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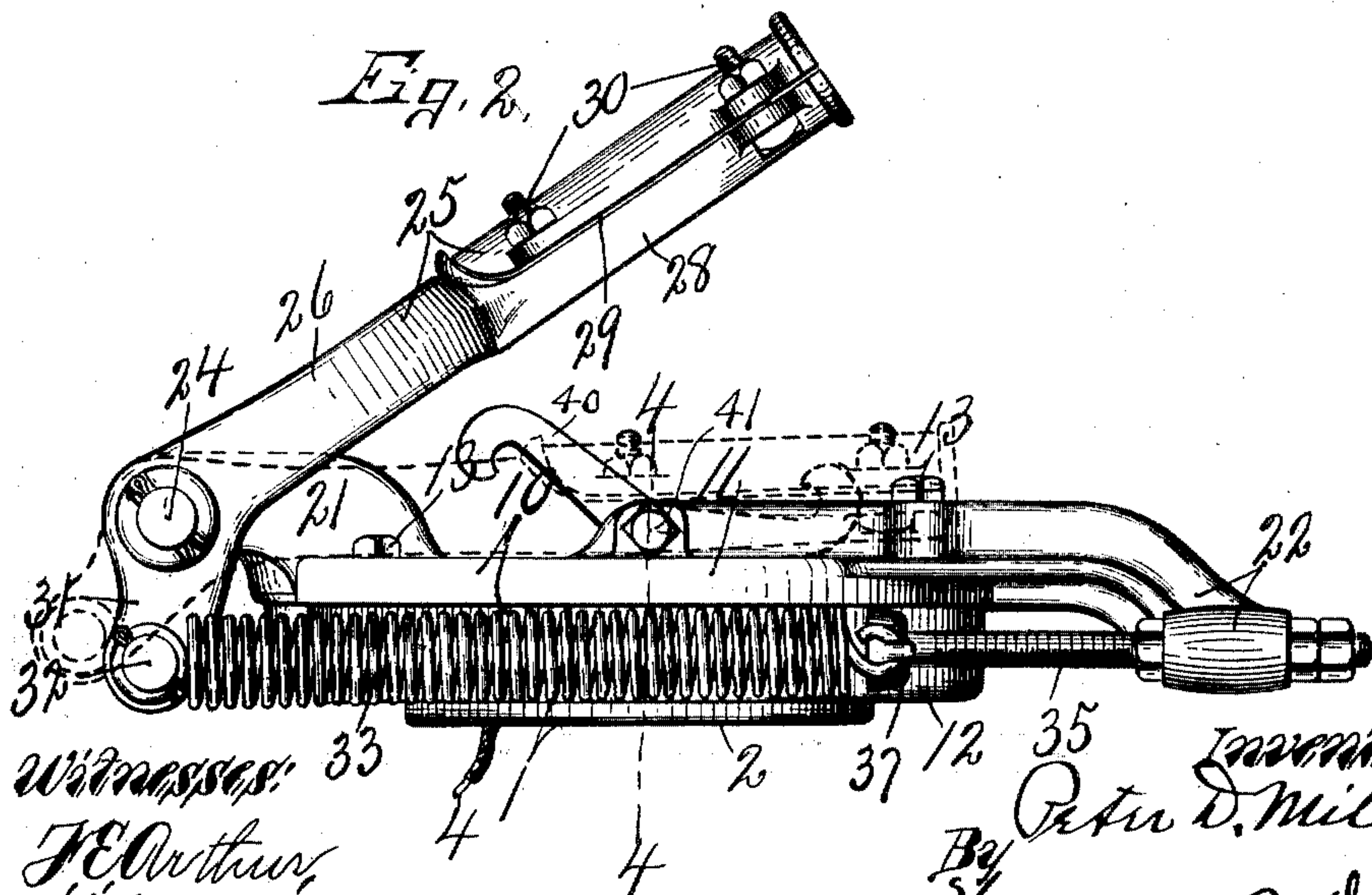
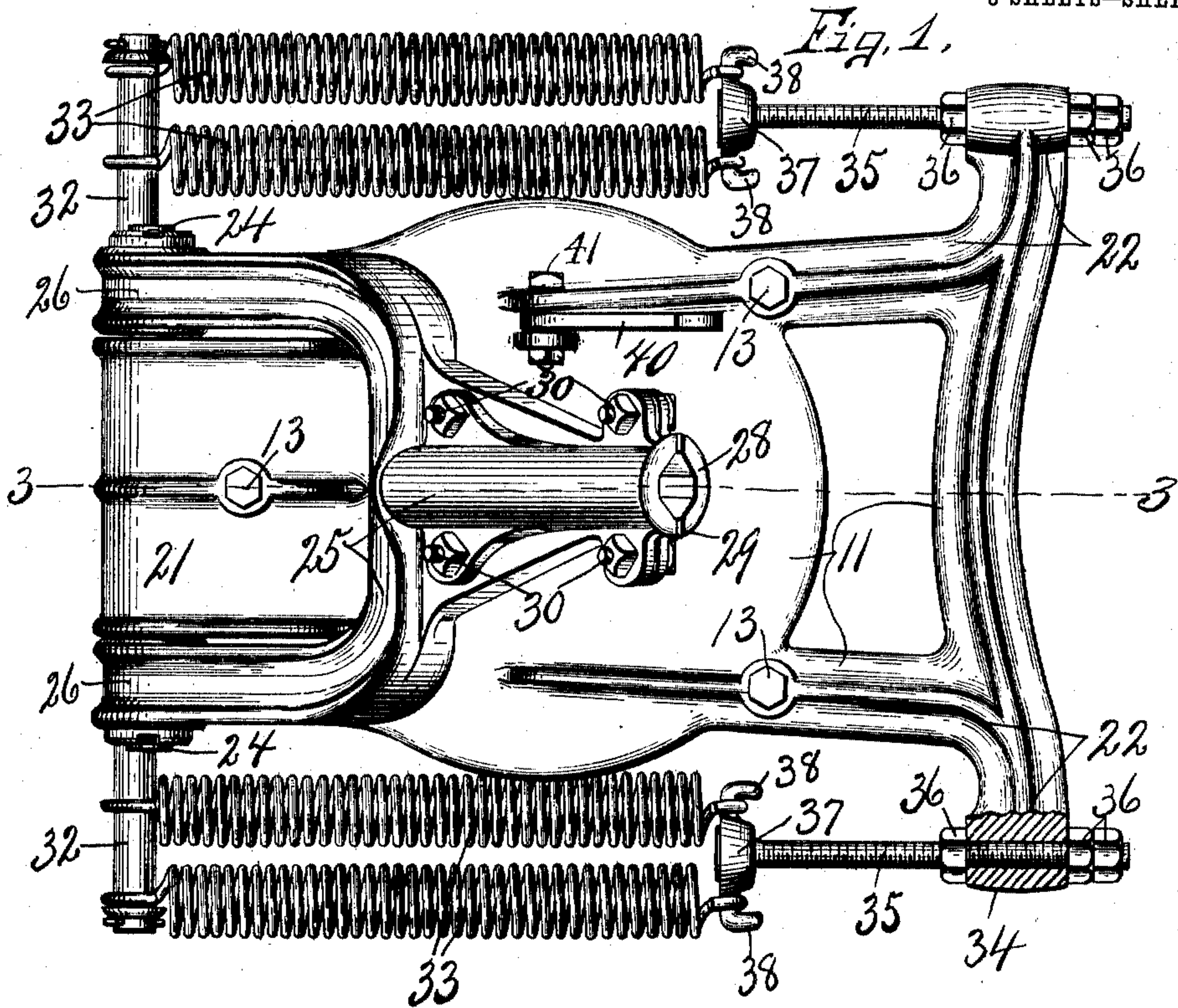
PATENTED MAY 17, 1904.

