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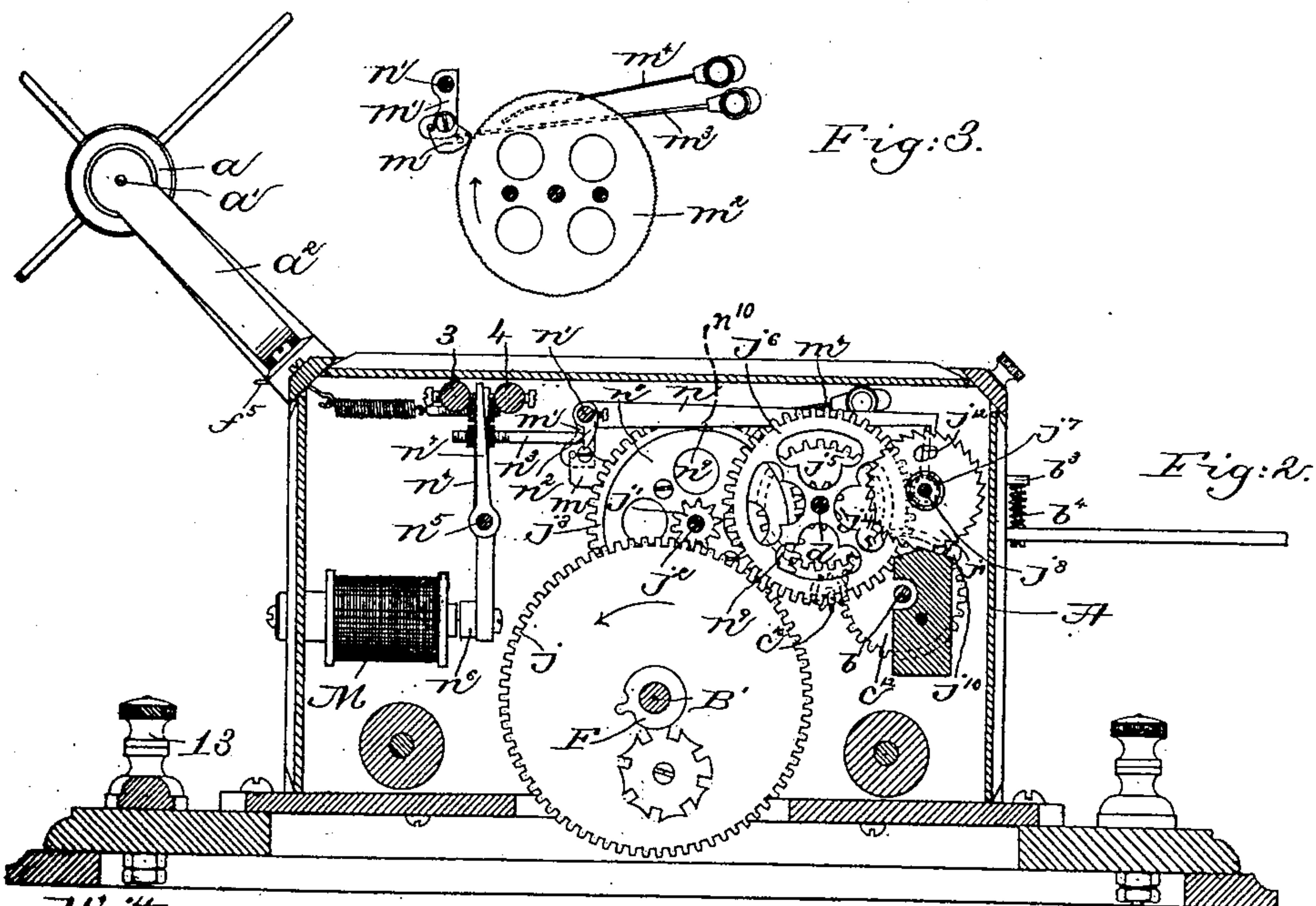
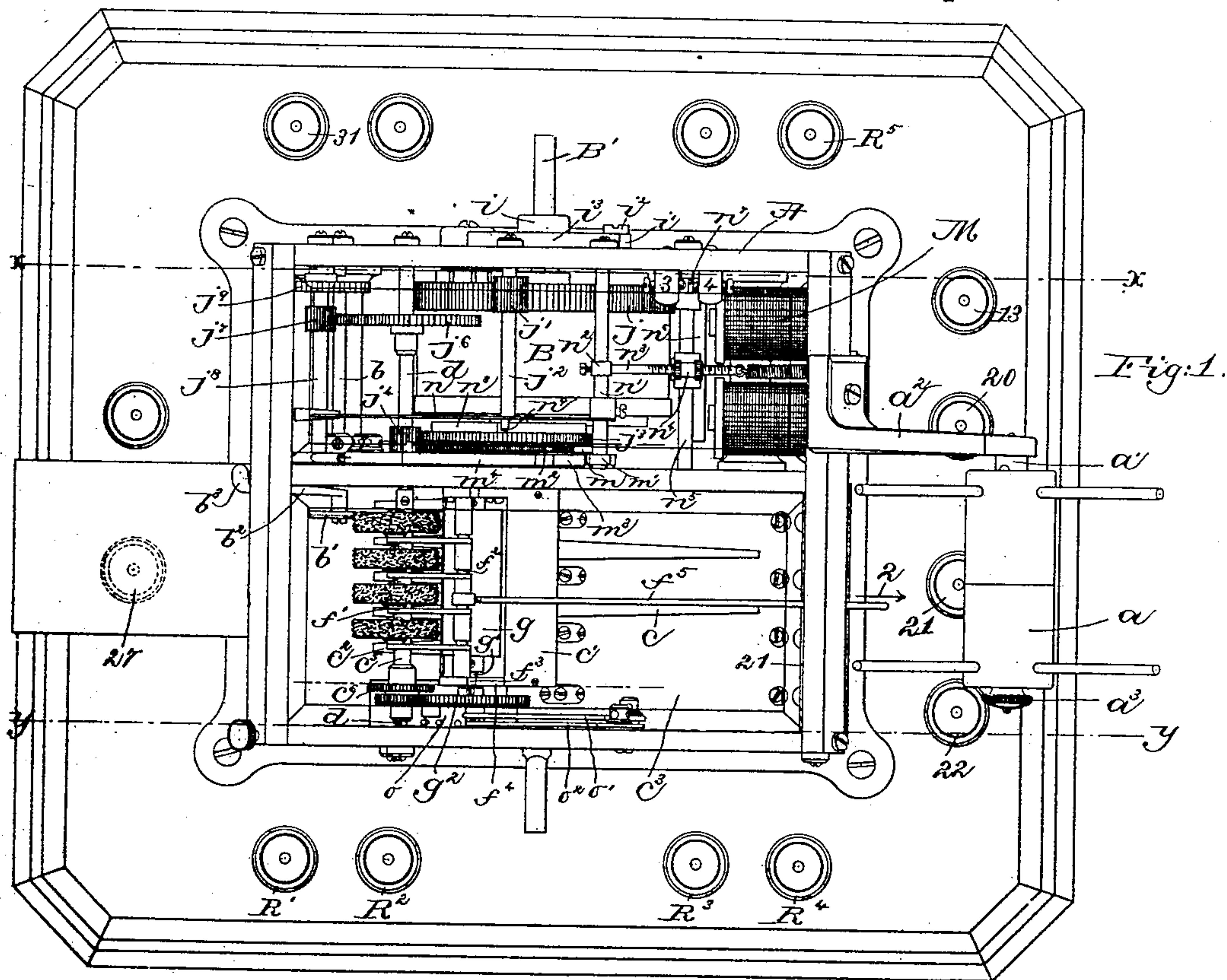
(No Model.)

