

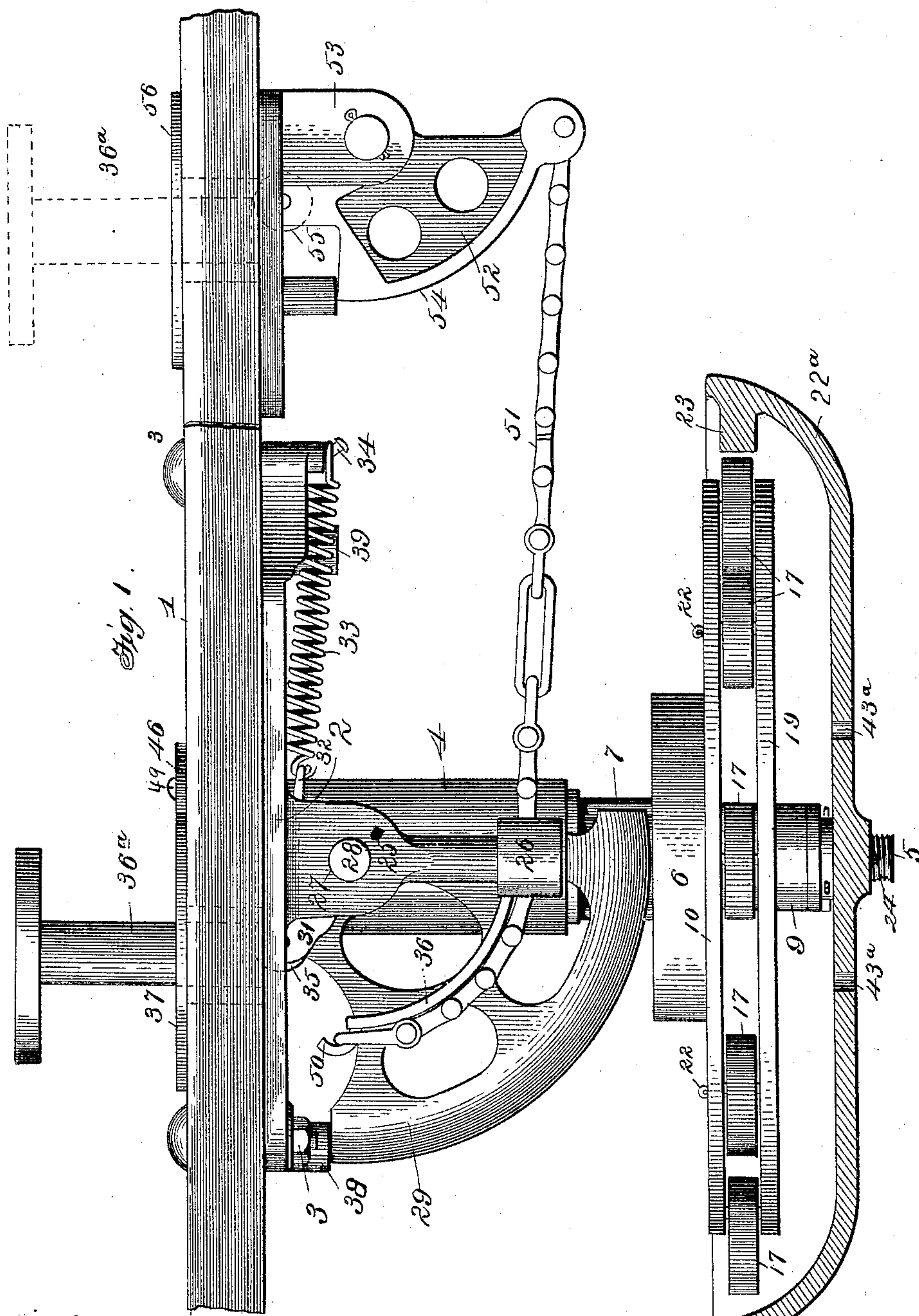
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6 Sheets—Sheet 1.

E. D. ROCKWELL.
BELL.

No. 473,854.

Patented Apr. 26, 1892.



Witnesses:
F. R. Cornwall
Louis G. Julius.