P. D. MILLOY.
TROLLEY BASE.

APPLICATION FILED NOV. 16, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



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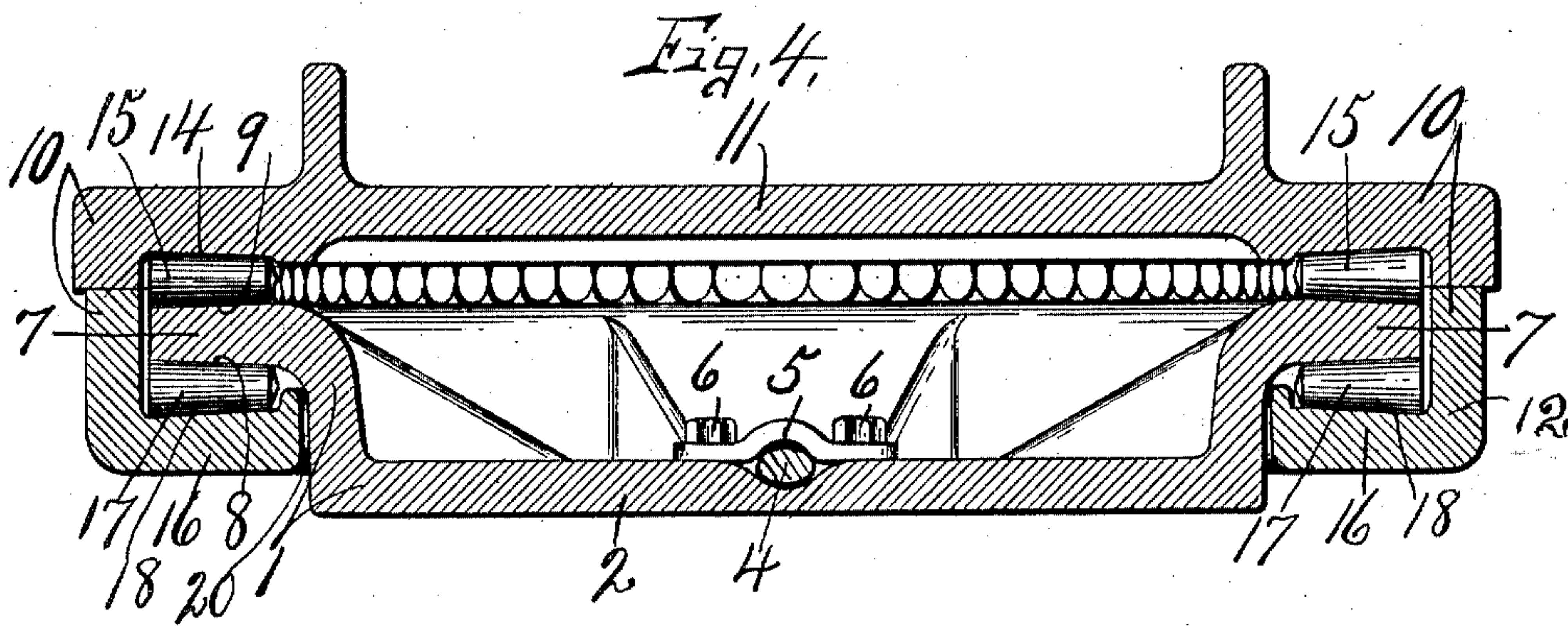
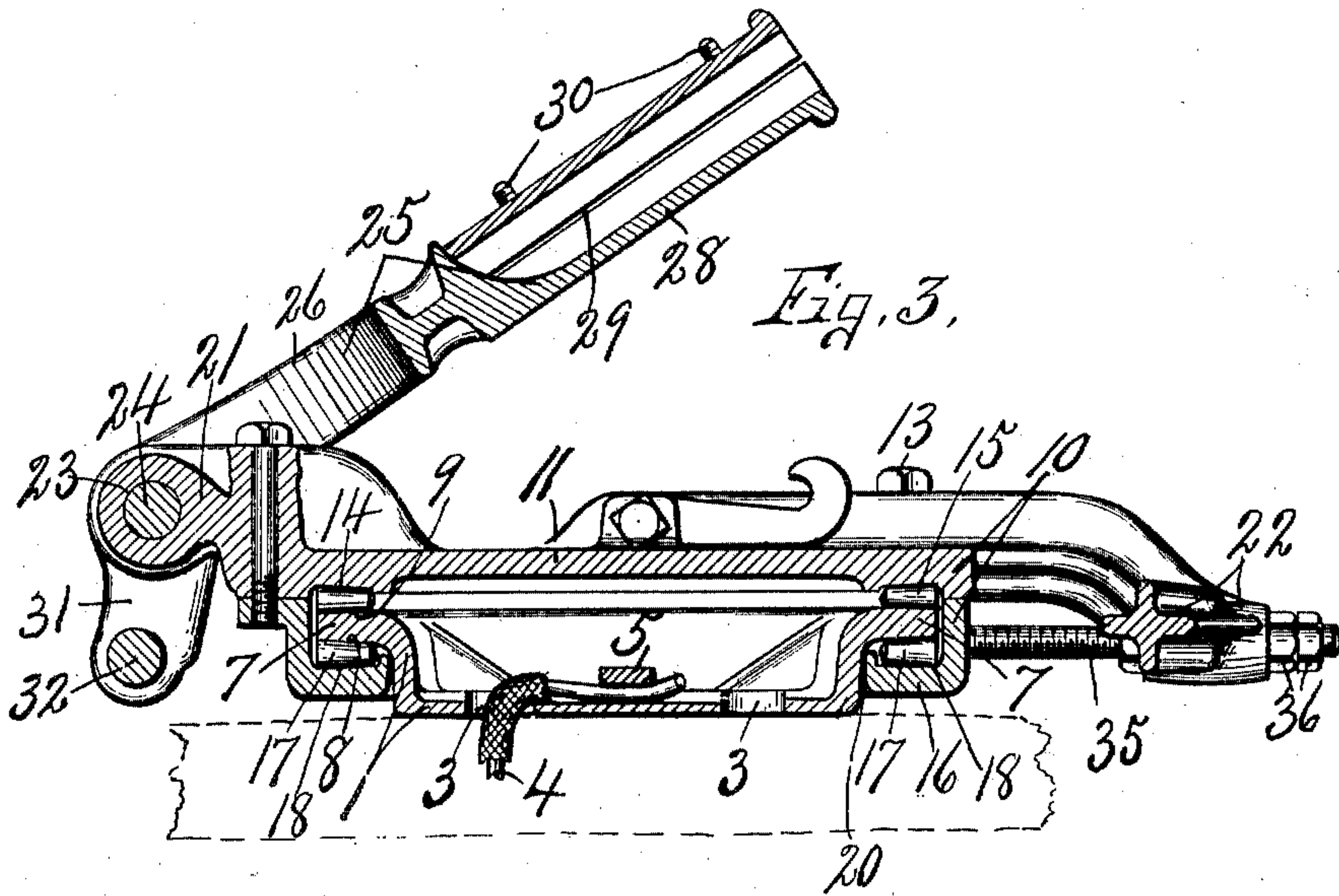
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3 SHEETS—SHEET 2.