3 Sheets—Sheet 1.

J. C. WILSON.  
MESSAGE RECORDING INSTRUMENT.

No. 426,554.

Patented Apr. 29, 1890.



Witnesses  
Howard F. Eaton.  
Frederick L. Emery.

Inventor.  
John C. Wilson  
by Lewis A. Hupmeyer

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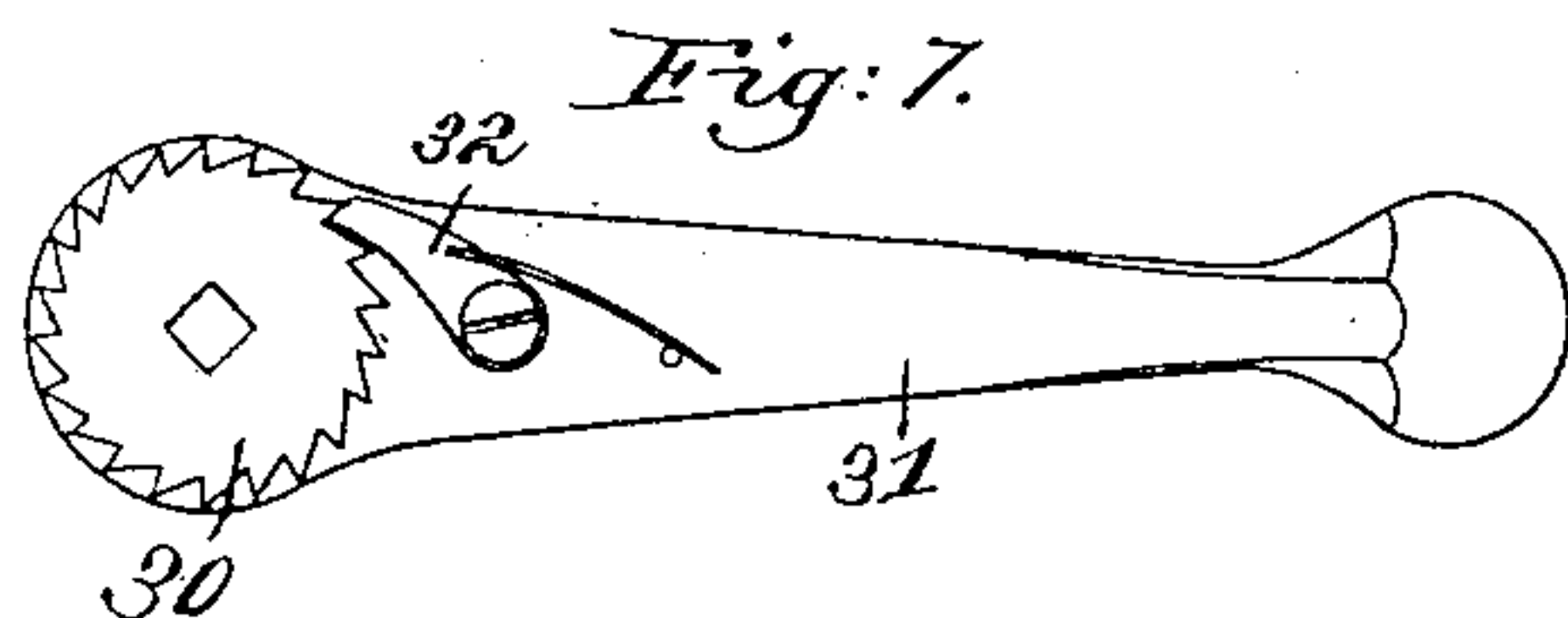
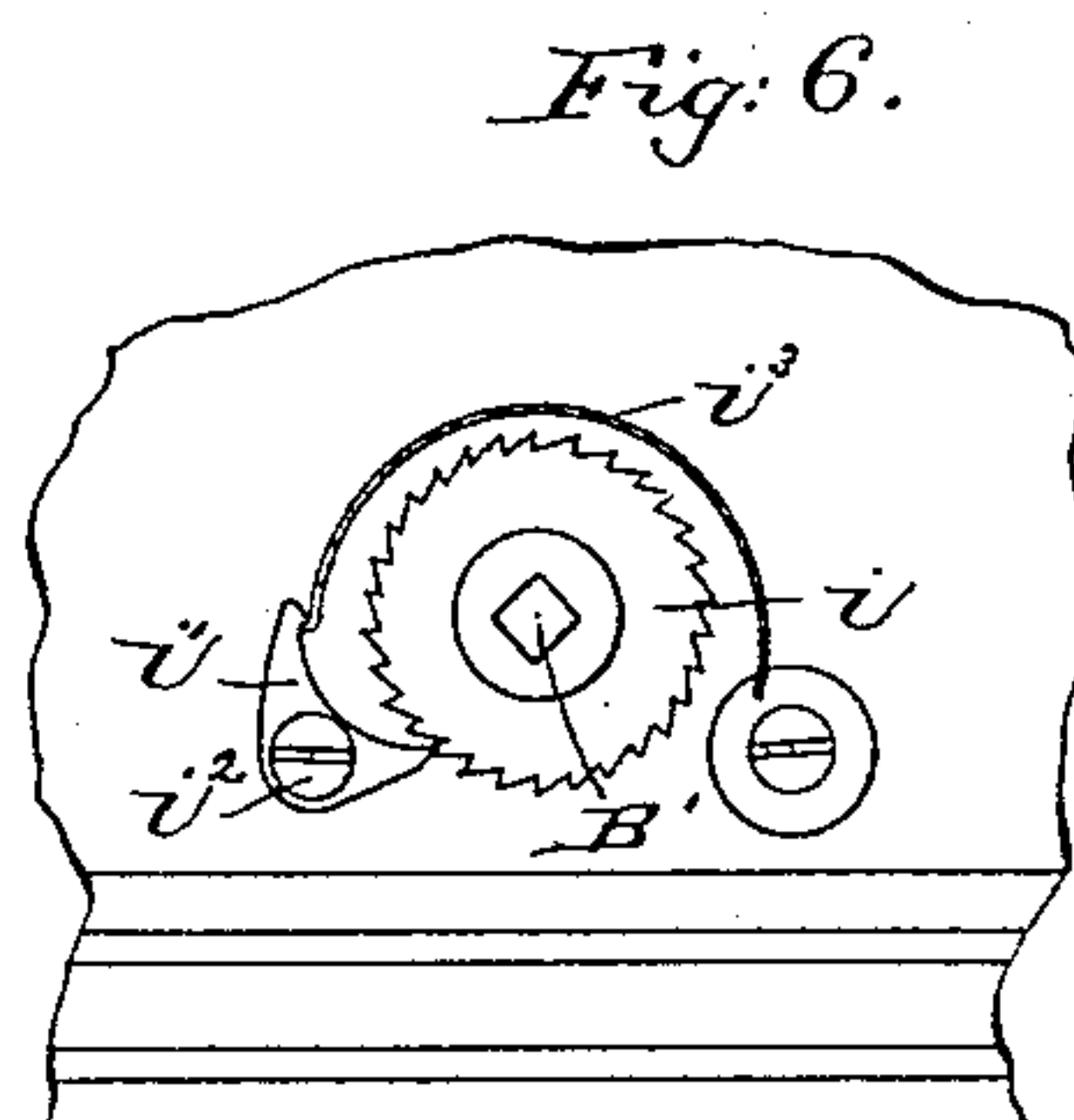
