

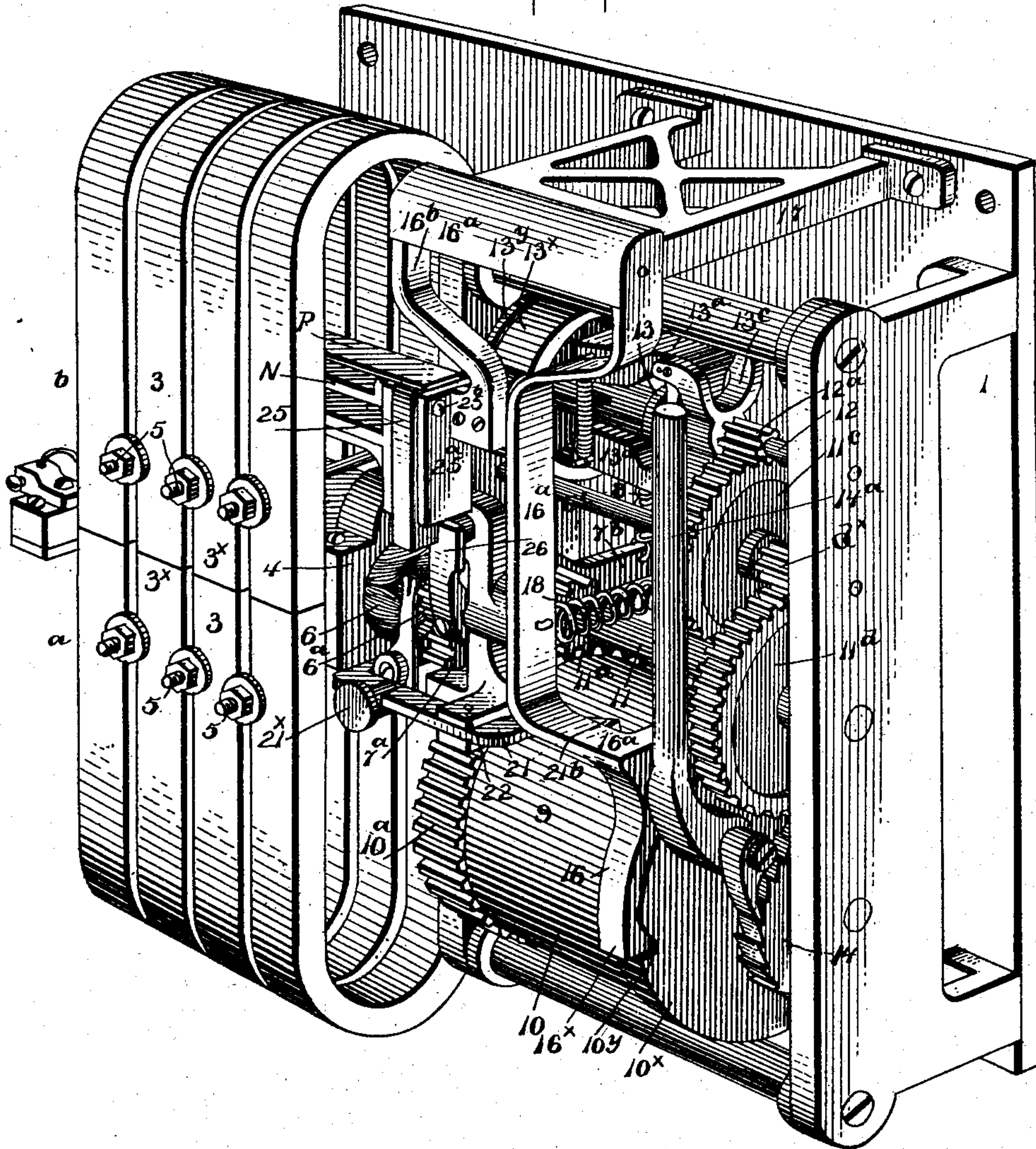
L. G. WOOLLEY.
MAGNETO ELECTRIC GENERATOR MECHANISM.

APPLICATION FILED MAY 26, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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No. 719,971.