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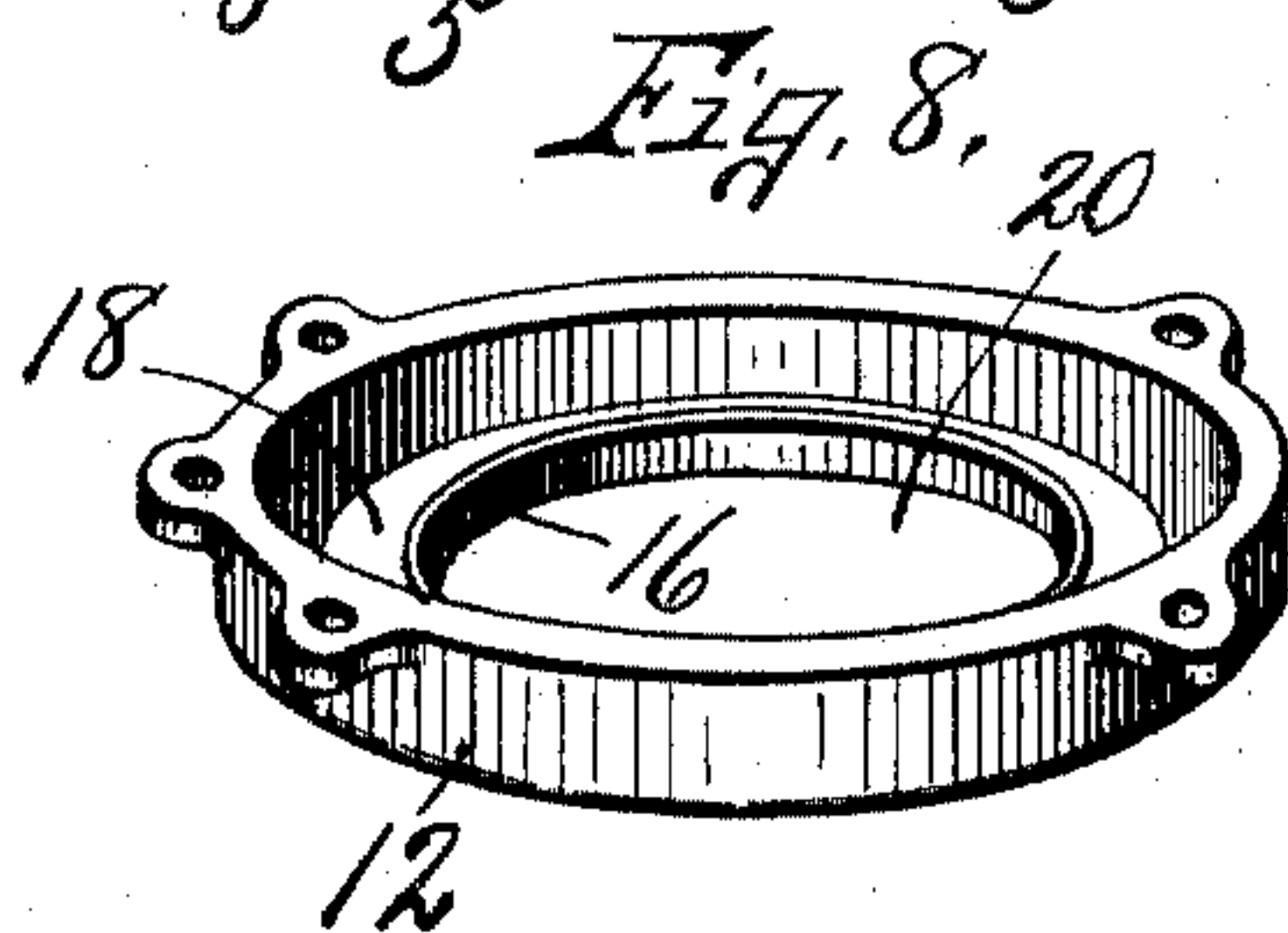