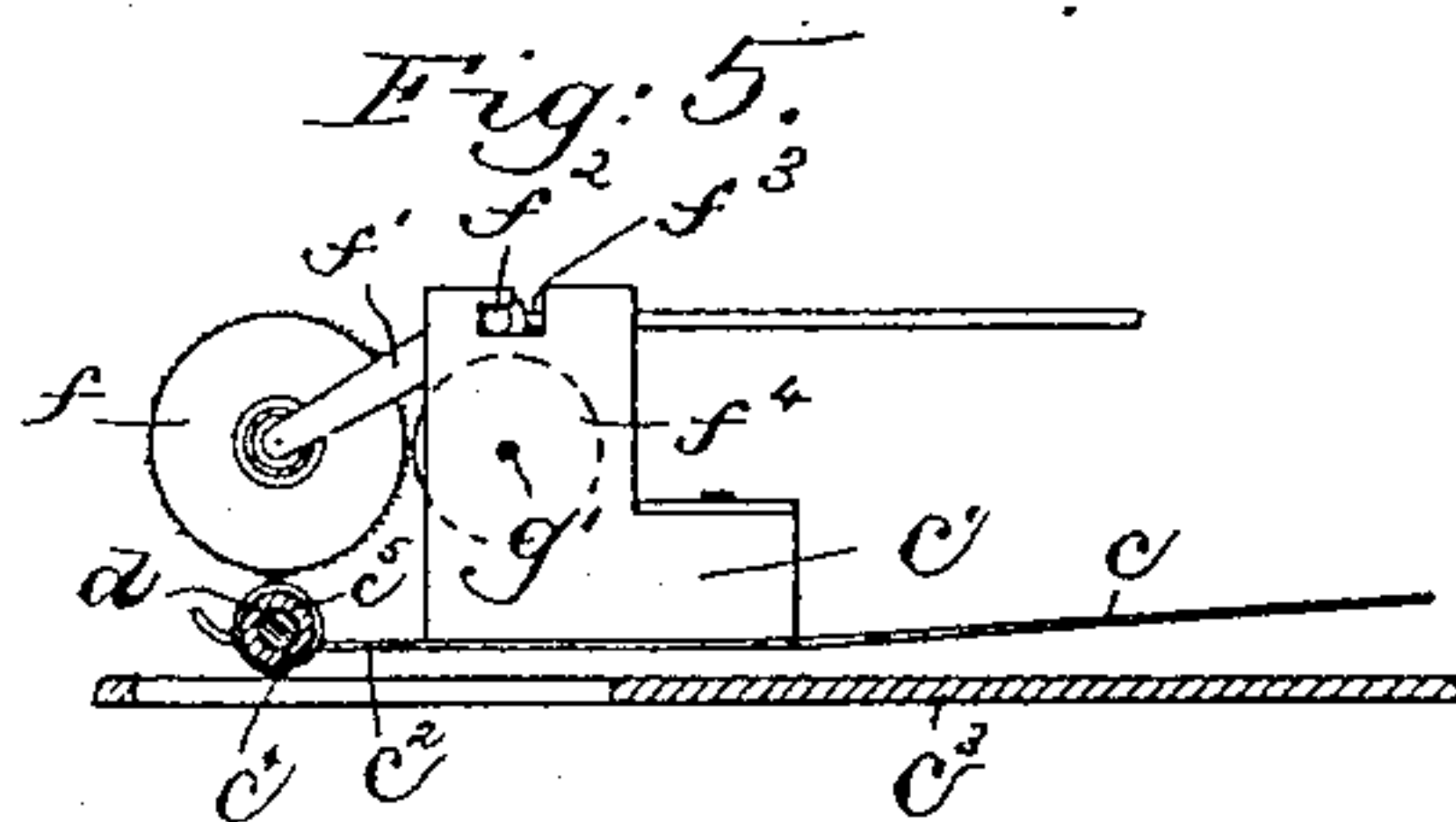
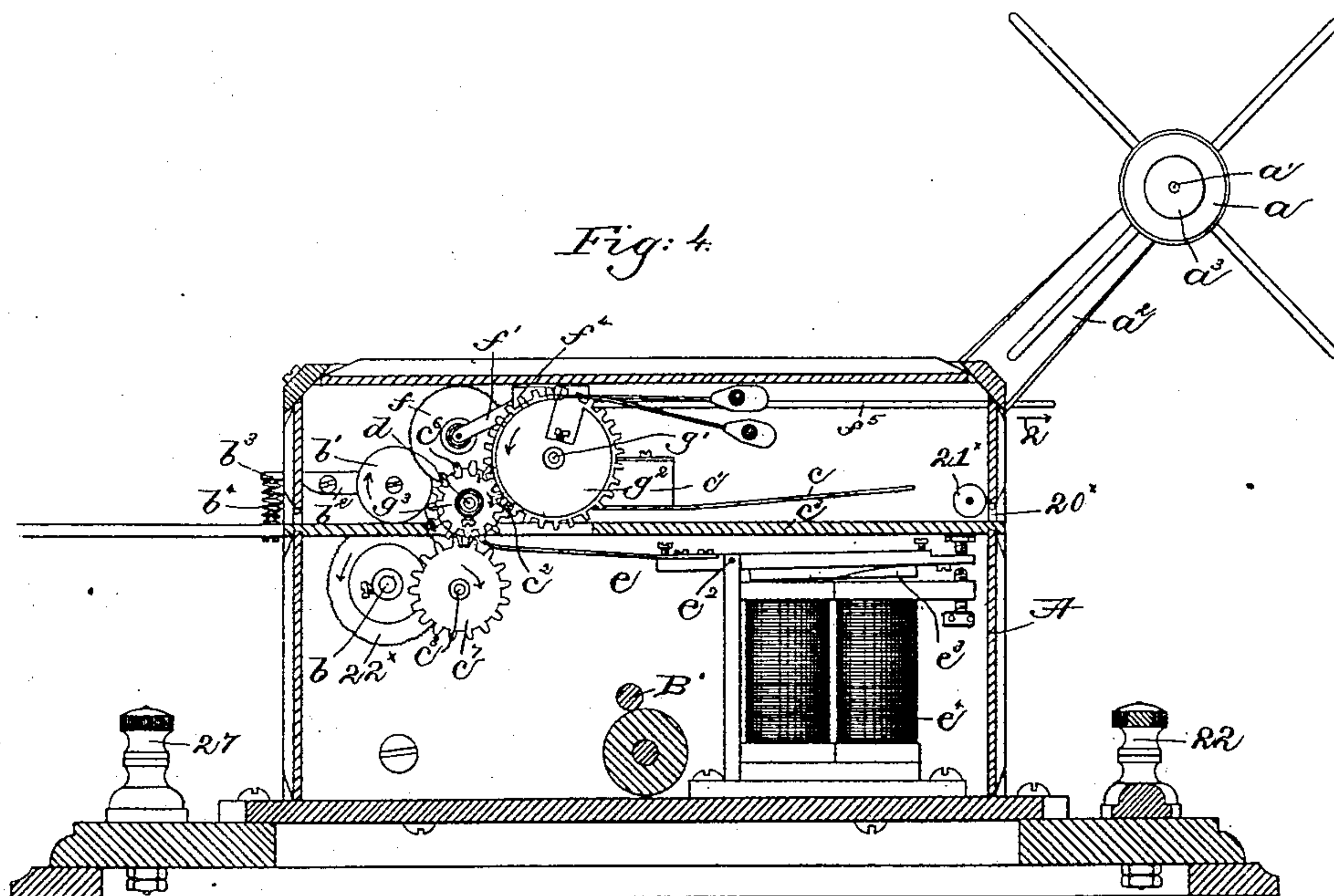
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3 Sheets—Sheet 2.