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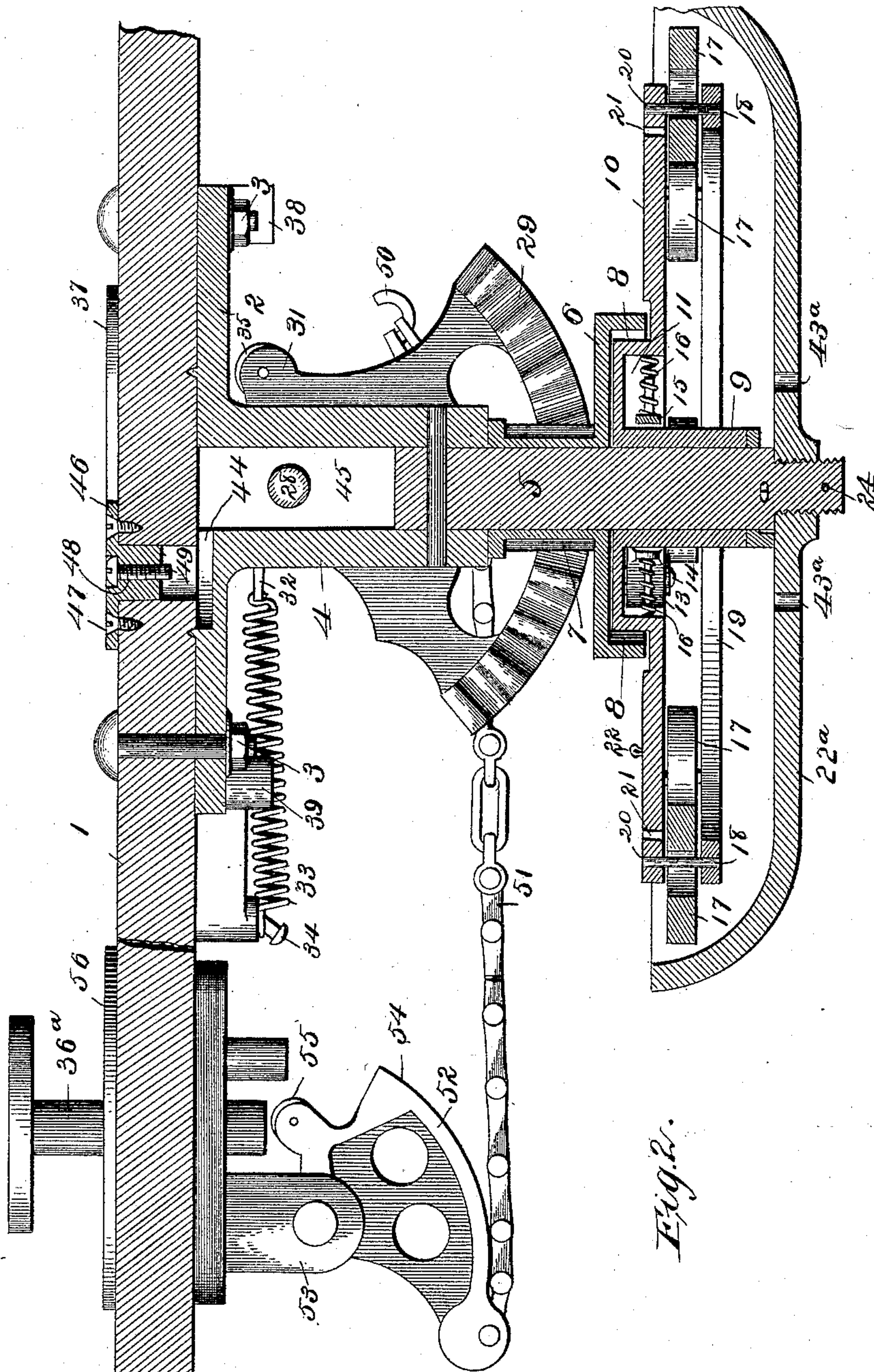
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