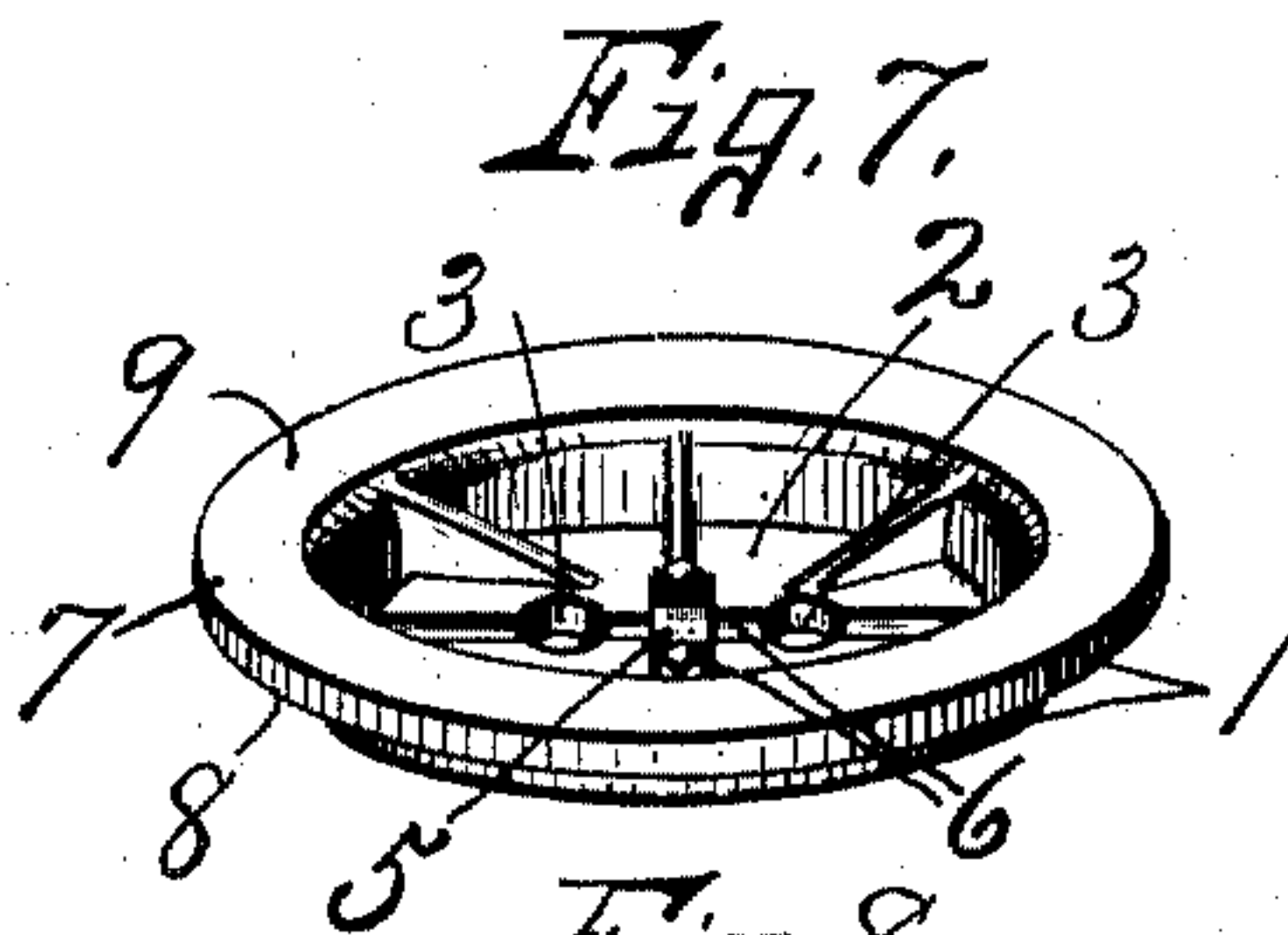
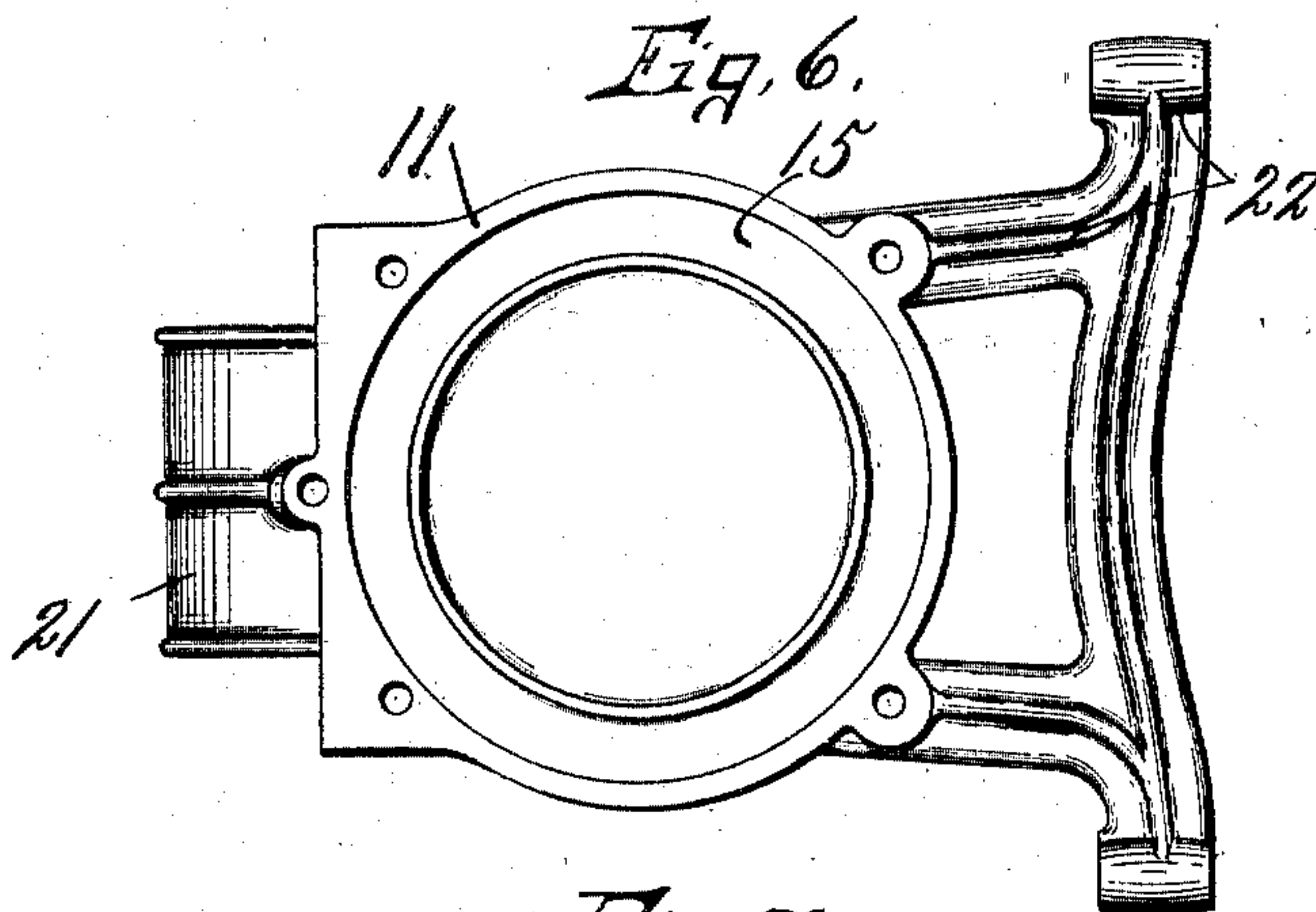