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Inventor.  
John C. Wilson  
by Lemby & Gregory  
Attys.



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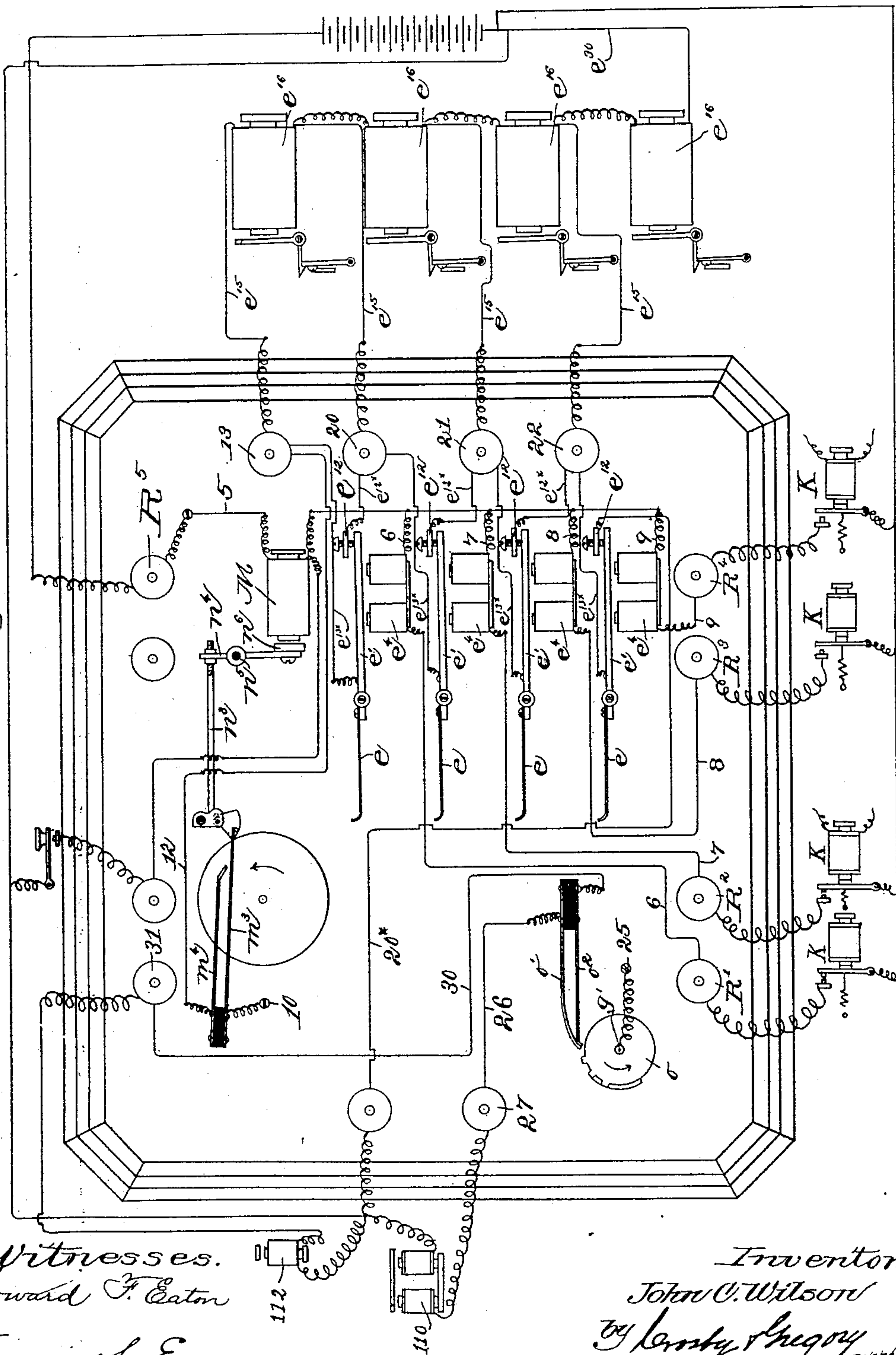
3 Sheets—Sheet 3.