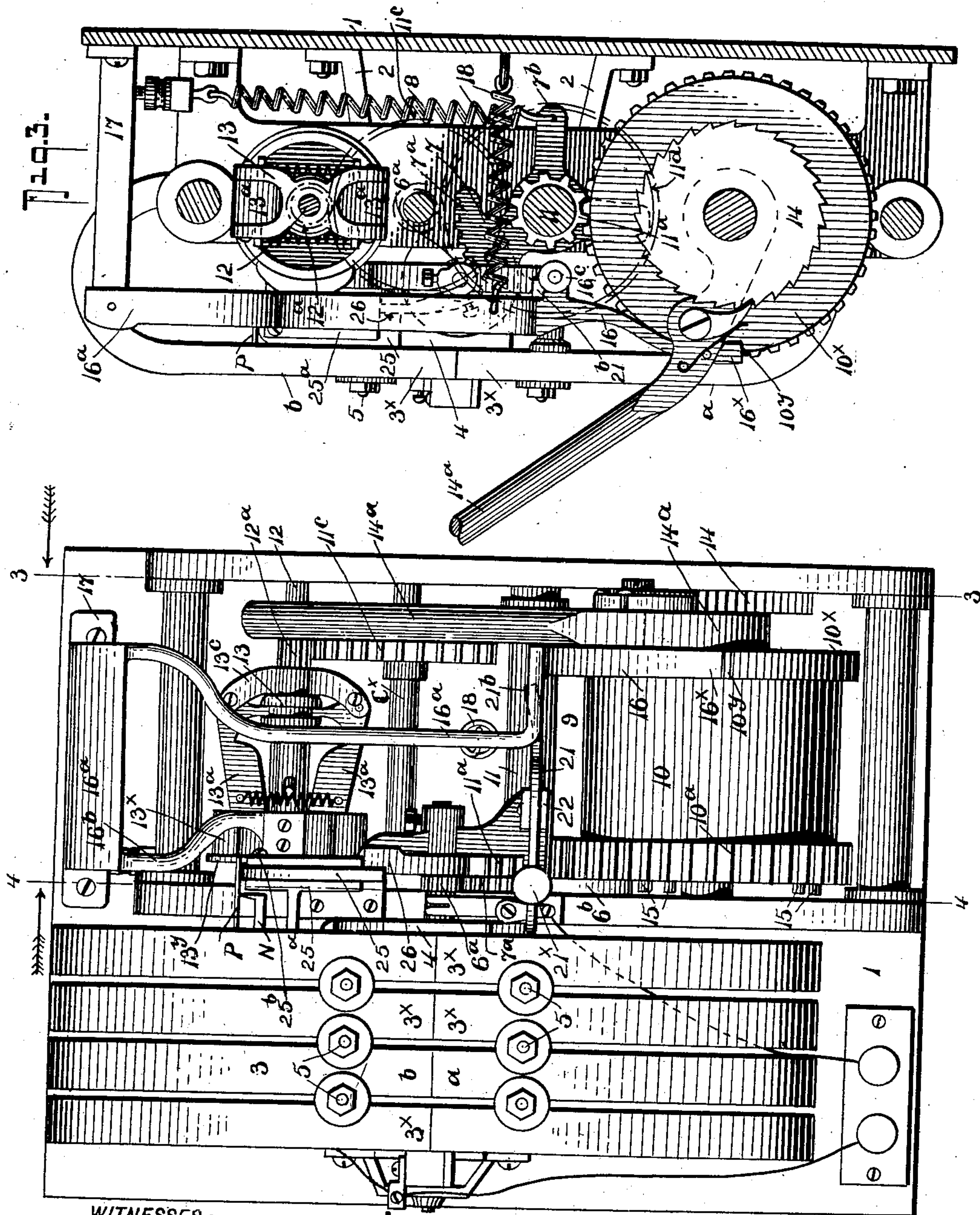
PATENTED FEB. 3, 1903.

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3 SHEETS—SHEET 2.



