thereof, and Fig. 10 is a top plan view of the head.

Referring now more particularly to the drawings, the numeral 1 designates the trolley base or stand, which is provided with a bearing socket or sleeve 2, adapted to turn horizontally on a vertical pivot bolt or stem 3, extending downward through the roof of the car and adapted in practice to be connected with the elements of the motor-feed circuit on the car. A pole-supporting bracket 4 is forked at its lower end to embrace the upper portion of the sleeve 2 and is pivotally mounted to swing in a vertical plane upon pivot-screws 5, which enter the sleeve, as

shown in Fig. 7. The upper end of the bracket 4 is provided with a socket to receive the lower end of the trolley-pole 6. From the arms of the bracket 4 project curved or segmental shoes 7, to which are attached at a point adjacent to the pole-socket and rearwardly of the plane of the pivot-bolts 5 the inner ends of flexible straps 8, which may be in the form of cords, wires, leather straps, or chains, the outer ends of said straps being attached to an angular connecting-piece 9. Disposed between the connecting-piece 9 and a similar connecting or bridge piece 10 are a series of coiled springs 11, said springs being attached at their ends to the said connecting or bridge pieces and serving to exert pressure to throw the pole 6 upward and maintain the trolley-wheel in contact with the trolley-wire. The bridge-piece 10 is connected to a screw-bolt or stem 12, attached to an upright 13 at the forward end of the front arm 13 of the stand 1, the connection between the bridge-piece 10 and the stem 12 being such as to permit said bridge-piece to be adjusted on the stem to regulate the pull of the springs 11. The stand 1 with the trolley-pole and wheel carried thereby are adapted to swing on the bolt or stem 3 as an axis to permit the trolley to be reversed in the usual manner.

Pivotally connected at its forward end to the upper end of the pole 6, as indicated at 14, is a trolley-supporting head comprising a main bracket or head proper, 15, which is pivotally connected in rear of the pivotal connection 14 with the upper end of a supplemental trolley pole or brace 16, as indicated at 17, the lower end of said pole or brace being pivoted at 18 to an arm 19, extending rearwardly from the socket or sleeve 2 of the base or stand 1. The supplemental pole or brace 16 is thus mounted to act in the nature of a counteracting link to support the head 15 and permit the same to swing freely in a vertical plane to adapt the trolley-wheel to vary its position to accord with the height of the wire, the head 15, however, being maintained by the pole and brace in a horizontal position.

The head 15 is provided with a laterally-swinging wheel-supporting section or bracket 20, connected thereto by a vertical pivot-bolt 21 and normally maintained in alignment with the head by coiled springs 22, said springs being disposed on opposite sides of the pivot-joint and adjustably connected

with the head and bracket to permit the latter to swing laterally in either direction and to return the same to its normal position. The ends of the springs are adjustably connected to brackets 23, disposed, respectively, upon the head and bracket and adjustably connected therewith by fastening-screws 24, each bracket 23 being formed with a longitudinal slot 25, by which it may be adjusted relatively to the other bracket and fastened in adjusted position to regulate the resisting pressure of the spring. This construction permits the wheel-supporting bracket 20 to have free lateral movement to adapt the wheel to accommodate itself to lateral sinu-
osities, irregularities, and curves in the wire.

From the supporting-bracket 20 extends an arm 26, formed with a bearing-socket 27 to receive the stem 28 of the trolley harp or yoke 29, which stem is provided with a flange or head-plate 30 to rest upon the arm and is journaled in the socket to permit the yoke to swing laterally or in a horizontal plane, the lower end of the stem being threaded to receive a securing-nut 31 for retaining it in position. The yoke is connected by springs 32 to adjusting-brackets 33 on the wheel-supporting bracket 20, said brackets 33 being similar in construction to the brackets 23 previously described. It will be understood that the resisting pressure of the springs 32 may thereby be regulated and that said springs permit the yoke to swing freely in either direction and restore the same to its normal position. This construction of the head, swinging supporting bracket, and yoke permits the trolley-wheel carried by the yoke to have a nicety of adjustment to accommodate itself to widely-varying irregularities in the wire and to thereby reduce the wear and tear thereon and the liability of the wheel jumping the wire.

The arms of the yoke are formed with vertical slots 34, opening through the upper edge thereof, which slots receive the threaded ends of a pivot-bolt 35, the bolt having a smooth-surfaced central portion on which the trolley-wheel 36 is revolubly mounted. In threaded engagement with the threaded ends of the bolt are cones 37, which project into bearing sockets or recesses 38, formed in the opposite sides of the wheel 36 and which, in conjunction with said cones, provide raceways for the reception of bearing-balls 39, which run in contact with the faces of the cones and suitably-hardened wear-plates 40. The cones fit within conducting brushes or yokes 41 and are held thereby from rotation, and the bolt 35 is secured in fixed position within the slots 34 by clamping-nuts 42, bearing against the outer sides of the arms of the yoke 29. The brushes 41 are provided with downwardly-projecting shanks or stems 43, which are bent laterally to project outwardly through the slots or openings 44 in

the arms of the yoke 29 and are fastened upon the outer side of said yoke by securing-screws 45. By this construction the wheel 36 is mounted to have free revolution and to conduct the current from the trolley-wire to the conducting-stem 3 through the parts of the bearing, the brushes 41, the yoke 29, the parts of the trolley-head, and the pole 6. The slots 34 are closed by caps or cover-plates 46, fastened in position by screws 47. These cover-plates not only close the slots 34, but also the openings of the yoked portions of the brushes 41, and thereby hold the shaft and cones from upward movement. Upon detaching the cap or cover plates and slacking the nuts 42 the trolley-wheel and its bearings may be lifted out of engagement with the harp 29, as will be readily understood, thus permitting of ready repairs or the convenient substitution of a new wheel for a worn-out one.