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Fig. 8.



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# UNITED STATES PATENT OFFICE.

JOHN C. WILSON, OF BOSTON, MASSACHUSETTS.

## MESSAGE-RECORDING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 426,554, dated April 29, 1890.

Application filed June 25, 1888. Serial No. 278,170. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. WILSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Message-Recording Instruments, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

- 10 This invention has for its object to construct a message-recording instrument especially applicable for police-signaling purposes and adapted to register all signals transmitted from a police-signal box to the central station.
- 15 The register is adapted to record all on-duty or patrol signals silently, and upon the occurrence of a special signal or one requiring immediate attention to bring into operation an audible alarm or distinguishable signal.
- 20 The register is desired to feed a definite length of paper forward for each signal, and to bring into operation a time-stamp, which operates to stamp the time upon the strip of paper upon which the signal is being or has been recorded.
- 25 The register is also designed to effect, through suitable intermediate mechanism, the answer-back transmitter.

The invention consists in details of construction to be hereinafter pointed out.

- 30 Figure 1 represents a plan view of a register embodying this invention; Fig. 2, a vertical section of the register shown in Fig. 1, taken on the dotted line  $xx$ ; Fig. 3, a detail of the creeper to be described; Fig. 4, a vertical section of the register shown in Fig. 1, taken on the dotted line  $yy$ ; Fig. 5, a detail of the inking device to be referred to; Fig. 6, a detail of the winding device to be described; Fig. 7, a detail of the winder, and Fig. 8 a
- 40 diagram showing the several parts of the register and circuits.

- The paper upon which the signals are to be recorded is placed or wound in the form of a coil upon a reel  $a$ , placed upon a stem or pin  $a'$ , fixed to the outer end of an arm  $a^2$ , fixed to or formed as a part of the box-like frame  $A$ , containing all the operating parts. The reel  $a$  is prevented from slipping off the stem by a nut  $a^3$ .

- 50 The paper is passed through a slot  $20^x$ , formed in one of the side walls of the box-

like frame and beneath a roll  $21^x$ , and is presented to the paper-feeding devices now to be described. The paper-feeding devices consist of a wheel  $22^x$ , having a toothed or serrated edge fixed to a shaft  $b$ , having its bearings in the frame-work, and also of a rotating presser-wheel  $b'$ , loosely mounted on an arm  $b^2$ , pivoted to the frame-work, the outer end  $b^3$  of said arm projecting or extending through an opening in one of the side walls of the main frame. A spiral spring  $b^4$  is placed beneath the end  $b^3$  of the arm  $b^2$ , the tendency of which is to maintain the roller-presser  $b'$  in contact with the toothed wheel  $22^x$  or upon the paper which passes over the toothed wheel  $22^x$ , thereby pressing the paper in contact with said toothed wheel  $22^x$ , by which it is fed forward. The paper is fed forward beneath the spring-arms  $c$ , attached to the under side of the ink-receiver  $c'$ , and thence forward beneath the spring-arms  $c^2$ , thereby holding the paper upon the plate  $c^3$ .

To mark or print the signal upon the paper, which, it is to be understood, is done by either dots or dashes, one or more marking-surfaces  $c^4$  are provided, (herein shown as four in number,) formed as a part of or attached to a roll or sleeve  $c^5$ , mounted upon the rod or shaft  $d$ , extending the entire width of the frames. A toothed wheel  $c^6$ , fixed to the sleeve  $c^5$ , is engaged by a pinion  $c^7$ , fixed to a shaft  $c^8$ , located beneath the sleeve, said shaft  $c^8$  having fixed to it a pinion  $c^{10}$ , which is engaged by a toothed wheel  $c^{12}$ , fixed to the shaft  $b$ , above referred to. By the arrangement of gearing the marking-surfaces will be revolved in a direction opposite to the movement of the paper itself.

The marking-surfaces  $c^4$  are located just above the paper, and the paper is lifted into contact with said surfaces by pens, and as I have herein shown four such surfaces four pens  $e$  are also employed, the free or outer ends of which when lifted strike against the under side of the paper and lift it against the marking-surfaces. The pens  $e$  are attached to the armature-carrying levers  $e'$ , pivoted at  $e^2$  to a suitable frame-work, the said levers  $e'$  having attached to the under side thereof armatures  $e^3$  of the electro-magnets  $e^4$ , four electro-magnets being herein shown. The electro-



magnets  $e^4$  are placed in different circuits, and hence are independently operative.

The marking-surfaces are supplied with ink by suitable felted rolls  $f$ , bearing directly upon them, said rolls  $f$  being loosely pivoted to or journaled in the outer ends of arms or frames  $f'$ , loosely mounted upon a rod  $f^2$ , held in suitable slots  $f^3$ , cut in the side plates  $f^4$ . The rolls  $f$  fall by gravity, as best shown in Fig. 5. A rod  $f^5$  is attached to the rod  $f^2$ , extending laterally through an opening in the main frame, (see Fig. 1,) which may be grasped by the hand and drawn in the direction of the arrow 2, the rod  $f^2$  sliding in the slots  $f^3$  until the felted rolls  $f$  bear upon an ink-roll  $g$ , placed in the ink-reservoir  $c'$  and fixed to a shaft  $g'$ . A toothed wheel  $g^2$  is fixed to the shaft  $g'$ , which is engaged by a toothed wheel  $g^3$ , fixed to the shaft  $d$ , upon which latter shaft the sleeve  $c^5$  is mounted. It will thus be seen that the felted or absorbent rolls  $f$  may be supplied with ink whenever desired, and will continually bear upon the marking-surfaces, as described.