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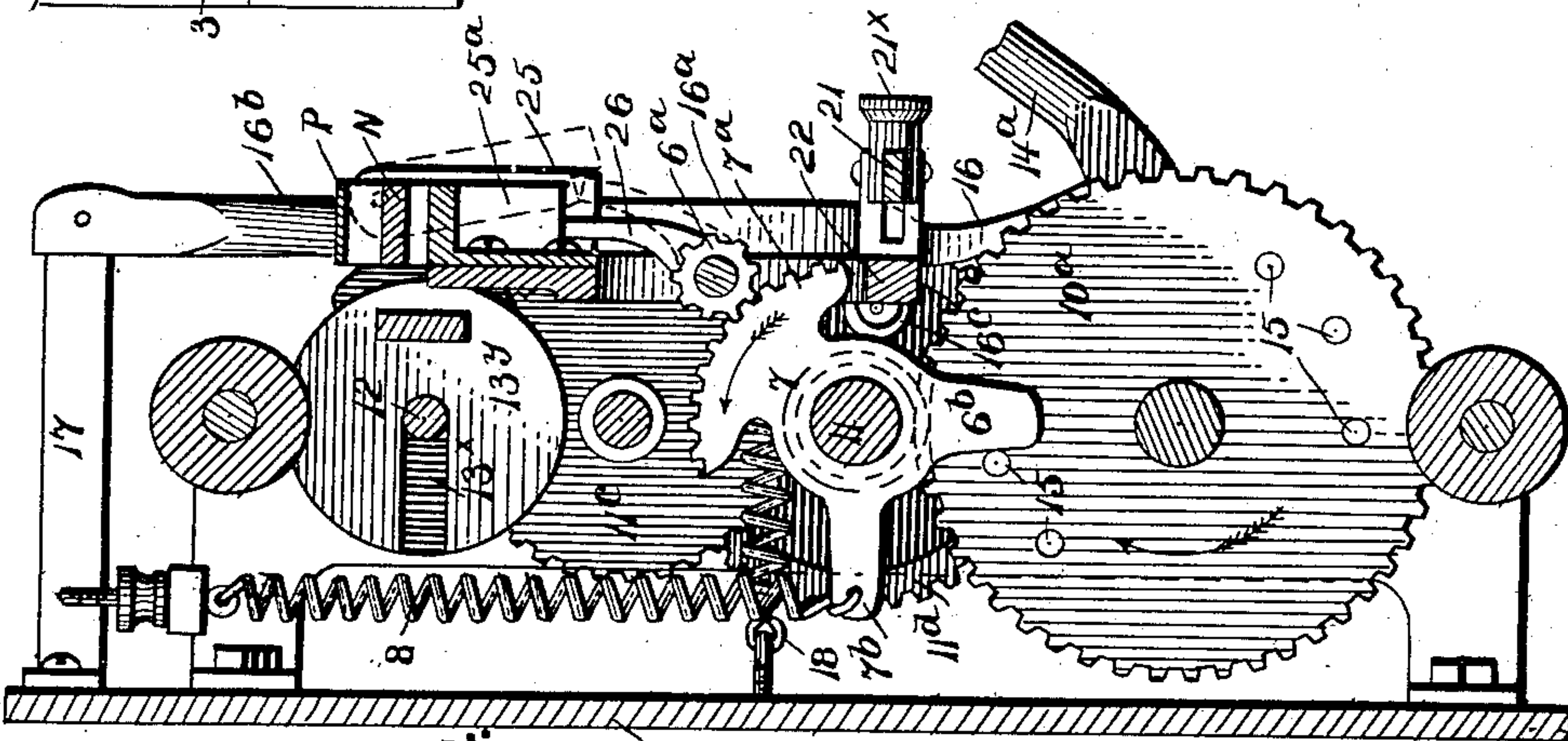
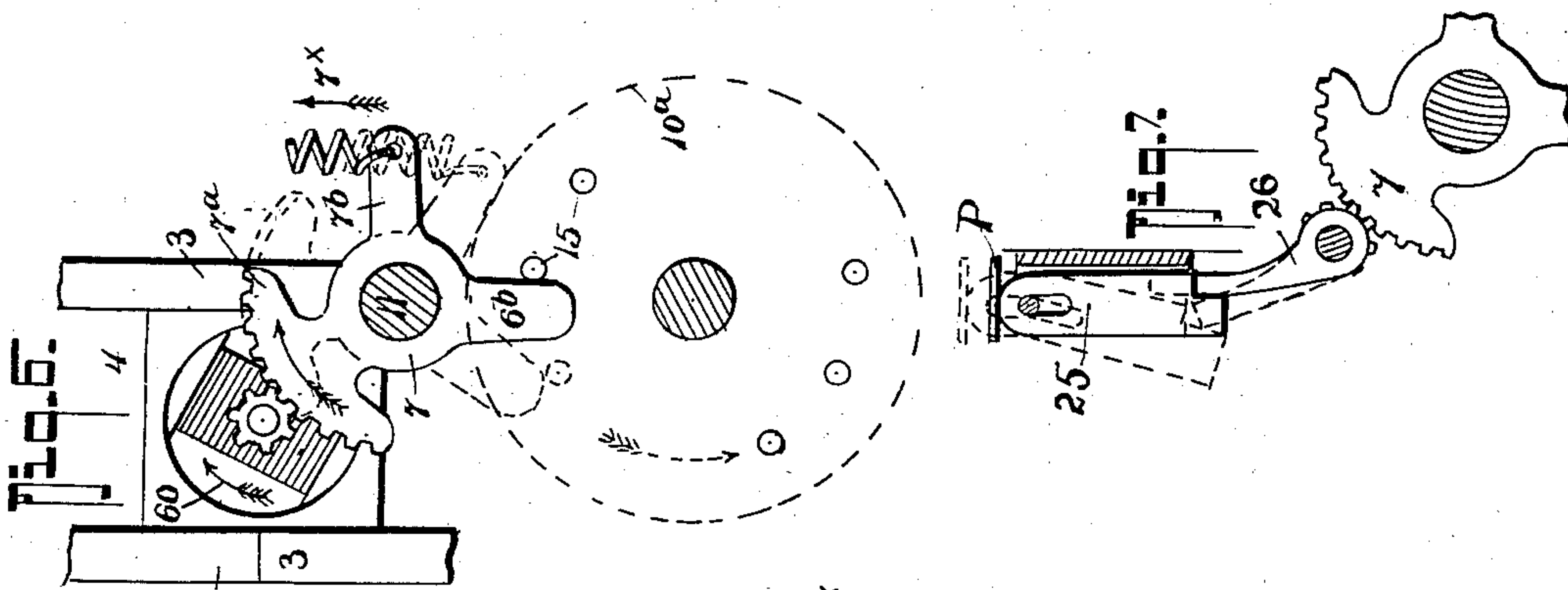