In the embodiment of the invention disclosed in Figs. 8, 9, and 10 the head is composed, as in the construction before described, of two sections 15' and 20', the main section, bracket or head proper, 15', being in the form of a plate pivotally mounted at 14' and 17' upon the poles 6 and 16. The section 20' also comprises a plate projecting partially over the plate 15' and partially in rear thereof and provided with a stud 21' projecting through and turning in a bearing opening 21^a in the plate 15' and threaded at its lower end to receive a retaining-nut 21^b. The meeting faces of the plates are grooved to form a raceway for antifriction-balls 48, stops 49 being provided on opposite sides of the plate 20' to limit its swinging movement. The harp 29' is eccentrically pivoted, as at 29^a, upon its stem 28' to swing in a vertical plane, and the stem is journaled in the rear extension of the plate 20', bearing-balls 50 being arranged to run in a raceway formed between the plate and flange 30. On the harp are two forks 51 and 52, in which wheels 36 and 36' are journaled in the manner shown in Fig. 5. A bridge 53 connects the forks and supports vertical guides 54, in which are spring-supported bearings 55, in which is journaled a guard-roller 56, arranged immediately above the pivot 29^a and adapted to bear upon the wire immediately in rear of the wheel 36 to steady the harp and prevent said wheel 36 from bearing too heavily on the wire under the leverage exerted by the wheel 36', which normally over-balances the wheel 36. This construction provides a wheel structure which will readily tilt to quickly conform to variations in the height of the wire. An inclined guard or fender plate 57 is fastened to the forward end of the plate 20' to guide the wire in adjusting the trolley to the wheels and prevent the wire from becoming caught under the front wheel.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of my improved trolley will be readily understood, and it will be seen that it provides a construction which permits the trolley-wheel to readily accommodate itself to variations in the height of the wire as well as curves and lateral irregularities thereof, thus reducing wear on the parts of the trolley to a material extent and diminishing the liability of the wheel jumping the wire.

Equivalent elements may of course be substituted for these herein shown in order to disclose one form of my invention.

Having thus described the invention, what is claimed as new is—

1. In a current-collector, a base, poles pivotally connected with the base, a supporting-spring between the base and one of the poles, a trolley-head comprising sections, one pivotally mounted upon the poles and the other pivotally mounted to swing laterally upon the first-named section, said laterally-swinging section projecting rearwardly beyond the rear trolley-pole, and a harp mounted upon the rearwardly-projecting portion of said section.

2. In a current-collector, a base, a pair of poles pivotally mounted upon the base, one in rear of the other, a trolley-head comprising two sections, one of said sections being pivotally mounted upon the poles to swing in a vertical plane and the other pivotally mounted for lateral movement upon said vertical swinging section, the laterally-swinging section being provided with a portion projecting in rear of the rear pole, and a harp pivotally mounted for lateral movement upon said portion.

3. In a current-collector, a base, poles pivotally supported by the base, a trolley-head comprising two sections, one of said sections being pivotally mounted for vertical movement upon the poles and the other being arranged in rear of said section and pivotally mounted for lateral movement thereon, springs connecting the head-sections to limit

such lateral movement, a harp pivotally mounted for lateral movement on the rear section, and springs connecting said section with the harp and serving to limit the swinging movement of the latter.

4. In a trolley, the combination of a base, spring-actuated trolley-poles pivotally supported thereon and arranged one in rear of the other, a sectional head supported by said poles, one of the head-sections being pivoted for vertical movement upon the pole and the other pivoted for lateral movement upon said vertical moving swinging section, means for limiting the swing of the laterally-movable section, and a trolley-wheel pivotally mounted upon the laterally-movable section in rear of the poles.

5. In a trolley, a harp having its side arms provided with slots opening through the upper ends thereof, a terminally-threaded bolt fitting in said slots, means for clamping the bolt in position, cones threaded upon the ends of the bolt, a trolley-wheel revolvably mounted upon the bolt and provided with bearing-sockets receiving said cones, bearing-balls disposed in the sockets and contacting with the cones, yokes engaging the cones and holding the same from movement, said yokes being fastened to the arms of the harp, and bridge-pieces closing the slots in the harp-arms and yokes and retaining the bolt and cones in operative position.

6. In a trolley, a pole, a swinging head carried by the pole, said head projecting rearwardly therefrom, means for pivotally supporting the head in rear of the pole, a laterally-swinging bracket upon the head in rear of such pivotal supporting connection, a laterally-swinging wheel journaled upon the bracket and means for limiting the movement of the bracket and wheel and restoring the same to their normal position.

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

PEARL J. WIRES.

Witnesses:

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A. H. DUNKEL.