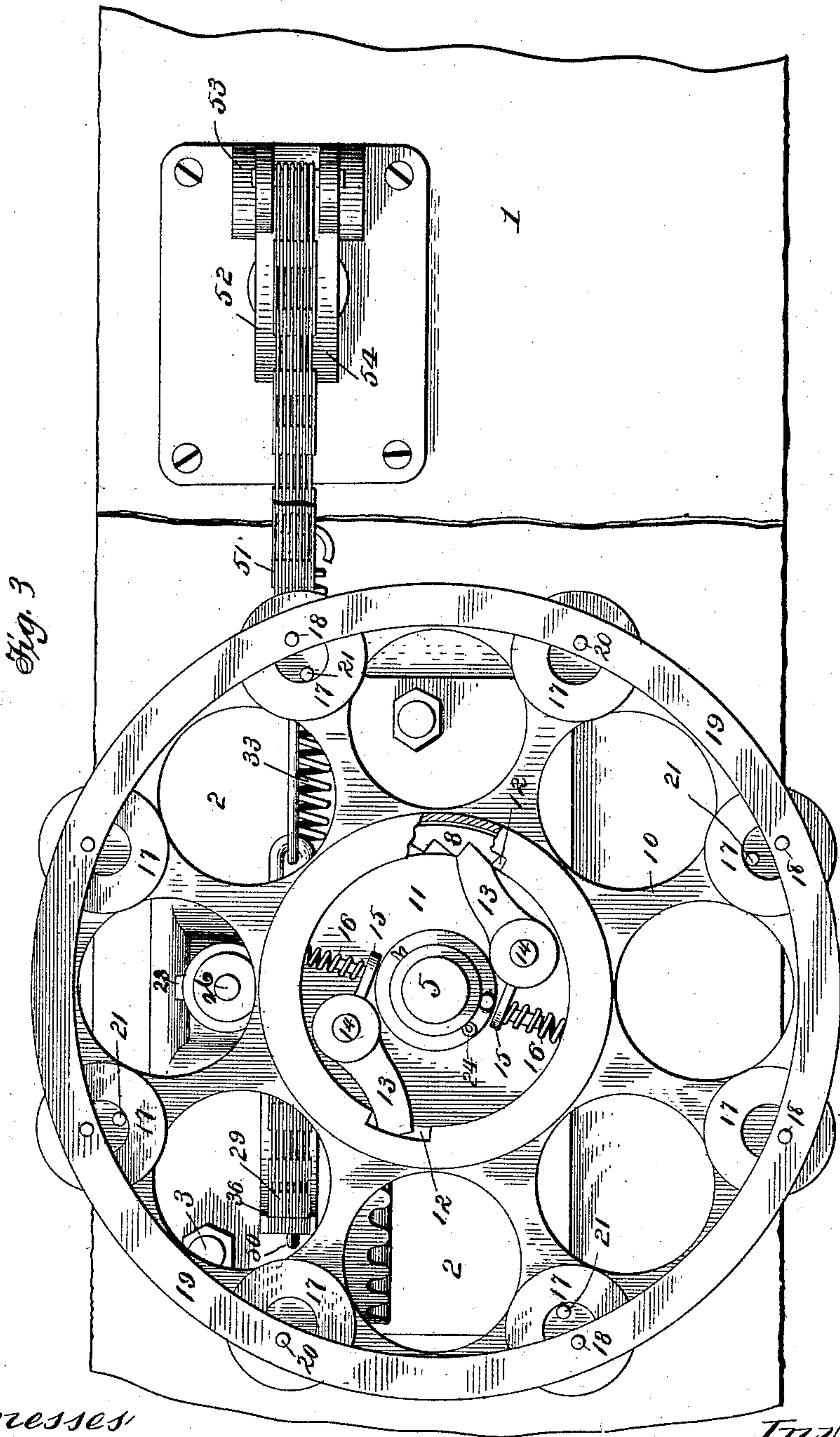
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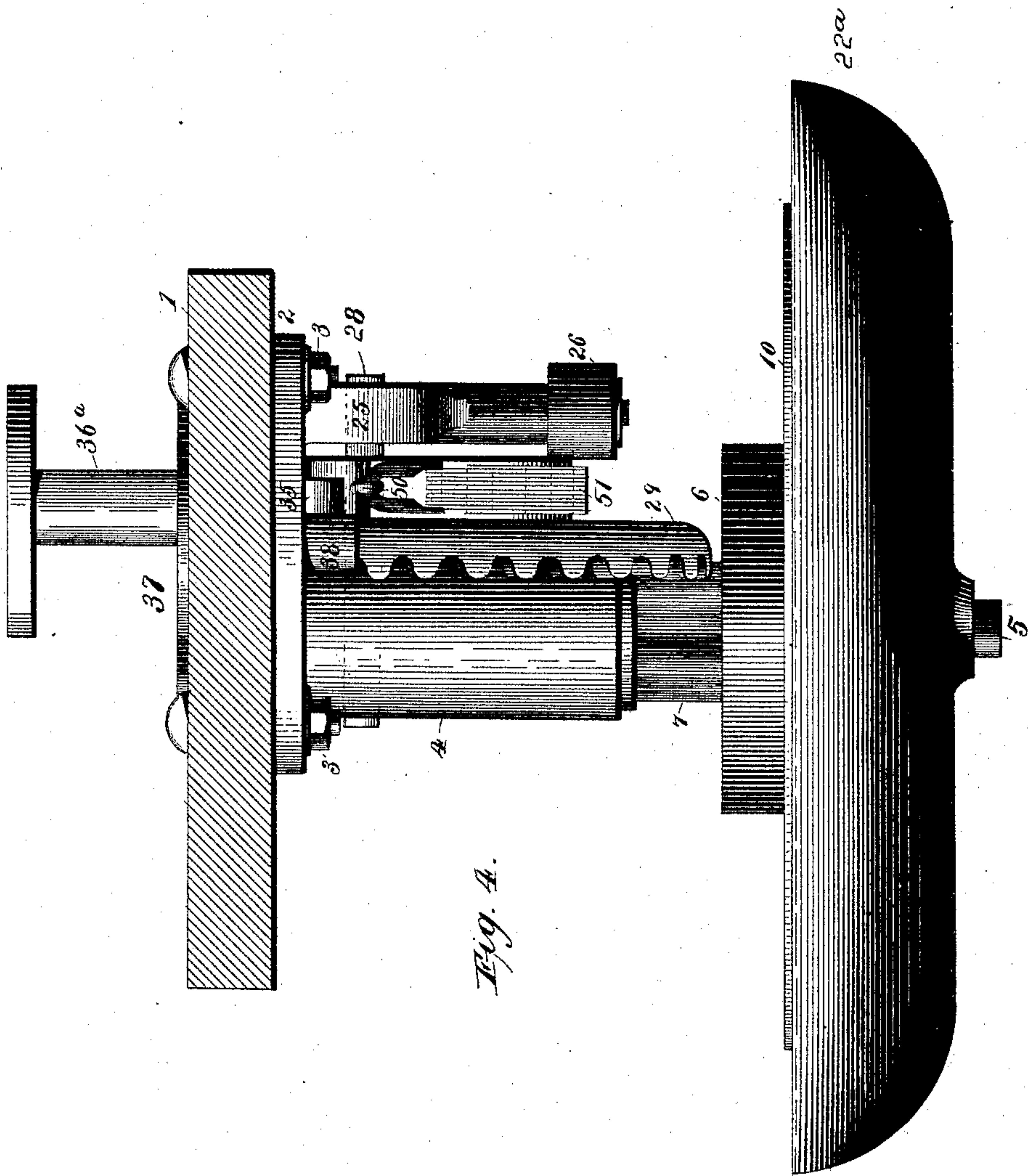