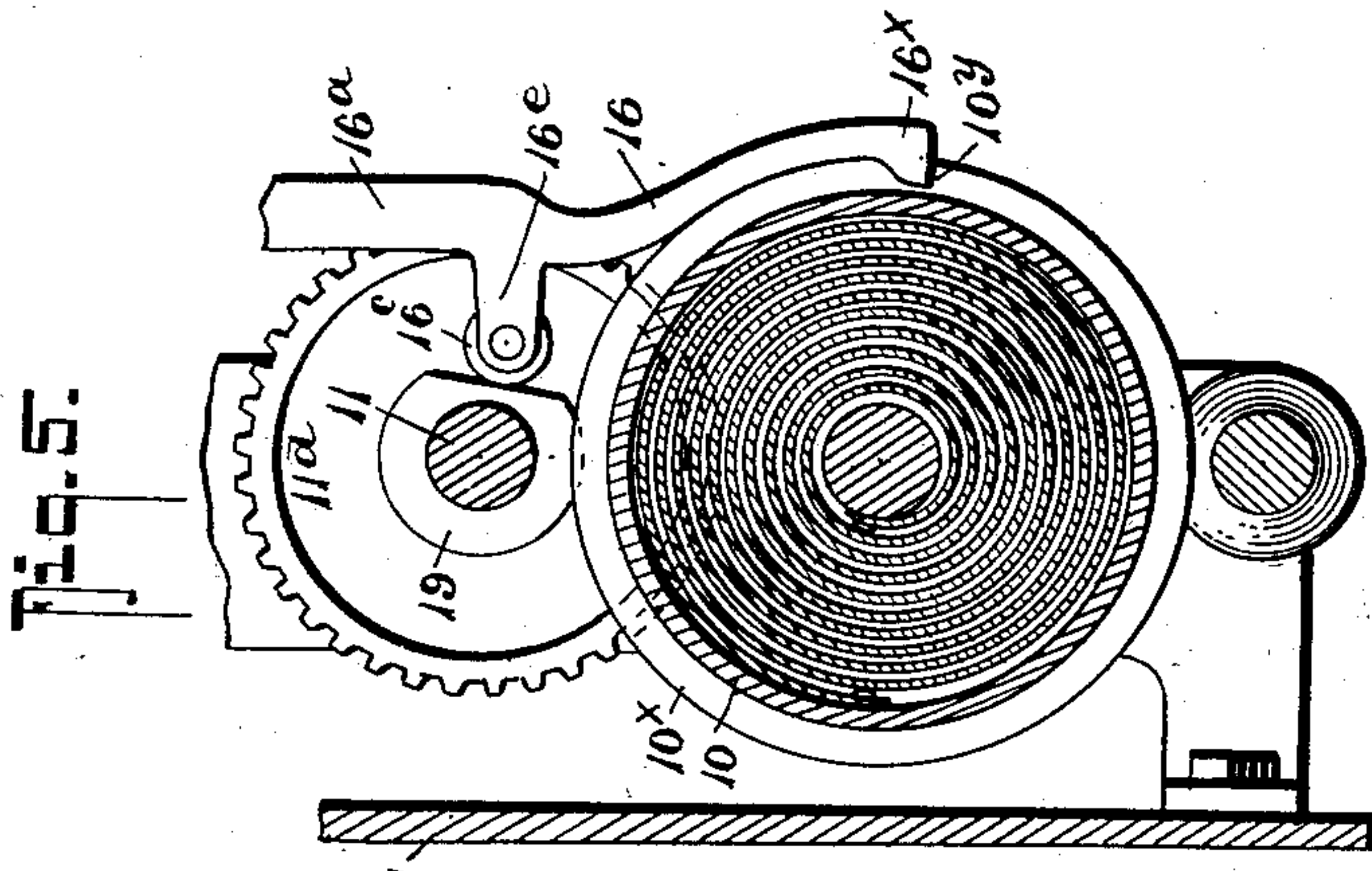
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NO MODEL.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