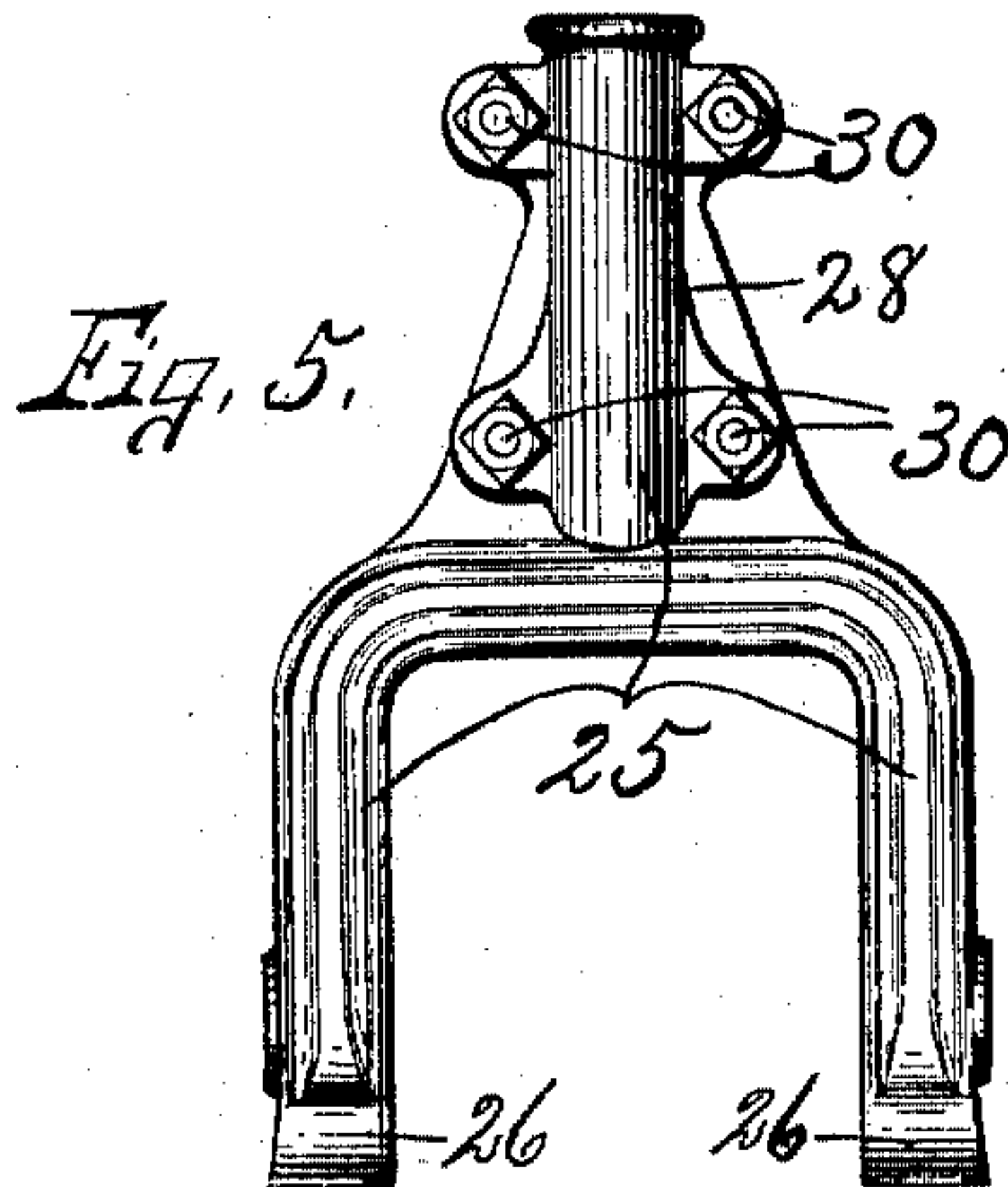
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