Fig. 4.

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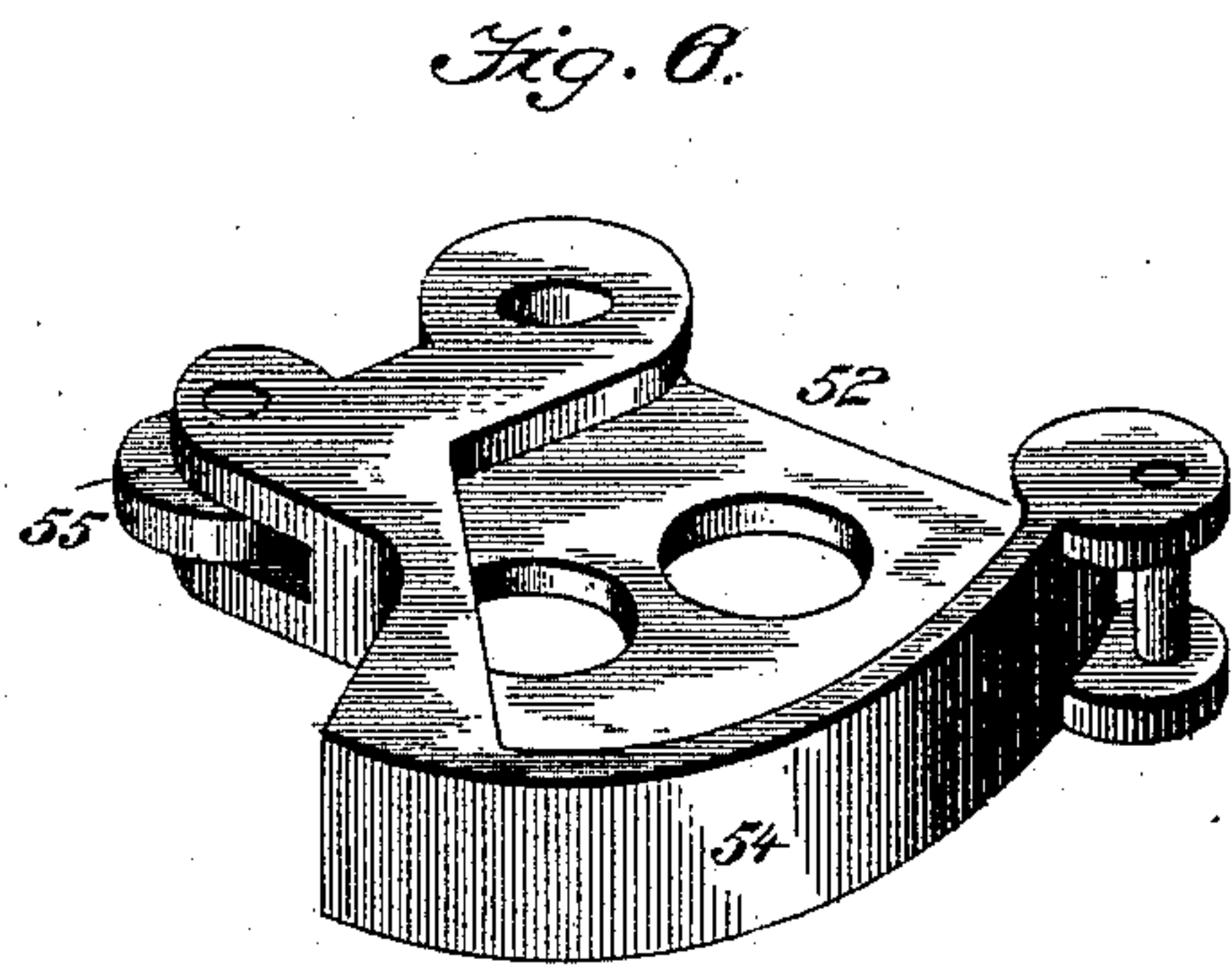
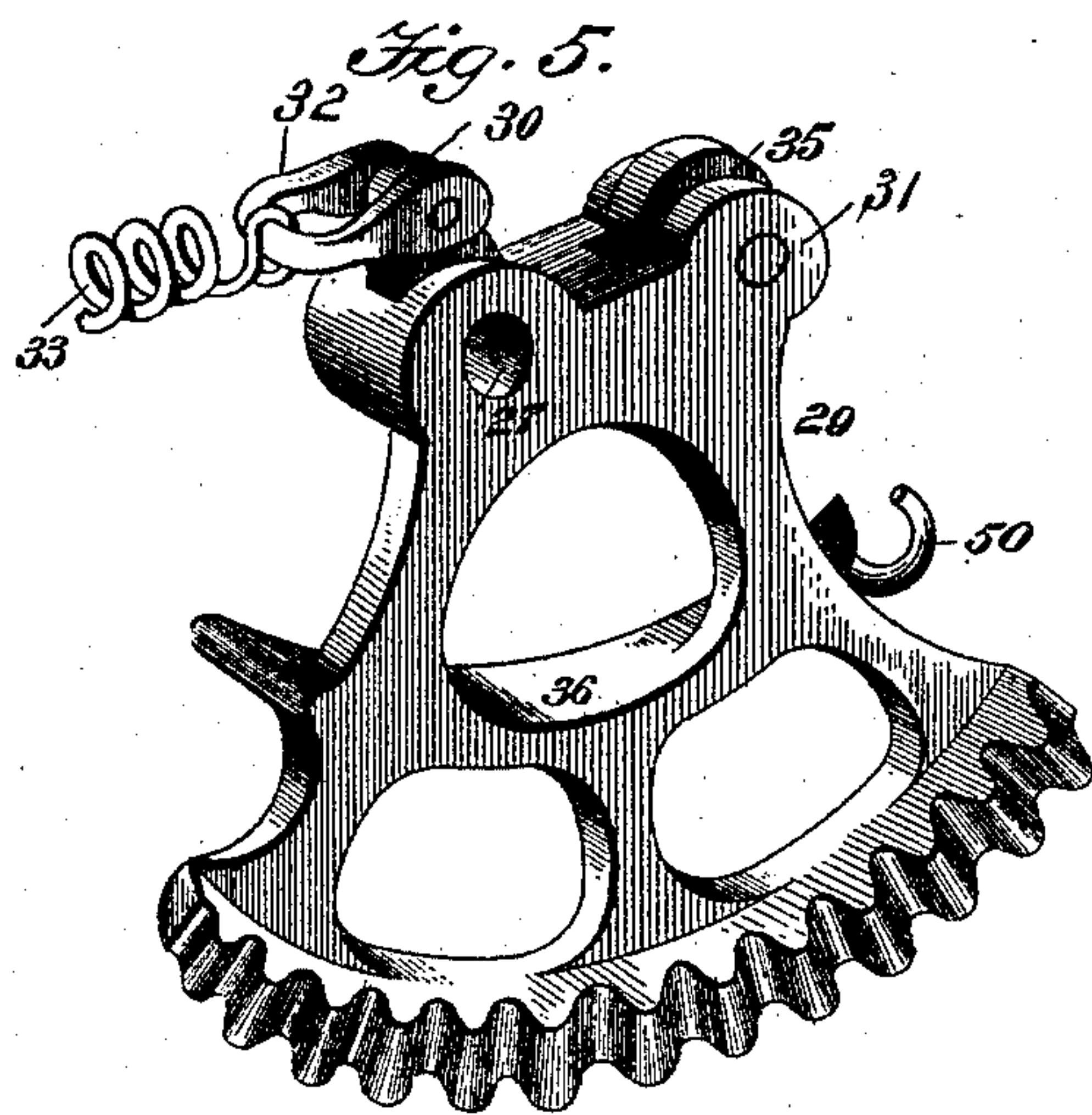