LEONIDAS G. WOOLLEY, OF KENTON, OHIO, ASSIGNOR TO THE MAGNETO ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y.

MAGNETO-ELECTRIC GENERATOR MECHANISM.

SPECIFICATION forming part of Letters Patent No. 719,971, dated February 3, 1903.

Application filed May 26, 1902. Serial No. 108,968. (No model.)

To all whom it may concern:

Be it known that I, LEONIDAS G. WOOLLEY, residing at Kenton, in the county of Hardin and State of Ohio, have invented a new and Improved Magneto-Electric Generator Mechanism, of which the following is a specification.

This invention is in the nature of an improved fire-alarm telegraph mechanism or box especially designed to dispense with the usual battery or other constant source of electrical energy and to substitute therefor an improved construction of magneto-electric telegraph mechanism for sending impulses from each separate box or mechanism to the headquarters or central station for giving the number of the box or the location of the fire.

My present invention in its generic nature comprehends a magneto-electric generating-machine, including an oscillating armature, a motor for imparting a direct motion to said armature in one direction, and a spring or equivalent means for returning the said armature to its reverse direction, the several parts being correlatively combined in a simple and economical manner and adapted when the motor mechanism is released to positively generate an electric current for transmitting the signal impulses.

My present invention in its more complete nature also includes a novel construction of shunt device for controlling the circuit from each box, which is normally held closed and coöperatively joined with the armature of the generator and adapted to be adjusted to its open position at predetermined times through certain movements of the said armature.

In its more subordinate features my present invention consists in certain details of construction and peculiar combination of parts, all of which will hereinafter be fully described, and specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved alarm or telegraph mechanism removed from the casing or box. Fig. 2 is a front elevation thereof. Fig. 3 is a vertical section thereof on the line 3 3 of Fig. 2. Fig. 4 is a similar view on the line 4 4 of Fig. 2 looking in the direction of the arrow. Fig. 5 is a

detail view illustrating the motor-stop-controlling cam devices. Fig. 6 is a detail view illustrating the "oscillator" or swinging-lever mechanism for imparting an alternate or oscillating movement to the armature and the means for operating the said lever. Fig. 7 is a detail view illustrating the trip devices for releasing the motor.