PETER DAVID MILLOY, OF BUFFALO, NEW YORK.

TROLLEY-BASE.

SPECIFICATION forming part of Letters Patent No. 760,231, dated May 17, 1904.

Application filed November 16, 1903. Serial No. 181,388. (No model.)

To all whom it may concern:

Be it known that I, PETER DAVID MILLOY, of Buffalo, in the county of Erie, in the State of New York, have invented new and useful
 5 Improvements in Trolley-Bases, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in
 10 trolley-supporting bases in which a revolving base-section is mounted upon a fixed section and carries a vertically-swinging trolley-arm which is normally elevated by suitable springs hereinafter described.

15 The primary object of this invention is to produce a low-down base in which the revolving section surrounds and incloses a greater portion of the fixed section and revolves upon horizontal bearings which are concealed from
 20 exposure to the elements.

Another object is to enter the electric power conductor or wire into the bottom of the fixed base-section and to clamp the same thereto between the base-sections, so that the anchor-
 25 age of the conductors or wires is fixed and the base-sections establish an electric connection between the trolley pole and wire, the purpose being to protect the connection from the elements and to thereby avoid corrosion
 30 and consequent loosening or imperfect contact of the electrical connection of the wire with the case.

Another object is to dispense with the use of central pivotal posts or hubs and to provide
 35 the fixed member with concentric substantially horizontal upper and lower bearings for receiving the revoluble section and preventing any possibility of undue friction of the sections one upon the other.

40 Other objects will appear in the following description.

In the drawings, Figures 1 and 2 are respectively top plan and side elevation of my improved trolley-supporting base and the
 45 trolley-arm hinged thereto. Figs. 3 and 4 are sectional views taken, respectively, on lines 33, Fig. 1, and 44, Fig. 2. Figs. 5 and 6 are respectively top plan and inverted plan views of the detached trolley-arm-supporting yoke
 50 and the upper part of the revolving base-section.

Figs. 7 and 8 are perspective views showing, respectively, the fixed base-section and the lower part of the revolving section.

Similar reference characters indicate corresponding parts in all the views. 55

A fixed base-section 1 is adapted to be secured in any suitable manner to the top of the car and consists of a cup-shaped metal disk, which is circular in top plan, and its central portion is depressed slightly beneath
 60 its upper horizontal face and is formed with a bottom 2, having one or more apertures 3 for receiving the ends of one or more electric-power cables 4. This cable 4 is passed upwardly through the running-board of the car
 65 upon which the bottom of the section 2 rests and through the aperture 3 and is then bared and clamped against the inner face of the bottom wall by a suitable metal clamping-plate
 70 5, the latter being held in place by suitable bolts or screws 6, and it is therefore apparent that the fixed base-section is in electrical connection with the wire 4, and at the same time the terminal connection of the wire with the
 75 plate 2 is within said section and is therefore inclosed and protected from the elements and permits the base to be placed directly upon the running-board of the car without the necessity of special support or lifts.

The upper portion of the section 1 is provided with a lateral outwardly-projecting
 80 flange 7, which is of greater diameter than the lower cylindrical portion for forming lower and upper substantially horizontal bearing-faces 8 and 9. Supported upon this flange
 85 7 of the fixed section 1 is a revoluble base-section 10, which in this instance consists of an upper metal plate 11 and a lower annular ring 12, which is secured to the plate 11 by clamping-bolts 13. The upper plate 11 is provided
 90 with an annular bearing 14, which rests upon antifriction roller-bearings 15, the latter riding upon the upper horizontal bearing-face 9 of the fixed section 1.