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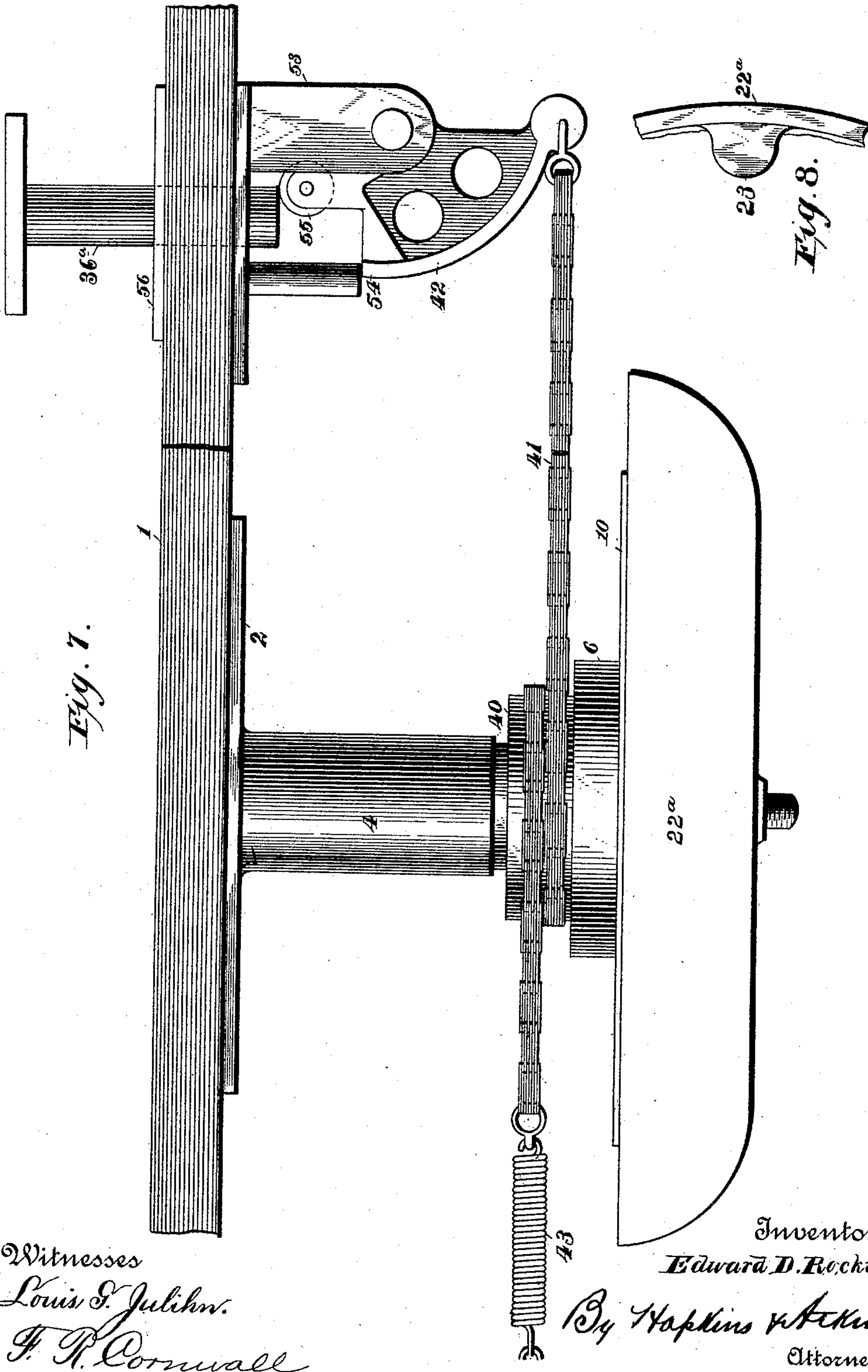
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UNITED STATES PATENT OFFICE.