In the practical construction of my present invention the mechanism constituting a complete alarm or telegraph apparatus is so constructed as to conveniently fit within a box or casing, (not shown,) and for such purpose a base-plate 1 is provided, to which the entire mechanism is attached, as clearly shown in Fig. 1. Upon a bracket-support 2 connected to the base 1 is fixedly mounted in any approved manner a number of permanent horse-shoe-magnets 3, the number depending upon the capacity of the machine required. To obtain the best results, I arrange the magnets in two series, (designated by *a b*,) with the pole ends opposing each other and joined with a centrally-disposed armature-housing 4, upon which and the bracket 2 the ends 3^x of the magnets are rigidly held by the clamp-bolt and nut devices 5 5, as shown.

The armature 6, which *per se* is of the ordinary construction, is journaled in the bracket 2, with which the poles or ends 3^x of the magnets join, and operated between the pole ends of the magnets; but instead of revolving between said pole ends, as is usual, in my present construction of telegraph mechanism said armature is held to oscillate between the poles—that is, the same is held to partially rotate in opposite directions alternately—such movement of the armature being advantageous, as the full effect of its generating action can be obtained by a simple and economical operating mechanism, and its oscillating can also be conveniently utilized for operating the shunt mechanism that controls the magnetic electric circuit generated and regulates the telegraphic impulses to the central station or headquarters.

Adjacent to and in a plane parallel with the magnets is arranged an operating mechanism for imparting motion to the armature, and such mechanism includes what I term an "oscillator," which is in the nature of a piv-

oted swinging lever 7, having a toothed segment 7^a at one end, held in mesh with the cog-gear 6^a upon the armature-shaft, as clearly shown in Fig. 6, and provided with a stem or shank 6^b, the purpose of which will presently appear. The member 7 is also provided with a crank-piece 7^b, with which connects one end of a stout retractile spring 8, the other end of which is joined with the main frame. (See Fig. 3.) The purpose of such spring is to normally swing the lever 7 in the direction indicated by the arrow 7^x and rotate the armature 6, (indicated by the arrow 60 in Fig. 6,) and hold it, as it were, to its normal or rest position.

9 designates a motor mechanism which includes a drum 10, spring-actuated in the ordinary manner, carrying at one end a large cog-gear 10^a, which meshes with the pinion 11^a on the shaft 11 of a train of gearing, which includes a drive-gear 11^d, that engages a pinion 11^c on a shaft 11^c, (see Fig. 1,) which carries a gear-wheel 11^e, held in mesh with the pinion 12^a on the shaft 12, upon which is mounted centrifugally-operating governor devices, which include a sleeve 13, loosely mounted on the shaft 12, with which the centrifugally-operating crank-levers 13^a connect, and which levers in turn are fulcrumed on the bracket-piece 13^c, fixedly secured to the shaft 12. The sleeve 13, also connected with or is integrally joined with the flange-disk 13^x, which acts as a friction member for engaging a stationary disk or plate 13^y on the main frame and has a brake-wheel for coöperating with the brake mechanism, the peculiar construction of which, its correlative arrangement with the motor, the devices for intermittently operating the striker or circuit-controller on the armature-shaft, presently described, and the arbitrarily-arranged projections for engaging the lever 7, as presently set forth, form an essential feature of my present invention.

14 designates a ratchet-wheel on the spring-drum shaft, and 14^a a lever carrying a pawl for engaging the ratchet-wheel and winding the spring.