The marginal edges of the plate 11 extend
 95 laterally beyond the bearing 14, and the ring 12 is secured to the lower face of said marginal edges, so that the two parts when united entirely inclose the annular flange 7 and bearings 8 and 9—that is, the annular ring 12 en- 100

circles the flange 7 and its bearings 8 and 9— and is formed with an inwardly-projecting flange 16, underlying the bearing-face 8 to receive and support a series of antifriction-rollers 17, which engage the lower annular bearing-face 8 and a similar annular bearing-face 18, forming the upper side of the flange 16.

When the two parts 11 and 12 are united, their meeting faces are drawn closely together to form a dust-proof joint. It now appears that the revolving section 10 is supported wholly upon the bearings 8 and 9 of the flange 7 and that such bearings are entirely inclosed by the sections 11 and 12 to protect them from rain, snow, dust, &c.

The roller-bearings 15 and 17 are the conical type to reduce friction to a minimum, and therefore it is unnecessary to employ any lubricant on these bearings, as it is well known that when a lubricant is used it invariably leaks through to the woodwork of the car and not only detracts from the appearance of the car, but also necessitates frequent scraping and repainting, which is entirely avoided by the use of my improved trolley-base.

The ring 12 is formed with a central opening 20, which receives the lower cylindrical portion of the fixed base-section 1, the diameter of said opening being slightly greater than that portion of the fixed base-section 1 which projects therethrough, the object of this being to prevent friction between the fixed and revolving sections.

The lower face of the bottom 2 of the fixed section 1 is adapted to rest directly upon the running-board of the car and is therefore disposed in a plane slightly beneath the plane of the lower face of the annular ring or flange 16, so that the section 10 may revolve freely without friction with the running-board. This revolving section is provided with forwardly and rearwardly projecting arms or brackets 21 and 22, the front arm being provided with a transverse opening 23, in which is inserted a rod or shaft 24 for receiving and supporting a vertically-swinging yoke 25. This yoke is adapted to receive and support the trolley-pole, and its lower end is bifurcated for forming arms 26, which are journaled or otherwise mounted upon the shaft or spindle 24 at opposite sides of the bracket 21. These arms 26 converge upwardly into a single arm 28, which is hollow and split longitudinally at 29 to receive the end of the trolley-pole, the opposite jaws of the arm 28 being firmly clamped upon the said end of the trolley-pole by clamping-bolts 30.

The lower ends of the arms 26 extend downwardly beneath the pivotal shaft or fulcrum 24 and flange 7 and are formed with apertures for receiving a transverse bar 32, the opposite ends of which extend some distance beyond the sides of the base-sections to receive and support the front ends of opposite pairs of springs 33. The lower extensions 31 of the

arms 26 are disposed at an angle at substantially forty-five degrees with the longitudinal axes of the arm 28, so that when the trolley-pole is in its normal position or at an angle of about forty-five degrees the extensions 31 stand nearly in a vertical plane.

The rear arms 22 are deflected downwardly in a plane beneath the upper face of the revolving section 10 and are provided with opposite lengthwise openings 34, which receive the front ends of adjustable anchor bolts or rods 35, said anchor-rods being held in position by lock-nuts 36.

The front ends of the anchor rods or bolts 35 are provided with swiveled heads 37, having opposite hook-shape extremities 38, which receive the rear ends of the springs 33.

The springs 33, anchor-bolts 35, and anchor-bar 32 are disposed in substantially the same horizontal plane below the upper face of the revolving section 10, and the springs 33 are therefore arranged in pairs, one pair at each side of the trolley-base sections 1 and 10 and in planes below the horizontal bearing of the revoluble section 10, and although they are arranged close to each other and to the sides of the revolving base-section 10 they are sufficiently separated to clear each other to prevent friction.

In assembling the parts of my invention the roller-bearings 17 are placed side by side upon the bearing 18 of the annular ring 16, and the base-section 1 is then placed in the opening 20, with the lower face of the flange 7 resting upon the upper faces of the roller-bearings 17, after which the section 1 is firmly secured to the top or running-board of the car, with the conductor 4 projecting through one of the openings 3, the end of said conductor being then firmly clamped to the inner face of the section 1 to insure a permanent electrical connection with the fixed base-section. The roller-bearings 15 are then placed upon the upper face of the flange 7, after which the plate 11 is mounted upon the bearings 15 and firmly clamped to the ring 12 by means of the bolts 13. The trolley-arm-supporting yoke is then mounted upon the forwardly-projecting arm 21, and the springs are operatively connected to the anchor-bars 32 and 35, as seen in Figs. 1 and 2, whereupon the device is ready for use after placing the pole in operative connection with the arm 28. It is thus seen that the fixed base-section 1 is inclosed by the parts 11 and 12 of the revolving section and that the bearings are therefore protected from the elements; but the general object of this construction is to make the base as nearly flat and as close to the top of the car as possible and at the same time to connect the trolley-arm-supporting yoke in such manner that the tension of the springs 33 is substantially uniform in all positions which the trolley-arm may assume and operates to maintain a uniform downward pressure

of the revoluble part upon its bearings and at opposite sides of its axis, which is done by connecting the ends of the springs at points in a plane below said bearings.

5 A hook or detent 40 is pivoted at 41 to the revolving section 11 and is movable into engagement with the swinging yoke 25 for holding it in its extreme lower position when not in use.