EDWARD DAYTON ROCKWELL, OF BRISTOL, CONNECTICUT, ASSIGNOR TO
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BELL.

SPECIFICATION forming part of Letters Patent No. 473,854, dated April 26, 1892.

Application filed September 9, 1891. Serial No. 405,196. (No model.)

To all whom it may concern:

Be it known that I, EDWARD DAYTON ROCKWELL, of Bristol, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Bells, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce improved mechanism for sounding a bell by which a continuous ringing may be effected through pressure of the foot of an operator.

My bell is especially designed for use on a street-car from which a warning-signal must be sounded at frequent intervals by an operator whose hands are otherwise employed—as, for instance, by a gripman on a cable car.

In the accompanying drawings, Figure 1 is a side elevation of my bell, showing the gong in cross-section and the parts in position they occupy when at rest. Fig. 2 is a vertical sectional view of my bell, partly in elevation, showing it as in operation under pressure at a distance from the bell proper. Fig. 3 is a bottom plan view of the bell with the gong removed. Fig. 4 is an end elevation. Fig. 5 is a perspective view of the segmental gear attached, and Fig. 6 a similar view of one of the bell-crank levers detached. Fig. 7 shows a modification of my device in elevation. Fig. 8 is a detail view of the rounded lug on the gong.

Referring to the figures on the drawings, 1 indicates a section of the floor of a car, for example.

2 indicates a plate adapted to be secured in place, as upon a car, by bolts 3, passing through holes in the plate and the bottom of the car.

4 indicates a stud projecting from the face of the plate, with which it may be made in one casting, as illustrated.

5 indicates a spindle, around which revolves the ratchet-wheel 6. This wheel is provided on one side with a pinion 7, which may be cast integrally with it. Upon the side opposite the pinion it is recessed to accommodate the internal ratchet-teeth 8.

9 indicates a hub or sleeve that carries the revoluble frame or balance-wheel 10 upon the spindle 5.

11 indicates a circular recess or raised part, and 12 opposite openings in the side wall

thereof, through which project the ends of pawls 13, that are carried in the recess. The pawls are pivoted to pins 14 and are provided with projecting spring chairs 15, that carry springs 16, which, pressing against the sides of the recess 11, tend to keep the pawls entered in the openings 12. The outside walls of the recess 11 are of such dimensions as to loosely fit within the recess that accommodates the ratchet-teeth 8, so that when the parts are properly assembled upon the stud the pawls 13 engage with the teeth of the ratchet-wheel 6 for rendering the frame continuously revoluble in one direction.