The motor mechanism employed for the register is one that is normally wound, it comprising the drum B, containing the mainspring mounted on the winding-shaft B'. A ratchet-wheel  $i$  is fixed on the winding-shaft B', and a pawl  $i'$ , pivoted at  $i^2$ , engages the teeth of the ratchet-wheel, it being normally held in engagement by the spring  $i^3$ .

The winder (see Fig. 7) consists of a ratchet-toothed block 30, held and freely rotatable in a hand-piece 31, said block having a squared hole at the center to receive the squared end of the shaft B'. A spring-controlled pawl 32 is also employed for enabling forward rotation of the ratchet 30. As the shaft B' extends entirely through the main frame-work and has each of its ends squared, as shown, it may be engaged by the winder at either side of the machine.

A Geneva stop F is used in connection with the winding-shaft, in usual manner.

The drum B is provided circumferentially with teeth  $j$ , forming the main driving-gear, which engages the pinion  $j'$ , fixed to a shaft  $j^2$ , said shaft having also fixed to it a toothed wheel  $j^3$ , which engages and drives a pinion  $j^4$ , fixed to the shaft  $d$ . A toothed wheel  $j^5$  is also fixed to the shaft  $d$ , which engages and drives the toothed wheel  $c^{12}$ , fixed to the shaft  $b$ . Another toothed wheel  $j^6$  is also fixed to the shaft  $d$ , which engages and drives a pinion  $j^7$ , (see dotted lines, Fig. 2,) fixed to the shaft  $j^8$ .

The escape-wheel  $j^9$  is fixed to the shaft  $j^8$ , and the pallet  $j^{10}$  is pivoted to the main frame, which co-operates with the escape-wheel. A detent  $j^{12}$  (see dotted lines, Fig. 2) is fixed to the shaft  $j^8$ . A releasing lever or bar  $n$ , fixed to the rod  $n'$ , has at its outer or extreme end a projection which engages and holds the detent  $j^{12}$ . A lug  $n^2$  is adjustably fixed to the rod  $n'$ , which is acted upon by a rod  $n^3$ , ad-

justably attached to the upper end of the armature-carrying lever  $n^4$ , fixed to the rod  $n^5$ , the armature  $n^6$  of said lever being attracted by the starting-magnet M. An arm  $n^7$  is also fixed to the rod  $n^5$ , the upper end of which co-operates with or vibrates between adjustable front and back stops 3 4. It is designed that the shaft  $j^2$  shall make one-third of a revolution each time the starting-magnet M operates, and hence a disk  $n^8$  is fixed to the shaft  $j^2$ , which has on its periphery three notches, as  $n^9$ , and the releasing-lever  $n$  has on its under side a lug or projection  $n^{10}$ , which enters one or another notch  $n^9$ .

By the motor mechanism herein described the feeding device is adapted to feed a definite length of paper forward each time it operates.

The register is placed in practice in a local or normally-open circuit, and the wire 5 from the local battery includes the starting-magnet M, and has, as herein shown, four branches 6 7 8 9, which branches include, respectively, the several electro-magnets  $e^4$ . Each branch 6 7 8 9 is normally open, and is adapted to be closed by the armature of the four relays K, which are included in independent closed circuits, the said wires 6 7 8 9 leaving the register at R' R<sup>2</sup> R<sup>3</sup> R<sup>4</sup>, respectively, to include the said relays, and returning to the local battery and entering the register by the wire 5 at the post R<sup>5</sup>. By this arrangement it will be seen that whenever any one of the main relays K operates the starting-magnet M operates and one of the electro-magnets  $e^4$ , and should a second signal arrive on another circuit before the first was completed another electro-magnet  $e^4$  operates, and the armature of the starting-magnet remains attracted or is properly responsive. As the electro-magnets  $e^4$  operate their armatures cause the pens to lift the paper against the rotating marking-roll.

The register herein shown is especially adapted for police-signaling purposes to register all calls, and the principle employed is substantially as shown and described in United States Patent No. 359,688, granted to B. J. Noyes, March 22, 1887. In the patent referred to all patrol or on-duty calls were registered silently, and all special calls were registered, and simultaneously a bell responded to thereby call attention, and the transmitters at the boxes were designed to effect a change in the current for intervals of short duration for all patrol-calls and to effect like changes in addition to a change of long duration for all special calls. In the present invention all impulses of short duration are registered as above described, and on the arrival of an impulse of long duration a "creeper," now to be described, operates. The creeper, as herein shown, (see Fig. 3,) consists of a sector  $m$ , having a serrated edge, is loosely pivoted to an arm  $m'$ , fixed to the shaft  $n'$ , and a toothed or serrated wheel  $m^2$  is fixed to the shaft  $j^2$ , upon the periphery of which the



sector bears. When the parts are at rest, the sector  $m$  drops by gravity out of engagement with the wheel  $m^2$ ; but just as soon as the magnet  $M$  is energized the said sector is thrown into engagement with the wheel  $m^2$ , and by friction the said sector is raised or turned upward on its pivot. The arm carrying the sector, being fixed to the shaft  $n'$ , will be vibrated in response to the impulses, and hence will retain the sector in engagement with the wheel  $m^2$  much longer on impulses of long duration than otherwise. At the rear side of the sector a small pin projects, upon which rests the outer or free end of a spring  $m^3$ , attached to the main frame beneath the spring  $m^4$ , but free from it. As the sector is lifted the spring  $m^3$  is raised, and upon the occurrence of an impulse of long duration said spring is raised sufficiently to make contact with the spring  $m^4$ .