Upon the end adjacent the magnets the motor mechanism drum has arbitrarily-arranged projecting studs 15, which are correlative disposed to effect a desired operation on the lever 7. For example, the studs 15, all of which are arranged to successively engage with the stem 7^b of the oscillator or swinging lever 7, are arranged in series of two, properly spaced apart, and a set of three, likewise spaced, the two sets being, however, properly separated to effect the desired striking action, which, for example, is "2 3," to represent box or mechanism No. 23. Thus should the motor mechanism be released by the trip devices, presently again referred to, the said motor through the medium of the studs 15 will swing the lever 7 over in one direction and oscillate it—that is, partially rotate the armature in one direction—

and as the stud disengages the lever-shank the said lever is quickly returned or oscillated back to its first position by the mechanism hereinbefore described, it being obvious that this operation is repeated so long as the motor runs and the striker-studs coöperate with the lever 7. In my present construction of telegraph mechanism I have provided that the striker-stud-carrying drum shall make three complete revolutions each time it is set in operation and is properly wound, so that the alarm or signal shall be repeated three times. It is obvious by ordinary mechanical provision the striking operation may be repeated a less or a greater number of times.

At one end the motor-drum carries a flange 10^x, having a radial notch 10^y 10^y, and upon this flange is held to ride an arm 16, having a nose 16^x for engaging with the notch 10^y at a proper time. The arm 16 forms a part of the brake-frame 16^a, which is pivotally mounted on the upper end of a standard 17 17, and the said frame is normally pulled in the direction of the base 1 by the spring 18, as clearly shown in Fig. 3. The frame 16^a also includes an arm 16^b, projected over the brake-wheel forming a part of the governor mechanism and carries a brake-shoe for engaging the said wheel.

Upon the inner face of the gear 11^e, forming a part of the motor train of gearing, is mounted a cam 19, with which engages a roller-bearing 16^c, mounted in the pendent portion 16^d of the brake-mechanism arm 16. The diameters of the motor-drum, the gear-wheel 11^e, the connections between the shaft, the said wheel and the motor-drum, and the cam 19 are such that the motor-drum will be permitted to make three revolutions before the brake devices are permitted to move to a braking position, the cam device on the wheel 11^e serving to hold the member 16 elevated in a plane above the notch in the flange of the motor-drum until the said motor-drum shall have completed its third revolution, at which time the connection between the cam and the lever 16 is such that the spring will pull the brake-arm 16 inward to cause the brake-shoe to engage its coacting brake-wheel, and thereby stop further movement of the motor.

21 designates a trip-lever fulcrumed in a bracket 22, which is an integral part of the frame in which the inner end of the armature-shaft is journaled, and the said lever has a heel portion 21^b, which extends under the arm 16^a of the brake-frame, the said frame and lever being so arranged that pressure upon the finger-stud 21^x of the lever will raise the heel portion and raise the arm 16^a to lift its nose-piece out of engagement with the notch in the drum-flange and release the motor mechanism.

P and N indicate contact-points with which the circuit-wires connect, one of said terminals being in the nature of a spring-plate.

25 indicates a slide member mounted in a guide 25^a and which piece I term the "shunting-slide." This member 25 is also fulcrumed to swing upon a pin 25^b, and its outer end is projected in the path of the sweep movement of a striker-finger 26, fixedly mounted on the armature-shaft and adapted to oscillate therewith.

By referring now more particularly to Fig. 7 it will be noticed that the members 25 and 26 are correlatively arranged, so that when the striker-arm swings in the direction indicated by the arrow in Fig. 6, which movement is effected by the spring that throws the armature back to its initial or normal position, the said striker-arm will engage the slide 25 and force it back lengthwise in the guide that holds it and move the terminal N out of engagement with the terminal P, and thereby open the shunt. It will also be noticed by reference to the said Fig. 7 that the parts are so arranged that after the shunt has been broken the plate 25 will be slid back through the tension of the terminal plate P, with its front end projected over the outer end of the striker-lever 26, and by reason of the pivotal connection of the member 25 the said member 25 will swing up out of engagement with the striker 26 when it, with the armature, is oscillated or moved back in the opposite direction through the medium of the studs 15 on the spring-operated drum.

By providing a shunting device of the character stated it is manifest that the shunt for the box or mechanism from which the electrical impulses are sent will be automatically cut out at proper times to permit the magneto-electric current to pass out of the main line in a positive and economical manner.

In my present construction of telegraph mechanism it is intended that after each complete operation of sending in a signal or alarm the motor-drum be rewound, which operation can be conveniently and quickly effected by reason of the novel manner in which the winding-lever is arranged. (See Fig. 1.)