For sounding the bell I prefer to have the balance-wheel provided around its outer edge with a number of loosely-pivoted revoluble strikers 17. They may be hung on pins 18 and be secured in place by an annular plate 19, provided with holes 20, through which the pins 18 are inserted and fastened. The strikers are of such form as to admit of being thrown outwardly by centrifugal force generated by the revolution of the balance-wheel, and after striking an obstruction, as the gong, to be whirled upon their respective pins, so as to present each time a different striking-face. If prevented from being thrown outwardly, they would in practice fail to reach the gong to sound it. To regulate, therefore, the number of active strikers, I provide retaining mechanism, which may consist of pin-holes 21 near the edge of the balance-wheel, into which pins 22 may be inserted through the pivotal apertures of as many strikers as it is desired to silence, which will hold them back away from the gong. By this means I can at pleasure increase or diminish the number of strokes to each revolution of the balance-wheel.

The strikers are constructed and arranged so as to prevent unequal waste of their wearing parts, but to diminish to a still greater degree the wear, which in bells of larger size is worthy of consideration. I have provided upon the inside of the gong 22 a lug 23, having a rounded end, against which each active striker successively impinges during the revolution of the balance-wheel. By making the surfaces of the strikers and the lug round I diminish the surface subject to abrasion

and also shorten the time of contact between the sounding parts, thereby reducing wear and getting a pure tone.

The gong may be carried on the screw-threaded end of the spindle 5, and for additional security may be fastened by the pin 24, passed through a hole in the end of the spindle.

25 indicates a pin projection extending from the plate 2 parallel with and a little removed from the stud 4. It carries on its lower end an anti-friction roller 26. The stud and pin projections are pierced near their bases with holes 27, through which is inserted a journal 28, which carries the segmental gear 29, that meshes with the pinion 7 to impart through the ratchet-wheel 6 rotary motion in one direction to the balance-wheel.

The segmental gear is provided upon opposite sides of its pivotal part with lugs or projections 30 and 31. To keep the segmental gear in the normal position for operating the balance-wheel, I provide a spring-balance, as follows: To the lug 30 is pivoted a link 32, to which is fastened one end of a tensile spring 33, whose other end is fastened to a pin 34, projecting from the plate 2. The lug 31 carries an anti-friction roller 35. The segmental gear is also provided on one side with a curved boss 36, which, bearing against the anti-friction roller 26, serves to hold the gear rigidly in mesh with the pinion 7.

36^a indicates a reciprocating prime-mover push-rod or foot-piece carried on a suitable bearing-piece 37, secured to the floor 1. The foot-piece is located so as to strike the roller 35, and is adapted, upon being pressed against it with sufficient force, to rotate the segmental gear upon its axis and impart motion to the balance-wheel to ring the gong. The action of the actuating mechanism of the frame is consequently intermittent and limited in each impulse by the continuation of pressure on the rod or foot-piece or the possibility of its motion downwardly; but the duration of the revolution of the frame after each impulse of the actuating mechanism is not so limited. By quick repeated strokes of the foot continuous motion in one direction may be imparted to the balance-wheel and constant ringing thereby produced. Upon release of the foot-piece the spring 33 will restore the segmental gear to its first position, the pawl and ratchet mechanism between the pinion 7 and balance-wheel reducing the force necessary for that purpose.

38 indicates a stop-pin projecting from the plate 2 in the path of the segmental gear to limit its movement under action of the spring, and 39 one to limit its motion in the opposite direction.

In Fig. 7 of the drawings is illustrated a modification of the actuating mechanism for imparting motion to the balance-wheel. In that figure, instead of the pinion 7, is shown a drum 40, around which is wound a flexible band—as, for instance, a chain 41. The chain

is fastened at one end to a bell-crank lever 42, that is carried and adapted to be operated substantially in the same manner as the segmental gear 29. The lever 42 may be spring-balanced as the segmental gear, or, what is the same thing in effect, the chain may be fastened at its other end to a spring 43 to keep it taut and draw it back after it has been pulled out by the lever 42.

43^a indicates holes in the bottom of the gong to release particles of dust which might otherwise accumulate and injure the tone of the bell.

In the drawings is illustrated a cleanly device for lubricating the principal bearing parts, which, while peculiarly adapted for use with my bell mechanism, may be applied with equal advantage to almost any machinery that employs a vertical shaft beneath a floor or like surface, which it is desirable to keep clean. The device referred to consists of a depression or basin 44, formed in the top of the plate 2, and which in use comes between the floor and plate so as to be completely closed by the union of those parts. It empties into a duct 45, which is formed in the stud 4 and which communicates with the bearings of the bell mechanism, so that oil poured into the basin is fed to the parts which require lubrication. To regulate the supply of oil through the duct 45, it may be stuffed with cotton waste or other suitable material. To render the basin accessible from the outside I bore a hole through the floor above the basin and use a metal cap-plate 46, that may be secured to place over the hole by screws 47. The center of the cap-plate is provided with a screw-threaded opening 48, through which oil may be poured and which may be tightly closed when not in use by a screw 49.