The armature-levers  $e'$  of the magnets  $e^4$  each have a back-stop  $e^{12}$ , and wires  $e^{12x}$  connect the back-stop with the binding-posts 13, 20, 21, and 22. Wires  $e^{13x}$  connect the armature  $e'$  with the binding-posts 13 20 21 22, and a series of shunt-circuits, as  $e^{15}$ , lead from the register connecting the binding-posts 13 20 21 22, and annunciator-magnets  $e^{16}$ , with the exception of the lowest one, are included in said shunts, so that the armature-carrying levers  $e'$  of the magnets  $e^4$ , by electrically connecting the wires  $e^{12x}$  and  $e^{13x}$ , normally short-circuit the said annunciator-magnets. The lowest annunciator-magnet  $e^{16}$  is included in a shunt-wire  $e^{30}$ , leading directly to the battery, but in operation is the same as the other magnets  $e^{16}$ , the shunt-wires of which lead indirectly to the battery. When any one of the said levers are attracted, one of the shunts will be broken, thereby including one of the annunciator-magnets, and when contact of the pens  $m^3 m^4$  is made the local circuit thus formed is closed, passing from the plate 10, pens  $m^3 m^4$ , wire 12, post 13, thence through the armature-carrying levers of all the magnets  $e^4$  until it arrives at the one which is attracted, and the current at this point passes through the shunt and its annunciator-magnet and thence through the remaining armature-levers, returning to plate by wire 20 $x$ .

The annunciator-magnets herein shown are adapted to release a drop, which in falling may, if desired, close a local circuit, (not shown,) including a bell, when the current passes through its coils; but said drop forms no part of this invention, and may or may not be employed. If said drop should be omitted, the bell would be included directly in the local circuit of the register.

A disk  $o$  is fixed to the shaft  $g'$ , which has on its periphery two series of contacts, and two pens  $o'$   $o^2$  lie in the path of movement of the projections of said disk, one for each series. One of the pens, as  $o'$ , is adapted to close a local circuit, in which is included an electro-magnet which is adapted to operate a time-stamp, said local circuit passing

through plate at 25, disk  $o$ , pen  $o'$ , wire 26, post 27, thence including the electro-magnet 110 of the time-stamp, the battery, and to post  $R^5$  to the plate. This local circuit is adapted to be closed after the signal has been received, so as to stamp upon the paper the correct time of the reception of each signal.

In another application, filed by me January 25, 1887, Serial No. 225,434, a circuit-closing disk was shown adapted to close a local circuit to effect the operation of a time-stamp, so that I do not herein lay claim to such as therein shown. The other pen  $o^2$  is adapted to cooperate with its series of contacts and close a local circuit, including an electro-magnet which effects the operation of a pole-changing transmitter, by which impulses of opposite polarity are transmitted, which are responsive on a suitable alarm, as a bell, placed in the boxes on the street.

It is designed to transmit one or more impulses at the completion of the reception of each signal, and hence the shaft  $g'$ , carrying the disk  $o$ , makes one revolution for each complete signal sent in, or while the shaft  $j^2$  makes one-third of a revolution, and the contacts on the disk  $o$  are arranged to engage the pen  $o^2$  just as the said disk completes its revolution. This local circuit passes from the plate at 25, through the disk  $o$ , pen  $o^2$ , wire 30 to post 31, thence including the operating magnet 112 of the pole-changer, and the battery-post  $R^5$  to plate.

I claim—

1. In a register, the normally-wound motor, releasing-lever, and starting-magnet, combined with the recording-pen and marking-roller, between which the paper is fed, the ink-roll and the reservoir in which it revolves, the ink-conveying roller bearing upon the marking-roller and journaled in a frame, and a movable rod supporting said frame, movement of which rod brings the said ink-conveying roller into and out of contact with the ink-roller, substantially as described.

2. In a register, a normally-wound motor, releasing-lever, starting-magnet, and armature-carrying lever, combined with a wheel, as  $m^2$ , driven by the motor and having a milled or roughened edge, and a loosely-pivoted segment, as  $m$ , located adjacent to the said wheel  $m^2$ , but normally free from contact therewith, said segment  $m$  having a milled or roughened edge and adapted to be moved into engagement with the said wheel  $m^2$  by the said armature-carrying lever, substantially as and for the purposes set forth.

3. In a register, a normally-wound motor, releasing-lever, starting-magnet, a recording pen and pen-magnet, and paper-feeding mechanism, combined with a wheel having a roughened edge or surface, a loosely-pivoted segment having a roughened edge or surface and adapted to be moved into engagement with the wheel, and a contact-pen engaged by the said segment and adapted to be moved



thereby to change the condition of a circuit on a prolonged contact with the wheel, substantially as described.

4. In a register, the normally-wound motor  
5 and starting-magnet and recording-pen magnets  $e^4$ , combined with annunciator-drops independently controlled by the said recording-pen magnets, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN C. WILSON.

Witnesses:

BERNICE J. NOYES,  
J. C. SEARS.