From the foregoing description, taken in connection with the accompanying drawings, it is believed that the advantages of my present invention will be readily apparent to those skilled in the art to which it appertains.

In a former patent granted to me, No. 664,366, dated December 18, 1900, for a fire-alarm telegraph-box a magneto-electric generator is provided for sending in the impulses; but in the said patented construction two special motor mechanisms are used, one for operating the armature of the magneto-generator and the other for governing the striking or impulse-controlling devices, and in the said patented construction the armature is rotatable continuously in the same direction. My present invention differentiates from the patented construction generically in that I employ but a single motor mechanism, which controls both the action

of the armature and the operation of the impulse-sending or striking devices.

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

1. A magneto-electric generating-machine, comprising a magneto-electric generator, including an oscillatory armature, a motor for imparting movement to said armature in one direction, and automatically-operating means for imparting motion to the said armature in a reverse direction.

2. A magneto-electric generating-machine, comprising a magneto-electric generator, including an oscillating armature automatically movable to its normal position, and a motor for imparting an intermittent movement to the armature, for the purposes described.

3. A magneto-electric generating-machine, comprising a magneto-electric generator, including an oscillating armature, a motor for intermittently moving said armature in one direction, and a spring for moving said armature in the opposite direction.

4. In a mechanism as described, a magneto-electric generator, including an oscillating armature, an oscillator coöperatively joined with said armature for imparting oscillatory movements thereto, a motor adapted to intermittently control said oscillator and move it in one direction, and automatically-operated means for moving the oscillator in a reverse direction when released from the motor, for the purposes described.

5. In a magneto-electric generating-machine, the combination with the magneto-electric generating devices, including an armature partially rotatable by spring action in reverse directions, mechanism for imparting reverse movement to said armature, and a shunting device directly connected with the armature, for the purposes described.

6. In a magneto-electric generating-machine, the combination with the rockable armature-shaft, and mechanism for imparting reverse motion thereto; of a shunting device normally closed, said device including a shiftable member, and a trip controlled by the armature-shaft, adapted to engage said shiftable member at predetermined times to open the shunt, for the purposes described.

7. In a magneto-electric generating-machine, the combination with the armature, means for imparting an oscillatory motion thereto, and a laterally-projected trip-finger fixedly connected with the armature; of a shunt device including a slidable and tiltable circuit-breaker held in the plane of the sweep movement of the trip-finger carried by the armature, and adapted to be slid lengthwise by engagement of the trip-finger therewith in one movement of said finger to open the shunt and to tilt out of the path of said finger on its reverse movement without affecting the shunt-circuit.

8. In a magneto-electric generating-machine, a magneto-electric generator, provided with an oscillating armature, a pivoted lever geared with the armature for imparting oscillatory motion to said armature mechanism for swinging said lever in one direction, a motor including arbitrarily-arranged projections for engaging said lever and moving it to its other direction, for the purposes described. 30
9. In a magneto-electric generating-machine, a magneto-electric generator, provided with the oscillating armature, a pivoted lever geared with the armature for imparting oscillatory motion thereto, mechanism for swinging said lever in one direction, a motor including arbitrarily-arranged projections for engaging said lever to move it in the other direction, a trip device for releasing the motor, and a stop mechanism for said motor. 35
10. In a magneto-electric generating-machine, a magneto-electric generator, provided with an oscillating armature, a pivoted lever geared with the armature for imparting oscillatory motion to said armature, mechanism for swinging said lever in one direction, a motor including arbitrarily-arranged projections for engaging said lever and moving it to its other direction, and a shunt controlled by the movement of the armature, as it returns to its normal position, as set forth. 40
11. In a magneto-electric generating-machine, comprising a magneto-electric generator, including an oscillating armature, a swinging lever geared with the said armature, a motor including arbitrarily-arranged projections for engaging the lever for swinging it in one direction, an independent mechanism for moving the lever to its other direction when disengaged from the aforesaid projections, a shunt device normally held to its closed position, and mechanism controlled by the movement of the armature, as it is returned to its normal position, for engaging the shunt device and moving it to its open position, for the purposes described. 45
- LEONIDAS G. WOOLLEY.
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