In use upon a car it is desirable that a bell should be adapted to be operated readily from either end of the car. For this purpose I provide on the topmost end of the boss 36 a hook 50, adapted to hold one end of a flexible band—as, for instance, a chain 51, whose other end is fastened to a bell-crank lever 52. This lever is carried in suitable bearings 53 in line with the segmental gear 29, and is provided with a flat curved surface 54, around which the band 51 bends. The lever 52 is also provided with an anti-friction wheel 55, above which is fixed a bearing-piece 56, similar to 37 and adapted to be occupied by foot-piece 36^a. The operation is similar to that of the bell by means of a direct connection. The band 51 being bent in place around the surface of the lever 52 and around the boss 36 of the segmental gear 29, which is in effect a second lever, the foot-piece 36^a being inserted into the bearing-piece 56, pressure upon the foot-piece will set the balance-wheel in motion and sound the gong. The same foot-piece may be used interchangeably, or two may be provided, as the bell is adapted to be rung when the band 51 is in place, either directly or through the lever 52.

I do not confine myself to details of construction, as in many ways they may be varied without departing from the scope of my invention.

5 I do not herein claim, broadly, the combination, with a gong and a revolving frame adapted to sound the same, of actuating mechanism for operating the frame either with or without a spring, and a foot-piece or push-rod for setting the actuating mechanism in motion, because I have made it the subject of a separate application—to wit, Serial No. 428,105, filed 7th day of April, 1892.

What I claim is—

15 1. In a bell adapted to be secured to the under side of a platform of a car, the combination, with a gong and revolving frame adapted to sound the same, of actuating mechanism for operating the frame, a spring for operating the actuating mechanism in one direction, a foot-piece adapted to be operatively connected with the actuating mechanism below the platform and to extend upwardly through the platform, and pawl-and-ratchet mechanism between the frame and its actuating mechanism, whereby continuous motion in one direction may be imparted to the frame, substantially as set forth.

2. In bell mechanism adapted to be secured to the under side of a platform of a car, the combination, with a gong and a revolving frame adapted to sound the same, of actuating mechanism for operating the frame, designed to extend upward through the floor of the platform so as to be operated from above the same, and connecting mechanism loosely connecting the actuating mechanism and the frame, whereby the motion of the actuating mechanism imparts a momentum to the frame that causes it to revolve under the direct impulse of the actuating mechanism and to continue to revolve after such impulse has terminated independently of the actuating mechanism, substantially as set forth.

3. The combination, with a revoluble frame and gong, of a loosely-pivoted striker, and a pin adapted to be passed through the frame and pivotal aperture of the striker to fasten it to the frame out of reach of the gong, substantially as and for the purpose specified.

4. In bell mechanism adapted to be secured to the under side of a platform of a car, the combination, with a gong and a revolving frame adapted to sound the same, of actuating mechanism for operating the frame, a spring for restoring the actuating mechanism, releasing mechanism between the frame and the actuating mechanism, whereby the frame is constantly propelled in the same direction, and a plunger for operating the actuating mechanism from the platform of the car, substantially as set forth.

5. In bell mechanism adapted to be secured to the under side of a platform of a car, the combination, with a gong and a revolving frame adapted to sound the same, of a segmental

gear swinging in a vertical plane, a disk on the frame-support, a hub on said disk formed with a pinion which meshes with the segmental gear, releasing mechanism between the disk and frame, whereby momentum in one direction is imparted to the frame, a spring for restoring the segmental gear to its normal position, and a plunger for operating the segmental gear, designed to extend through the platform of the car to be operated from above, substantially as set forth.

6. In bell mechanism adapted to be secured to the under side of a platform of a car, the combination, with a gong, a revolving frame adapted to sound the same, and a support for the frame, of a segmental gear swinging in a vertical plane, a disk mounted loosely on the frame-support, a hub on said disk formed with a pinion which meshes with the segmental gear, pawl-and-ratchet mechanism between the disk and the frame, a spring for operating the segmental gear in one direction, and a plunger adapted to extend upward through the platform of the car to impart motion to the gear in opposition to the force of the spring, substantially as set forth.

7. In bell mechanism, the combination, with a suitable support and a gong mounted thereon, of a revolving frame adapted to sound the gong mounted on said support, means for actuating the revolving frame, a plurality of loosely-pivoted hammers upon the frame, adapted to be thrown out by centrifugal force and to successively strike the gong, and means for retaining one or more of the hammers out of action, substantially as set forth.

8. In bell mechanism adapted to be secured to the under side of the platform of a car, the combination, with a gong and a revolving frame adapted to sound the same, of a spring-balanced segmental gear swinging in a vertical plane and operatively connected with the revolving frame to drive it, a bell-crank lever to be secured under the opposite platform of the car, connecting mechanism between the bell-crank lever and the segmental gear, and a foot-piece for operating the bell-crank lever from above the platform of the car, substantially as set forth.

9. In bell mechanism adapted to be secured underneath a car and to be operated by an attendant upon either platform of the car, the combination, with suitable bell mechanism and a lever for operating the same, of a lever adapted to be carried underneath the platform of the car, a foot-piece for operating said last-named lever from the platform, and a band or the like connecting the two levers, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

EDWARD DAYTON ROCKWELL.

Witnesses:

ETTA B. SPRING,
CHARLIE DOWNS.