10 Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A trolley-base comprising a revoluble part having lower and upper horizontal bearings, a fixed part having an annular horizontal flange interposed between said bearings and supporting the revoluble part, a vertically-swinging yoke fulcrumed on the revolving part at one side of its axis, and a spring connected to the yoke and to the revolving part at opposite sides of its axis and in a plane below the bearings and fulcrum of the yoke, whereby the action of the spring produces substantially equal pressure upon the bearings at opposite sides of the axis of the revoluble part in the direction of extension of the spring.

2. A trolley-base comprising a non-rotatable section having a horizontal annular flange, a revoluble section surrounding said flange and bearing upon its lower and upper faces, a vertically-swinging yoke fulcrumed on the revoluble section at one side of its axis, and springs at opposite sides of the base connected to the yoke and to the revoluble part at points at opposite sides of said axis, and in planes below the annular flange.

3. A trolley-base comprising a revoluble section having an opening in its bottom, a fixed section in said opening and provided with a horizontal bearing-face for supporting the revoluble section, a vertically-swinging yoke fulcrumed on the revoluble section at one side of its axis, and springs connected to the yoke and to the revoluble section at opposite sides of said axis, and in a plane below said bearing.

4. A trolley-base comprising a non-rotatable section having an annular horizontal flange, a revoluble section having annular horizontal bearing-faces above and beneath the flange, antifriction-rollers between the bearing-faces and the adjacent faces of the flange, a vertically-swinging yoke fulcrumed on the revoluble section at one side of its axis and provided with an arm extending below the plane of said flange and a spring connected to said arm and to the revoluble member at the opposite side of its axis from the arm and at a point in a plane below the annular flange.

5. In a trolley-base, the combination of a fixed section having lower and upper substantially horizontal annular bearings, a revoluble section mounted on said bearings and having a central opening in its bottom through which

the fixed section protrudes, a vertically-swinging yoke fulcrumed on the revoluble section at one side of its axis, and springs connected to said yoke and to the revoluble section at opposite sides of the said axis and at points in a plane below the fulcrum of the yoke and also below said annular bearings.

6. In a trolley-base, the combination of a revoluble section having a central opening in its bottom and provided with lower and upper annular bearings, a fixed base-section projecting through said opening and having an annular flange interposed between said bearings, a vertically-rocking yoke fulcrumed on the revoluble section in front of its axis and extending downwardly from its fulcrum in front of the fixed base-section, arms extending rearwardly and downwardly from the revoluble section at the rear of the fixed section, and springs at the opposite sides of the fixed base-section connecting said arms to the downward extension of the yoke.

7. A trolley-base comprising a fixed section having an annular horizontal flange, a revoluble base-section mounted upon the flange and provided with an arm extending downwardly at the rear of the fixed section, a trolley-arm-supporting lever fulcrumed on the revoluble section in front of its axis and having one of its arms extending downwardly in front of the fixed base-section and a spring at one side of the fixed base-section having one end connected to the depending arm of said lever, and its other end connected to the rearwardly and downwardly projecting arm on the revoluble section.

8. In a trolley-support, a fixed base-section having a substantially horizontal annular flange, a revoluble section inclosing said flange and supported thereon, a yoke fulcrumed on the revolving section, and a spring having one end attached to the yoke below its fulcrum and in front of the fixed section and its other end attached to the revolving section at the rear of the fixed section, the points of connection of the spring with the yoke and revolving section being in a plane below the upper face of the flange.

9. In a trolley-supporting base for electrically-propelled cars, the combination with a fixed base-section, a revoluble section mounted on the fixed section, a trolley-arm hinged to the revoluble section and a clamp within the fixed section securing the electric conductor against the top face of the base.

10. In combination with a trolley-base having an opening in its bottom to receive the electric conductor, and means within the base to clamp the conductor against the top face of the base at one side of the opening.

11. In a trolley-base, the combination with a fixed section and a revoluble section mounted thereon, of a clamp between the sections to secure the electric conductor to one of the sections.

12. In combination with a trolley-base comprising fixed and revoluble sections, the fixed section having an opening in its bottom to receive an electric conductor, and means between the sections for clamping the conductor to the bottom of the fixed section.

13. In a trolley-base, the combination of a fixed section having an annular flange surrounding its upper end, a revoluble section mounted upon said flange and provided with arms extending forwardly and rearwardly beyond the fixed base-section, a trolley-arm-supporting lever fulcrumed on the front arm and extending downwardly beneath the fulcrum and in front of the base, and a spring connecting the lower end of the lever extension to the rearwardly-projecting arm of the revoluble section.

14. In a trolley-base, the combination of a fixed base-section having an annular flange surrounding its upper end, a series of frusto-conical rollers arranged side by side around and upon the upper face of the flange, a revoluble base-section resting upon said rollers and provided with an annular flange extending under the lower face of the flange of the fixed base-section, an additional series of frusto-conical rollers interposed between said

flanges, the rollers of each series having their axes in different planes and their sides disposed in radial lines converging at the axes of revolution of the revoluble section, and a trolley-arm-supporting lever fulcrumed on the front end of the revoluble section.

15. In a trolley-base, the combination of a fixed base-section having an annular flange surrounding its upper end, a revoluble base-section mounted upon and inclosing said flange, arms extending rearwardly and downwardly from the revoluble section at the rear of the fixed base-section, a trolley-arm-supporting lever fulcrumed on the revoluble section in front of the fixed section and extending beneath its fulcrum and springs at the opposite sides of the fixed base-section having their front ends connected to the depending extensions of the trolley-arm lever and their rear ends connected to the rearwardly-projecting arms of the revoluble section.

In witness whereof I have hereunto set my hand this 13th day of October, 1903.

PETER DAVID MILLOY.

Witnesses:

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